national**grid**

Andrew S. Marcaccio Senior Counsel

November 19, 2022

VIA ELECTRONIC MAIL

Luly E. Massaro, Clerk Rhode Island Division of Public Utilities and Carriers 89 Jefferson Boulevard Warwick, RI 02888

RE: Docket 5209 - Proposed FY 2023 Electric Infrastructure, Safety, and Reliability Plan Responses to Data Requests - Division Set 3

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a National Grid ("National Grid" or the "Company"), enclosed please find the electronic version of the Company's responses to the Division's Third Set of Data Requests in the above-reference matter.¹

Please be advised that the Company's response to DIV 3-2 and DIV 3-3 contain confidential information. As such, the enclosed represents a public redacted version of this filing. An unredacted confidential version of this filing will be sent electronically to the Division of Public Utilities and Carriers ("Division") under a Non-Disclosure Agreement, and to the Commission via the Company's encryption software, Egress Switch.

Pursuant to 810-RICR-00-00-1.3(H)(3) and R.I. Gen. Laws § 38-2-2(4)(B), the Company respectfully requests that the Commission treat the information redacted in the public version as confidential. In support of this request, the Company has enclosed two separate Motions for Confidential Treatment. One for the Company's response to DIV 3-2 and one for the Company's response to DIV 3-3. In accordance with 810-RICR-00-00-1.3(H)(2), the Company also respectfully requests that the Commission make a preliminary finding that the information redacted in the public version is exempt from the mandatory public disclosure requirements of the Rhode Island Access to Public Records Act ("APRA").

Thank you for your attention to this transmittal. If you have any questions, please contact me at 401-784-7263.

Sincerely,

Che & m

Andrew S. Marcaccio

Enclosure

cc: Docket 5209 Service List Jon Hagopian, Esq. (w/confidential version) John Bell, Division (w/confidential version) Greg Booth, Division Linda Kushner, Division

¹ Per a communication from Commission counsel on October 4, 2021, the Company is submitting an electronic version of this filing followed by six (6) hard copies filed with the Clerk within 24 hours of the electronic filing.

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.

<u>January 19, 2022</u> Date

Joanne M. Scanlon

Docket No. 5209 - National Grid's Electric ISR Plan FY 2023 Service List as of 12/22/2021

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514 Daniels St. #254		
Raleigh, NC 27605		
File an original & five (5) copies w/:	Luly.massaro@puc.ri.gov;	401-780-2107
Luly E. Massaro, Commission Clerk	Cynthia WilsonFrias@puc ri goy:	-
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	Alan.nault@puc.ri.gov;	
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Ronald Reybitz		
Stephen Breininger	skbreininger@pplweb.com;	
-		

STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION

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THE NARRAGANSETT ELECTRIC CO. D/B/A NATIONAL GRID'S FY 2023 ELECTRIC INFRASTRUCTURE, SAFETY AND RELIABILITY PLAN

DOCKET NO. 5209

MOTION OF THE NARRAGANSETT ELECTRIC COMPANY D/B/A <u>NATIONAL GRID FOR PROTECTIVE TREATMENT OF</u> <u>CONFIDENTIAL INFORMATION</u>

The Narragansett Electric Company d/b/a National Grid ("National Grid" or the "Company") hereby respectfully requests that the Public Utilities Commission ("PUC") grant protection from public disclosure certain confidential information submitted by the Company in the above referenced docket. The reasons for the protective treatment are set forth herein. The Company also requests that, pending entry of that finding, the PUC preliminarily grant the Company's request for confidential treatment pursuant to 810-RICR-00-00-1.3(H)(2).

The records that are the subject of this Motion that require protective treatment from public disclosure are the Company's confidential attachments to DIV 3-2 which include Attachment DIV 3-2-6; Attachment DIV 3-2-15; Attachment DIV 3-2-23; and Attachment DIV 3-2-31 (the "Confidential Attachments") which were filed by the Company on January 19, 2022 in response to the Third Set of Data Requests issued by the Division of Public Utilities and Carriers ("Division") in the above-referenced docket. The Company requests protective treatment of the Confidential Attachments in accordance with 810-RICR-00-00-1.3(H) and R.I. Gen. Laws § 38-2-2-(4)(B).

I. LEGAL STANDARD

For matters before the PUC, a claim for protective treatment of information is governed by the policy underlying the Access to Public Records Act ("APRA"), R.I. Gen. Laws § 38-2-1 et seq. <u>See</u> 810-RICR-00-00-1.3(H)(1). Under APRA, any record received or maintained by a state or local governmental agency in connection with the transaction of official business is considered public unless such record falls into one of the exemptions specifically identified by APRA. <u>See</u> R.I. Gen. Laws §§ 38-2-3(a) and 38-2-2(4). Therefore, if a record provided to the PUC falls within one of the designated APRA exemptions, the PUC is authorized to deem such record confidential and withhold it from public disclosure.

II. BASIS FOR CONFIDENTIALITY

The Confidential Attachments, which are the subject of this Motion, are exempt from public disclosure pursuant to R.I. Gen. Laws § 38-2-2(4)(B) as "[t]rade secrets and commercial or financial information obtained from a person, firm, or corporation that is of a privileged or confidential nature." The Rhode Island Supreme Court has held that this confidential information exemption applies where the disclosure of information is likely either (1) to impair the government's ability to obtain necessary information in the future; or (2) to cause substantial harm to the competitive position of the person from whom the information was obtained. Providence Journal v. Convention Center Authority, 774 A.2d 40 (R.I. 2001). The first prong of the test is satisfied when information is provided to the governmental agency and that information is of a kind that would customarily not be released to the public by the person from whom it was obtained. Providence Journal, 774 A.2d at 47.

The Confidential Attachments consist of financial and commercial information and Critical Energy Infrastructure Information ("CEII"). National Grid would customarily not release this information to the public. The Company's submission of the Confidential Attachments stem from

data requests issued by the Division in the above-referenced docket. Accordingly, National Grid is providing the Confidential Attachments to fulfil its regulatory responsibilities.

Public disclosure of the information identified as CEII in the Confidential Attachments would negatively impact the Company's ability to effectively operate to provide safe and reliable service to its customers as CEII means a system or asset of the bulk-power system, whether physical or virtual, the incapacity or destruction of which would negatively affect national security, economic security, public health or safety, or any combination of such matters. As such, the Company would not release this information to the public. Therefore, this information satisfies the exception found in R.I. Gen. Laws § 38-2-2(4)(B).

III. CONCLUSION

For the foregoing reasons, the Company respectfully requests that the PUC grant this motion for protective treatment of the Confidential Attachments.

Respectfully submitted,

NATIONAL GRID By its attorney,

Che & m

Andrew S. Marcaccio (#8168) National Grid 280 Melrose Street Providence, RI 02907 (401) 784-4263

Dated: January 19, 2022

CERTIFICATE OF SERVICE

I hereby certify that on January 19, 2022, I delivered a true copy of the foregoing Motion via electronic mail to the parties on the Service List for Docket No. 5209.

Joanne M. Scanlon

STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION

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THE NARRAGANSETT ELECTRIC CO. D/B/A NATIONAL GRID'S FY 2023 ELECTRIC INFRASTRUCTURE, SAFETY AND RELIABILITY PLAN

DOCKET NO. 5209

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The records that are the subject of this Motion that require protective treatment from public disclosure are the Company's confidential response to DIV 3-3 and the attachments to DIV 3-3 which include Attachment DIV 3-3-1 and Attachment DIV 3-3-2 (collectively, the confidential information is referred to herein as the "Confidential Attachments") which were filed by the Company on January 19, 2022 in response to the Third Set of Data Requests issued by the Division of Public Utilities and Carriers ("Division") in the above-referenced docket. The Company requests protective treatment of the Confidential Attachments in accordance with 810-RICR-00-00-1.3(H) and R.I. Gen. Laws § 38-2-2-(4)(B).

I. LEGAL STANDARD

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II. BASIS FOR CONFIDENTIALITY

The Confidential Attachments, which are the subject of this Motion, are exempt from public disclosure pursuant to R.I. Gen. Laws § 38-2-2(4)(B) as "[t]rade secrets and commercial or financial information obtained from a person, firm, or corporation that is of a privileged or confidential nature." The Rhode Island Supreme Court has held that this confidential information exemption applies where the disclosure of information is likely either (1) to impair the government's ability to obtain necessary information in the future; or (2) to cause substantial harm to the competitive position of the person from whom the information was obtained. Providence Journal v. Convention Center Authority, 774 A.2d 40 (R.I. 2001). The first prong of the test is satisfied when information is provided to the governmental agency and that information is of a kind that would customarily not be released to the public by the person from whom it was obtained. Providence Journal, 774 A.2d at 47.

The Confidential Attachments consist of financial and commercial information. National Grid would customarily not release this information to the public. The Company's submission of

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the Confidential Attachments stem from data requests issued by the Division in the abovereferenced docket. Accordingly, National Grid is providing the Confidential Attachments to fulfil its regulatory responsibilities. Therefore, this information satisfies the exception found in R.I. Gen. Laws § 38-2-2(4)(B).

Moreover, the public disclosure of the information contained in the Confidential Attachments would likely cause substantial harm to the Company's competitive position in thirdparty market request for proposals ("RFP") solicitations. The Confidential Attachments contain sensitive information and other commercial details regarding the Company's analysis of Non-Wires Alternative ("NWA") opportunities. Disclosing this information to the public could harm the Company's ability to procure third-party NWA solution bids in the most cost-effective and unbiased manner and, ultimately, harm customers.

Furthermore, the commercial information requested was provided directly by the participating third-party bidders and would allow other market participants or utilities to gain an unfair advantage and be able to extrapolate how those third-party bidders may respond to other RFP solicitations. Correspondingly, the public disclosure of the information contained in the Confidential Attachments would likely cause substantial harm to the overall competitive positions, for RFP solicitations of the Company as well as other utilities and companies, of the third-party bidders involved in the two NWA opportunities detailed in the Division's data request.

In addition, the public disclosure of the information contained in the Confidential Attachments could result in hesitation of prospective bidders knowing that their information may become public which, in turn, could result in fewer market participants in Company RFP solicitations.

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III. CONCLUSION

For the foregoing reasons, the Company respectfully requests that the PUC grant this motion for protective treatment of the Confidential Attachments.

Respectfully submitted,

NATIONAL GRID By its attorney,

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Andrew S. Marcaccio (#8168) National Grid 280 Melrose Street Providence, RI 02907 (401) 784-4263

Dated: January 19, 2022

CERTIFICATE OF SERVICE

I hereby certify that on January 19, 2022, I delivered a true copy of the foregoing Motion via electronic mail to the parties on the Service List for Docket No. 5209.

Joanne M. Scanlon

Division 3-1

Request:

List all projects completed in FY 2020, FY 2021, and FY 2022 (to date) requiring Closure Papers and provide the Closure Papers.

Response:

A list of all projects with closure papers written in FY 2020, FY 2021, and FY 2022 (to date) is listed below. Please see Attachments DIV 3-1-1 through DIV 3-1-17 for copies of Closure Papers.

<u>Funding</u> <u>Project</u> <u>Number</u>	Funding Project Description	USSC Sanction Paper Number	<u>Closure</u> <u>Paper</u> <u>Date</u>	<u>Attachment</u> <u>Number</u>
C036516	Kilvert St 87 - New Fdr (DLine)	USSC-12-346C	12/22/2020	DIV 3-1-1
C051824	Lafayette Sub Transformer Replaceme	USSC-14-223C	6/9/2020	DIV 3-1-2
C053268	Pawtucket No 1 Bus Sect 73 Relief	USSC-15-238C	4/6/2021	DIV 3-1-3
C068686	Franklin Sq Breaker Replacements	USSC-15-277C	9/21/2021	DIV 3-1-4
C055844	W Cranston Transformer #2 Replaceme	USSC-15-290C	2/2/2021	DIV 3-1-5
CD00373	Watch Hill UG Phase 2	USSC-16-093C	4/13/2021	DIV 3-1-6
C050017	Daggett Ave MC Retirement (D-Line)	USSC-16-148C	4/13/2021	DIV 3-1-7
C051274	Daggett Ave MC Retirement (D-Sub)	USSC-16-148C	4/13/2021	DIV 3-1-7
C075571	RI VVO Langworthy Corner 86, Dist	USSC-16-319C	2/9/2021	DIV 3-1-8
C075573	RI VVO Langworthy Corner 86, Sub	USSC-16-319C	2/9/2021	DIV 3-1-8
C076365	RI VVO/CVR Tiogue Ave 100, Substat	USSC-16-319C	2/9/2021	DIV 3-1-8
C076367	RI VVO/CVR Lincoln Ave 72, Substat	USSC-16-319C	2/9/2021	DIV 3-1-8
C077200	RI VVO/CVR Tiogue Ave 100	USSC-16-319C	2/9/2021	DIV 3-1-8
C077201	RI VVO/CVR Lincoln Ave 72	USSC-16-319C	2/9/2021	DIV 3-1-8
C032258	ACNW VIt47 Full Rebuild Prov	USSC-17-212C	5/4/2021	DIV 3-1-9
C073957	Citizens Bank Infrastructure, Johns	USSC-17-267C	5/4/2021	DIV 3-1-10
C051385	Central Falls Sub Relief	USSC-17-295C	10/20/2020	DIV 3-1-11
C047375	IRURD Mystery Farms Estates	USSC-18-270C	10/26/2021	DIV 3-1-12
C046697	Hope Substation Flood Restoration	USSC-18-282C	1/5/2021	DIV 3-1-13
C081110	Westerly T4 Failure	USSC-18-310C	10/6/2020	DIV 3-1-14
CD01097	Warwick Mall Substation Flood Resto	USSC-19-012C	5/12/2020	DIV 3-1-15
C082725	Sockanosett T1 Failure	USSC-19-195C	11/2/2021	DIV 3-1-16
C078476	Hope Sub Pole Replacement	USSC-19-447C	12/22/2020	DIV 3-1-17

			national grid	
Closure: U	IS Sanction Paper			
Title:	Kilvert St - New Feeders	Sanction Paper #:	USSC-12-346 C	
Project #:	C036516	Sanction Type:	Closure	
Operating Company:	The Narragansett Electric Company	Date of Request:	12/22/2020	
Author:	Hurley, Kathleen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning	
Utility Service:	Electricity T&D	Project Manager:	Hurley, Kathleen	
Executive Summary				

This paper is presented to close C036516. The total spend was 3.726M. The original sanctioned amount for this project was 3.830M at +/- 10%.

Project Summary

This project addressed the reliability concerns in the City of Warwick. To address the reliability issue, this project installed two feeders, 87F5 and 87F6, at Kilvert Street substation.

Schedule Variance Table	
	Schedule Variance
Project Grade - Ready to use Date	6/30/2015
Actual Ready to use Date	8/28/2015
Schedule Variance	0 year(s), 1 month(s), 29 day(s)

Schedule Variance Explanation

Additional wire pulling activity pushed the finish date out a month and Railroad Training was delayed.

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	3.426	3.140	(0.286)

	Opex	0.147	0.170	Attachr 0.023	nent DF Pag
	Removal	0.153	0.520	0.367	_ 0
	Total	3.726	3.830	0.104	_
Cost Variance Analysis					

Cost Variance Analysis

This project was completed within the sanction amount and tolerance.

Final Cost by Project				
Actual Spending (\$M) vs. Sanc	tion (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Kilvert St- New Feeders	Capex	3.426	3.140	(0.286)
	Opex	0.147	0.170	0.023
	Removal	0.153	0.520	0.367
	Total	3.726	3.830	0.104
Project Sanction Summary (\$M))			
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	3.426	3.140	(0.286)
	Opex	0.147	0.170	0.023
	Removal	0.153	0.520	0.367
	Total	3.726	3.830	0.104
Improvements / Lessons	Learned			

ID#281

Prior to conducting the work, a small section of line over the R/R Tracks needed Amtrak Training. This is a requirement Amtrak recently put into place, National Grid was responsible for setting up the training.

The issue was getting the time and schedule in place to train the OH Crew. This activity held up the final WR# from closing.

Identify early on in the project the need for specialized training.

Closeout Activities		
ACTIVITY	COMPLETED	
All work has been completed in accordance with all National Grid policies	● Yes ○ No	
All relevant costs have been charged to project	● Yes ◯ No	
All work orders and funding projects have been closed	● Yes ○ No	
All unused material have been returned	● Yes ◯ No	
All as-builts have been completed	● Yes ◯ No	
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No	
Project documentation archived per department procedures	● Yes ○ N/A	

CIAC reconciled per the appropriate tariff Project specific contracts closed Accounting provided for ongoing costs

○ Yes ● N/A
 ○ Yes ● N/A
 ● Yes ○ N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers		
Function	Individual	
Finance	Harju, Andrew	
Regulatory	Azarcon, Carolyn; Long, James	
Jurisdictional Delegate(s)	Easterly, Patricia	
Procurement	Chevere, Diego	
Control Centers (CC)	Gallagher, Michael W.	

Decisions

I approve this paper.

DocuSigned by: Mike Gillespie Signature 12/30/2020 Date

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

N/A

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Closure: U	S Sanction Paper			
Title:	Closure Lafayette Transformer Replacement	Sanction Paper #	USSC-14-223 C	
Project #:	C051824	Sanction Type:	Closure	
Operating Company:	The Narragansett Electric Company	Date of Request:	6/9/2020	
Author:	Hurley, Kathleen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning	
Utility Service:	Electricity T&D	Project Manager:	Hurley, Kathleen	
Executive Summary				

This paper is presented to close C051824. The total spend was 2.800M. The original sanctioned amount for this project was 2.703M at +/- 10%.

Note: The latest sanction amount was \$2.995M.

Project Summary

This project replaced the existing transformer (T1), the motor operated load break switches, and the wooden pole box structure. The relay protection for the new transformer (T1) was upgraded and the relay recloser protection scheme was upgraded on transformer No.2.

The transformer and associated equipment was replaced due to asset condition issues.

Schedule Variance Table	
Sched	ule Variance
Project Grade - Ready to use Date	2/20/2019
Actual Ready to use Date	3/19/2019
Schedule Variance	0 year(s), 0 month(s), 27 day(s)
Schedule Variance Explanation	

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under

		Attachr	nent l
2.793	2.582	(0.211)	Р
0.001	0.000	(0.001)	
0.006	0.121	0.115	
2.800	2.703	(0.097)	
	2.793 0.001 0.006 2.800	2.7932.5820.0010.0000.0060.1212.8002.703	Attachu 2.793 2.582 (0.211) 0.001 0.000 (0.001) 0.006 0.121 0.115 2.800 2.703 (0.097)

Cost Variance Analysis

This project was complete within the sanction amount.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	(\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C051824	Capex	2.793	2.582	(0.211)
	Opex	0.001		(0.001)
	Removal	0.006	0.121	0.115
	Total	2.800	2.703	(0.097)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	2.793	2.582	(0.211)
	Opex	0.001	0.000	(0.001)
	Removal	0.006	0.121	0.115
	Total	2.800	2.703	(0.097)

Improvements / Lessons Learned

During construction it was determined the Junction Boxes included in the original design package were not required at the substation.

The design should be reviewed during the preliminary engineering phase or prior to final engineering with the construction team to determine whether the Junction Box and the cables connected to the Junction Box had enough room at the station.

Lessons Learned #246

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ◯ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ◯ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A

CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	●Yes ○N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Bostic, Christina
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

	Attachment DIV 3-1-2
Decisions	Page 4 of :
I approve this paper.	
DocuSigned by:	
Signature	
8/19/2020 Date	

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

Appendix

N/A

nationalgrid **Closure: US Sanction Paper** Title: Pawtucket No 1 Bus Sect 73 Relief Sanction Paper #: USSC-15-238C Project #: Sanction Type: C053268 Closure Operating Date of Request: 4/6/2021 The Narragansett Electric Company: Company Author: Sponsor(s): McGovern, Sean Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Utility Service: **Project Manager:** Electricity T&D McGovern, Sean Executive Summary

This paper is presented to close C053268. The total spend was 1.548M. The original sanctioned amount for this project was 0.485M at +/- 10%.

Note: The latest sanction amount was \$1.750M.

Project Summary

The Pawtucket No 1 bus transformer section 73 was loaded above the rated summer emergency capability (peak load limit). This project mitigated the risk by transferring load from bus section 73 to bus section 71 and Valley substation. Transfers were accomplished by reconfiguring the distribution feeders. This project reduced the projected loading on the bus section (section 73) to its summer normal rating. The capacity provided by the "New Southeast Substation" projects (sanction #USSC-15-109) permanently addresses this issue.

Schedule Variance Table

	Schedule Variance
Project Grade - Ready to use Date	12/31/2015
Actual Ready to use Date	9/24/2015
Schedule Variance	0 year(s), 3 month(s), 8 day(s)
Schedule Variance Explanation	

Project completion was accelerated in response to address budgetary needs at the time.

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under

			7 ttacini
Capex	1.219	0.375	(0.844)
Opex	0.110	0.050	(0.060)
Removal	0.219	0.060	(0.159)
Total	1.548	0.485	(1.063)

Cost Variance Analysis

Due to this being a urban area with narrow roads and cars parked on the street, additional police protection was required to direct traffic and take care of other safety matters. In addition, field conditions warranted a change in construction methods from 'open wire' to 'spacer cable construction' due to lines in close proximity to buildings.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)

Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C053268	Capex	1.219	0.375	(0.844)
	Opex	0.110	0.050	(0.060)
	Removal	0.219	0.060	(0.159)
	Total	1.548	0.485	(1.063)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.219	0.375	(0.844)
	Opex	0.110	0.050	(0.060)
	Removal	0.219	0.060	(0.159)
	Total	1.548	0.485	(1.063)

Improvements / Lessons Learned

A comprehensive review of the area where the work will be performed needs to occur as part of the detailed design phase. Age and condition of all equipment should be considered before and during project. Specific issues and factors that need to be better considered in the area include traffic conditions, safety concerns, and the ability to schedule outages. These also need to be included in the estimate during the design phase. Constructability review needs to capture any significant variances between proposed design and actual field construction expected to occur.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ◯ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	⊖Yes ●N/A
CIAC reconciled per the appropriate tariff	

	\bigcirc Yes	• N/A
Project specific contracts closed	\bigcirc Yes	• N/A
Accounting provided for ongoing costs	⊖Yes	• N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Joyce, Anisa
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

	Attachment DIV 3-
Decisions	Page 4 o
I approve this paper.	
DocuSigned by:	
Signature	
4/12/2021 Date	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-3 Page 5 of 5

Appendix

N/A

			national grid
Closure: U	S Sanction Paper		
Title:	Franklin Square Circuit Breaker Replacement	Sanction Paper #	: USSC-15-277C
Project #:	C068686	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	9/21/2021
Author:	Tofigh, Banafsheh	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Tofigh, Banafsheh
Executive Su	mmary		

This paper is presented to close C068686. The total spend was 2.323M. The original sanctioned amount for this project was 2.200M at +/- 10%.

Project Summary

The project replaced 11 Circuit Breakers at the Franklin Square #11 Substation due to asset condition. The breakers were obsolete, lacked spared parts and were slow to operate and unreliable. The replacement of these breakers were necessary to support ongoing expansion and system improvement work in the area. To keep spending under \$8M, the remaining 26 circuit breakers at the Franklin Square #11 will be replaced under Sanction paper USSC-18-331 (FP#C081006).

Schedule Variance Table				
	Sche	dule Variance		
Project Grade - Ready to use Date	e 12/31/2017			
Actual Ready to use Date	3/30/2018			
Schedule Variance	0 year(s), 2 month(s), 29 day(s)			
Schedule Variance Explana	tion			
N/A				
Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under

Capex	2.291	1.947	(0.344)
Opex	0.000	0.000	0.000
Removal	0.032	0.253	0.221
Total	2.323	2.200	(0.123)

Cost Variance Analysis

The project cost was within tolerance.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C068686	Capex	2.291	1.947	(0.344)
	Opex	0.000	0.000	0.000
	Removal	0.032	0.253	0.221
	Total	2.323	2.200	(0.123)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	2.291	1.947	(0.344)
	Opex	0.000	0.000	0.000
	Removal	0.032	0.253	0.221
	Total	2.323	2.200	(0.123)

Improvements / Lessons Learned

Non-complex projects containing different phases delivered across multiple fiscal years can be impacted by cost of living increases. These need to be factored into the forecast.

Closeout Activities COMPLETED ACTIVITY All work has been completed in accordance with all • Yes O No National Grid policies All relevant costs have been charged to project ● Yes ○ No All work orders and funding projects have been ● Yes ○ No closed All unused material have been returned ● Yes ○ No All as-builts have been completed ● Yes ○ No All lessons learned have been entered appropriately ● Yes ○ No into the lesson learned database Project documentation archived per department ● Yes ○ N/A procedures CIAC reconciled per the appropriate tariff ○Yes ●N/A Project specific contracts closed ● Yes ○ N/A Accounting provided for ongoing costs ○Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	McGrath, Jim	Endorses scope, design, conformance with design standards

Reviewers		
Function	Individual	
Finance	Kapxhiu, Ana	
Regulatory	Azarcon, Carolyn	
Jurisdictional Delegate(s)	Easterly, Patricia	
Procurement	Chevere, Diego	
Control Centers (CC)	Gallagher, Michael W.	

Decisions

I approve this paper.

	DocuSigned by:
Cienceture	Mike Gillespie
Signature	09F411044CEF47A
Date	9/28/2021

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-4 Page 5 of 5

Appendix		
N/A		

This document has been reviewed and does not contain Critical Energy/Electric infrastructure Information (CEII). 2/10/2021

			national grid	
Closure: US Sanction Paper				
Title:	West Cranston #21 No.2 Transformer Replacement Closure Paper	Sanction Paper #	USSC-15-290 C	
Project #:	C055844; C058300	Sanction Type:	Closure	
Operating Company:	The Narragansett Electric Company	Date of Request:	2/2/2021	
Author:	Place, Matthew	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Gemmell, Brian VP Transmsn Asset Mgmt Plan & Del	
Utility Service:	Electricity T&D	Project Manager:	Place, Matthew	
Executive Su	mmary			

This paper is presented to close C055844; C058300. The total spend was 3.377M. The original sanctioned amount for this project was 3.950M at +/- 10%.

Project Summary

This project replaced the No.2 LTC transformer with a larger capacity LTC transformer rated 115/13.2 kV, delta-wye, 24/32/40 MVA. Two new vacuum relayed circuit breakers and six coupling capacitor voltage transformers (CCVTs) were also installed. In addition, the existing electro-mechanical transformer protection for both transformers was upgraded to micro processor-based. New alarm points were added to the existing Remote Terminal Unit via fiber-optic cable for remote status, control and monitoring of the switching devices and transformers. Replacement of the existing transformer enabled accurate asset condition monitoring, reduced maintenance activities, and eliminated the failed LTC compartment. In addition, the increased capacity will assist with the projected load growth in the area and improve the contingency deficit. In summary, this project has helped provide reliable service to the Company's customers in this area.

Schedule Variance Table Schedule Variance Project Grade - Ready to use Date 3/17/2019 Actual Ready to use Date 3/23/2019 Schedule Variance 0 year(s), 0 month(s), 6 day(s) Schedule Variance Explanation This project was delivered within the 90 day tolerance.

Cost Summary Table

Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	3.184	3.883	0.699
	Opex	0.012	0.000	(0.012)
	Removal	0.181	0.067	(0.114)
	Total	3.377	3.950	0.573

Cost Variance Analysis

In an effort to maintain the schedule, the project grade draft estimate (received 6/28/18) of 3.950M was used for the sanction paper to ensure DOA would be available to award the construction contract. The proposed contract award date was 7/25/18 and the Gate 3 procurement milestone was scheduled for 7/27/18. With preoutage work scheduled to start in August, it was critical to ensure the procurement milestones were met and DOA was available to award the construction contract.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	(\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C055844 - West Cranston	Capex	3.113	3.833	0.720
Transformer #2 Replacement	Opex	0.000	0.000	0.000
	Removal	0.166	0.067	(0.099)
	Total	3.279	3.900	0.621
Actual Spending (\$M) vs. Sanction	(\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C058300 - West Cranston Tx Repl	Capex	0.071	0.050	(0.021)
Tline work	Opex	0.012	0.000	(0.012)
	Removal	0.015	0.000	(0.015)
	Total	0.098	0.050	(0.048)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	3.184	3.883	0.699
	Opex	0.012	0.000	(0.012)
	Removal	0.181	0.067	(0.114)
	Total	3.377	3.950	0.573

Improvements / Lessons Learned

Improving system capacity and poor asset condition were the primary drivers for this project; however, the Southern Sky Renewable Energy Distributed Generation project required system modifications at the West Cranston #21 Substation. These system modifications are described in the System Impact Study for Southern Sky Renewable Energy RI LLC.

For Distribution Generation (DG) Interconnection related projects, maintain open communications with

Distribution Planning & Asset Management and Customer Energy Integration (CEI). The West Cranston #21 T2 Replacement Project needed modifications to the existing Company System as outlined in the Southern Sky Renewable Energy Interconnection Study, which was revised in January 2019.

After construction was complete and crews had demobilized, CEI requested confirmation on the scope of work, specifically overcurrent settings on the 21F1 feeder breaker relay as well as bi-directional metering and bi-directional Load Tap Changer (LTC) controls on the primary transformer T1 and back up transformer T2. Since this was not previously identified with the 3V0 protection installation, protection engineering and substation engineering had to coordinate with distribution planning & asset management to ensure all required scope of work was complete.

Protection engineering identified a setting change on the 21F1 Feeder, which was implemented in May 2019 by PTO. LTC settings for T1 were received from distribution planning in April 2019 and in order to accommodate these settings, substation engineering had to procure additional materials, which had a one-month lead time. Once materials were delivered, O&M installed the panel, controller, and settings and were able to confirm in July 2019 that all remaining work identified by CEI was complete.

Overall, this was not a huge schedule and financial impact to the project; however, crews could have worked on this while already on site during the regularly scheduled construction sequence. If there was a critical deadline (e.g. outage window or customer RFL date), the additional material lead time could have caused schedule delays. These issues could have been avoided if they were identified earlier and communicated with the project team.

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ○ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	● Yes ○ N/A
CIAC reconciled per the appropriate tariff	● Yes ○ N/A
Project specific contracts closed	● Yes ○ N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
--------------------	---------------------------------	---
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

DocuSigned by: Mike Gillespie Signature 2/8/2021 Date

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-5 Page 6 of 6

Appendix

N/A

nationalgrid

Closure: U	IS Sanction Paper		
Title:	Watch Hill UG Phase 2	Sanction Paper #:	USSC-16-093C
Project #:	CD00373	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	4/13/2021
Author:	McGovern, Sean	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean
Executive Su	mmary		
This paper is pro	control to close CD00272. The tot	tal apand was \$1 146M	

This paper is presented to close CD00373. The total spend was \$1.146M. The original sanctioned amount for this project was \$1.200M at +/- 10%.

Project Summary

The Watch Hill conservancy requested all overhead facilities in the Watch Hill area, consisting of Bay Street, Plimpton Street, Bluff Avenue, Larkin Road and Fort Road in the town of Westerly RI, to be relocated to an underground system. This area has a mix of residential and commercial customers. There was no increase in load and no increase in annual revenue from this project. This was performed as a public requirement request.

Schedule Variance Table	
Sc	chedule Variance
Project Grade - Ready to use Date	5/31/2015
Actual Ready to use Date	5/22/2015
Schedule Variance	0 year(s), 0 month(s), 9 day(s)
Schedule Variance Explanation	

N/A

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	0.917	0.925	0.008

Opex	0.166	0.131	(0.035)
Removal	0.063	0.144	0.081
Total	1.146	1.200	0.054

Cost Variance Analysis

This work was betterment at the request of the residents of the Watch Hill Area of Westerly, RI. Therefore there was a \$1.312M customer contribution collected before the work commenced. This contribution is not subject to reconciliation per the tariff.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)				
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
CD00373	Capex	0.917	0.925	0.008
	Opex	0.166	0.131	(0.035)
	Removal	0.063	0.144	0.081
	Total	1.146	1.200	0.054
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	0.917	0.925	0.008
	Opex	0.166	0.131	(0.035)
	Removal	0.063	0.144	0.081
	Total	1.146	1.200	0.054

Improvements / Lessons Learned

This project ran into many issues during the close out process. The customer contribution was collected under one work order then needed to be manually applied across the construction work orders on the back end, many months after the construction was completed. Future betterment projects should utilize the deferred revenue procedure to effectively debit and credit the work orders on a monthly basis.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ○ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A
CIAC reconciled per the appropriate tariff	● Yes ○ N/A
Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Joyce, Anisa
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

	DocuSigned by:
	Mike Gillespie
Signature	09F411044CFF47A
4/15/2 Date	2021

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-6 Page 5 of 5

Appendix	
N/A	

5

nationalgrid **Closure: US Sanction Paper** Title: Daggett Ave Metal Clad Retirement Sanction Paper #: USSC-16-148C Project #: Sanction Type: C050017, C051274 Closure Operating Date of Request: 4/13/2021 The Narragansett Electric Company: Company Author: Sponsor(s): McGovern, Sean Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Project Manager: Utility Service: Electricity T&D McGovern, Sean **Executive Summary**

This paper is presented to close C050017, C051274. The total spend was 2.720M. The original sanctioned amount for this project was 0.935M at +/- 10%.

Note: The latest sanction amount was \$2.555M.

Project Summary

Daggett Avenue substation was a 13.8/4.16kV station with a single 3.1 MVA transformer supplying two feeders. It was built in the 1950's and supplies distribution load in the City of Pawtucket and served approximately 1,300 customers with a 2.60MV load. These stations were primarily single metal-clad switchgear modules supplied by a single LTC transformer. They were all supplied from 13.8kV distribution circuits.

The 1950's vintage metal-clad switchgear at Daggett Avenue substation was identified for replacement in accordance with the Metal-clad Switchgear Strategy. The bus insulation in this switchgear was prone to failure, the gaskets were at the end-of-life and there were signs of moisture ingress and rust on flooring. The floors were warped making it difficult to rack the breakers in and out. The project has retired the metal clad and addressed these concerns.

Schedule Variance Table

Sch	edule Variance
Project Grade - Ready to use Date	11/30/2017
Actual Ready to use Date	3/20/2017
Schedule Variance	0 year(s), 8 month(s), 15 day(s)

Schedule Variance Explanation

Project completion was accelerated in response to budgetary needs at the time.

Cost Summary Table

Project Sanction Summary (\$M)

Approval	
0.660	(1.331)
0.080	(0.241)
0.195	(0.213)
0.935	(1.785)
	Approval 0.660 0.080 0.195 0.935

Cost Variance Analysis

Final Cost by Project

The first resanction of this project approved \$1.25M over the original sanction, \$920k for the pole plant conditions, \$200k for small wire upgrades, and \$130k for step-down removals. Labor costs were higher than anticipated due to work zone traffic and safety conditions, and outages were scheduled outside of normal working hours to accommodate customer needs. To account for this, \$370K was approved in the second resanction. Finally, transportation and civil charges were not fully accounted for in the original sanction.

Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C050017	Capex	1.991	1.991 0.660	
	Opex	0.320	0.080	(0.240)
	Removal	0.316	0.090	(0.226)
	Total	2.627	0.830	(1.797)
Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C051274	Capex	0.000	0.000	0.000
	Opex	0.001	0.000	(0.001)
	Removal	0.092	0.105	0.013
	Total	0.093	0.105	0.012
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.991	0.660	(1.331)
	Opex	0.321	0.080	(0.241)
	Removal	0.408	0.195	(0.213)
	Total	2.720	0.935	(1.785)

Improvements / Lessons Learned

A comprehensive review of the area in which the work will be performed must occur as part of the detailed design phase. Age and condition of all equipment should be considered, as well as civil work needed. Specific issues with the work zone, such as traffic conditions, safety concerns, and the ability to schedule outages are factors that need to be given more consideration during the design phase. Early identification of such issues, along with those that may arise during customer conversions, will improve the accuracy of estimates.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	\odot Yes \bigcirc No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	\odot Yes \bigcirc No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers				
Function	Individual			
Finance	Joyce, Anisa			
Regulatory	Azarcon, Carolyn; Long, James			
Jurisdictional Delegate(s)	Easterly, Patricia			
Procurement	Chevere, Diego			
Control Centers (CC)	Gallagher, Michael W.			

Decisions

I approve this paper.

	DocuSigned by:
Signature	Mike Gillespie
4/15/2 Date	2021

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-7 Page 5 of 5

Appendix

N/A

			national grid
Closure: U	S Sanction Paper		
Title:	RI VVO/CVR Expansion, Lincoln Ave 72, Tiogue Ave 100, Langworthy Corner 86 - Closure	Sanction Paper #:	USSC-16-319 C
Project #:	C076367, C077201, C076365, C077200, C075573, C075571	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	2/9/2021
Author:	Currier, Carol	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Hughes, Michael
Executive Su	mmary		

This paper is presented to close C076367, C077201, C076365, C077200, C075573, C075571. The total spend was \$1.896M.

The original sanctioned amount for this project was \$1.732M at +/- 10%.

Note: The latest sanction amount was \$1.962M.

Project Summary

The project was for deployment/expansion of Volt-Var Optimization and Conservation Voltage Reduction (VVO/CVR) technology to 3 substations located in the project area (Lincoln Ave #72 Substation, Tiogue Ave 100, Langworthy Corner 86). The project built upon the infrastructure deployed during the Rhode Island VVO/CVR Pilot to cost-effectively deploy the technology to high value substations in the service territory as an expansion project. Project was completed within tolerance.

Schedule Variance Table

Schedule Variance

Project Grade - Ready to use Date

Actual Ready to use Date

Schedule Variance

3/30/2018 0 year(s), 2 month(s), 2 day(s)

5/31/2018

Schedule Variance Explanation

Completed two months early.

Cost Summary Table

Project Sanction Summary (\$M)

			Attachiment	
Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under	Ра
Capex	1.695	1.539	(0.156)	-
Opex	0.131	0.147	0.016	-
Removal	0.071	0.046	(0.025)	-
 Total	1.896	1.732	(0.164)	-

Cost Variance Analysis

The Langworthy and Lincoln circuits required more materials and labor than originally estimated. Two additional capacitor banks than original estimate.

Final Cost by Project				
Actual Spending (\$M) vs. S	anction (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C075571	Capex	0.229	0.035	(0.194)
	Opex	0.014	0.007	(0.007)
	Removal	0.029	0.003	(0.026)
	Total	0.272	0.045	(0.227)
Actual Spending (\$M) vs. S	anction (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C075573	Capex	0.047	0.180	0.133
	Opex	0.000	0.040	0.040
	Removal	0.000	0.010	0.010
	Total	0.047	0.230	0.183
Actual Spending (\$M) vs. S	anction (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C076365	Capex	0.074	0.054	(0.020)
	Opex	0.000	0.008	0.008
	Removal	0.000	0.002	0.002
	Total	0.074	0.064	(0.010)
Actual Spending (\$M) vs. S	anction (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C076367	Capex	0.306	0.398	0.092
	Opex	0.001	0.001	0.000
	Removal	0.001	0.000	(0.001)
	Total	0.308	0.399	0.091
Actual Spending (\$M) vs. S	anction (\$M)			
Project	Breakdown	Total Actual	Original Project	Variance

		Spend	Sanction Approval	(Over) / Under	Page
C077200	Capex	0.264	0.201	(0.063)	-
	Opex	0.031	0.029	(0.002)	-
	Removal	0.003	0.006	0.003	-
	Total	0.298	0.236	(0.062)	-
Actual Spending (\$M) vs. Sanction	n (\$M)				-
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under	_
C077201	Capex	0.775	0.671	(0.104)	
	Opex	0.085	0.062	(0.023)	-
	Removal	0.038	0.025	(0.013)	-
	Total	0.898	0.758	(0.140)	_
Project Sanction Summary (\$M)					
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under	
Total	Capex	1.695	1.539	(0.156)	_
	Opex	0.131	0.147	0.016	-
	Removal	0.071	0.046	(0.025)	-
	Total	1.896	1.732	(0.164)	-

Improvements / Lessons Learned

1) The project needed to be a two-year project (The first year for design and second year for construction). The time to complete the study of each substation and circuit, then complete design, and order some of the material typically takes close to a year. Then in order to allow enough time to schedule the required internal resources takes time. Then the final step is to have an external contractor to complete final testing and confirmation of the system complete operation. Trying to accomplish all this and complete the work in one fiscal year has proved to be a challenge.

2) Approximately 50% of budget should be used as original partial sanction amount to be able to purchase materials (some may require a 6-month delivery).

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ◯ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ◯ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	● Yes ○ N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-8 Page 4 of 6

Project specific contracts closed Accounting provided for ongoing costs

● Yes ○ N/A
 ● Yes ○ N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark; Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Altenburger, Peter F.; Swanson, Leonard G.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

	DocuSigned by:
Signature	Mile Gillespie
3/17/20 Date	21

Appendix

N/A

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			national grid
Closure: U	S Sanction Paper		
Title:	Vault 47 Full Rebuild Providence R	Sanction Paper #	USSC-17-212C
Project #:	C032258	Sanction Type:	Closure
<u> </u>		<u> </u>	
Operating Company:	The Narragansett Electric Company	Date of Request:	5/4/2021
Author:	McGovern, Sean	Sponsor(s):	Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	McGovern Sean
Executive Sur	mmary		
This paper is pres	ented to close C032258. The total sp	pend was \$1.527M.	
The unufilat satic		. 37 UNI at T/- 10 %.	

Note: The latest sanction amount was \$1.497M.

Project Summary

Network Vault 47 on Washington Street in Providence was initially built as a single-unit vault in 1939. It was enlarged in 1972 to accommodate a second unit. The oldest part of the vault structure was deteriorated, and was removed and replaced. The project covered expenditures to install and equip a new single unit vault adjacent to the previous structure, and to remove the original part of the vault. Removal and disposal were done in accordance with EPA requirements because testing indicated the vault structure was PCB-contaminated. The 1972-portion of the vault was not removed, but the roof was replaced due to deterioration.

Upon completion of the project the following was installed: one network vault structure, one mole-type secondary collector bus, 300 ft of 3-1C-4/0 Cu15 KV cable, 780 ft of 4-1C-500 kcmil Cu600 V cable, 340 ft of 1C-500 kcmil Cu 600 V cable, 260 ft of 3-1C-750 kcmil Cu600 V cable, and miscellaneous underground and network vault equipment. The following was removed on completion: 215 ft of 6" Cu bus bar, 155 ft of 5" Cu bus bar, 135 ft of 3C-1/0 PL 15 kV cable, 110 ft of 3-1C-1/0 PL 15 kV cable, 60 ft of 3-1C-500 kcmil Cu RL 600 V cable, one network vault structure, and miscellaneous underground and network vault equipment.

Schedule Variance Table	
Sched	ule Variance
Project Grade - Ready to use Date	6/30/2017
Actual Ready to use Date	6/12/2018
Schedule Variance	0 year(s), 11 month(s), 17 day(s)
Schedule Variance Explanation	

The work on the vault finished 6/8/2017. Delays in final road restoration were caused by the time it took to agree with the City of Providence on limit of paving by National Grid, and by the need to coordinate with a City road repaving project in the same area and also with other utility work nearby.

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	0.894	0.590	(0.304)
	Opex	0.258	0.070	(0.188)
	Removal	0.375	0.310	(0.065)
	Total	1.527	0.970	(0.557)

Cost Variance Analysis

The original estimate assumed forced vent system materials which were standard at that time; the actual installation used explosion proof design which was the first installation of this type in the System. This caused increased engineering, material, and labor costs. Contractor bids were higher than estimated. The City of Providence required road repairs that were not in the original scope. Due to the work site being adjacent to a Federal Courthouse, General Services Administration (GSA) required all noisy construction work be done when there were no trials. To maintain a productive construction schedule, work was done at night which caused labor costs to rise. Environmental remediation costs were higher than estimated.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	(\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C032258	Capex	0.894	0.590	(0.304)
	Opex	0.258	0.070	(0.188)
	Removal	0.375	0.310	(0.065)
	Total	1.527	0.970	(0.557)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	0.894	0.590	(0.304)
	Opex	0.258	0.070	(0.188)
	Removal	0.375	0.310	(0.065)
	Total	1.527	0.970	(0.557)

Improvements / Lessons Learned

The project successfully installed the first precast solid (not grated) network vault hatch covers and an explosion proof ventilation design in the System. The experience gained with precast solid vault hatch covers will be applied when considering possible designs for future vault construction and reconstruction. The explosion proof vent system is now used for all new installations and replacement of existing forced ventilation systems. Higher contingencies for environmental remediation should be used when estimating removal of PCB-contaminated concrete vault structures.

Closeout Activities

ACTIVITY

All work has been completed in accordance with all

● Yes ○ No

National Grid policies All relevant costs have been charged to project	●Yes ○No
All work orders and funding projects have been closed	\odot Yes \bigcirc No
All unused material have been returned	\odot Yes \bigcirc No
All as-builts have been completed	●Yes ○No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Joyce, Anisa
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

(c) Note: In the event that any Blanket/Programs are not approved prior to the start FY2023, the FY2022 approval limits will remain in effect until such time as the FY2023 Blanket/Programs are approved by USSC and/or other appropriate authority for approval.

	DocuSigned by:
	Mike Gillespie
Signature	09F411044CFF47A
5/19/2 Date	021

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-9 Page 5 of 5

Appendix		
N/A		

			national grid		
Closure: U	Closure: US Sanction Paper				
Title:	Citizens Bank Infrastructure, Johnston	Sanction Paper #:	USSC-17-267C		
Project #:	C073957	Sanction Type:	Closure		
Operating Company:	The Narragansett Electric Company	Date of Request:	5/4/2021		
Author:	McGovern, Sean	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning		
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean		
Executive Summary					

This paper is presented to close C073957. The total spend was 1.409M. The original sanctioned amount for this project was 1.236M at +/- 10%.

Note: The latest sanction amount was \$1.450M.

Project Summary

Citizens Bank ("Citizens") relocated to a new campus, located at 685 Greenville Ave, Johnston, RI (the "Campus"). The Campus is served by the 38F3 circuit, a 12.47 kV distribution supply out of the Putman Pike Substation in Smithfield, RI. The 38F3 infrastructure is insufficient to supply the 4.5 MW load needed. After completion, the project finished reconductoring 1.4 miles of existing overhead three-phase conductor with 477AI covered wire, construction of a commercial underground loop in the Citizens Campus, and the relocation of a pole due to the Greenville Ave road widening associated with the Citizens Campus expected traffic.

Schedule Variance Table				
	Sched	ule Variance		
Project Grade - Ready to use Dat	е		8/31/2018	
Actual Ready to use Date			6/12/2018	
Schedule Variance		0 yea	ar(s), 2 month(s), 20	day(s)
Schedule Variance Explana	ation			
N/A				
Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual	Original Project	Variance

	Spend	Sanction Approval	(Over) / Under
Capex	1.301	0.049	(1.252)
Opex	0.047	1.139	1.092
Removal	0.061	0.048	(0.013)
 Total	1.409	1.236	(0.173)

Cost Variance Analysis

Police details were underestimated in design, and customer delays caused the project to accumulate additional labor costs. There was a \$0.269M CIAC on this project.

Final Cost by Project				
Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C073957	Capex	1.301	0.049	(1.252)
	Opex	0.047	1.139	1.092
	Removal	0.061	0.048	(0.013)
	Total	1.409	1.236	(0.173)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.301	0.049	(1.252)
	Opex	0.047	1.139	1.092
	Removal	0.061	0.048	(0.013)
	Total	1.409	1.236	(0.173)

Improvements / Lessons Learned

Clear expectations need to be set with customers/developers regarding their civil work progress and the impacts on sequencing of National Grid work. This customer's contractor(s) repeatedly inaccurately stated sections of civil work were complete and ready for cable pulling in an attempt to accelerate the construction timeline. This resulted in many unnecessary and unproductive site visits by National Grid crews.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ○ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	⊖Yes
CIAC reconciled per the appropriate tariff	● Yes ○ N/A

Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers			
Function	Individual		
Finance	Joyce, Anisa		
Regulatory	Azarcon, Carolyn; Long, James		
Jurisdictional Delegate(s)	Easterly, Patricia		
Procurement	Chevere, Diego		
Control Centers (CC)	Gallagher, Michael W.		

Decisions

I approve this paper.

(c) Note: In the event that any Blanket/Programs are not approved prior to the start FY2023, the FY2022 approval limits will remain in effect until such time as the FY2023 Blanket/Programs are approved by USSC and/or other appropriate authority for approval.

	DocuSigned by:	
	Mike Gillespie	
Signature _	09F411044CFF47A	
Date	5/19/2021	

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Appendix		
N/A		

nationalgrid

Closure: L	IS Sanction Paper		
Title:	Central Falls Sub Relief	Sanction Paper #:	USSC-17-295C
Project #:	C051385	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	10/20/2020
Author:	McGovern, Sean	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean
Evenutive Su			

Executive Summary

This paper is presented to close C051385. The total spend was \$1.338M. The original sanctioned amount for this project was 0.295M at +/- 10%.

Note: The latest sanction amount was \$1.300M.

Project Summary

This project was required to relieve an overloaded transformer bank at the Central Falls substation. This was a 13.8/4.16kV substation with two transformer banks each supplying two feeders. It serves 3,439 customers with 7.05MW of load in the city of Central Falls, Rhode Island. The North transformer bank serves the 104J3 feeders. Based on reads from the thermal meters, it was determined that the loading on the station's North transformer bank exceeded summer normal ratings. This project converted a section of the 104J1 & J5 feeders to the 13.8kV 102W52 feeder out of the Valley Substation in Cumberland, RI. It also converted a section of the 104J7 feeder to the 13.8kV 107W43 feeder out of the Pawtucket Substation.

	Schedule	Variance	Table
--	----------	----------	-------

Schedule Variance

Project Grade - Ready to use Date Actual Ready to use Date Schedule Variance

3/28/2018 0 year(s), 3 month(s), 19 day(s)

7/15/2018

Schedule Variance Explanation

Project completion was slightly delayed while arrangements were made to work on a section crossing a set of railroad tracks. The timetable for this was under the control of the railroad company rather than National Grid.

 Cost Summary Table

 Project Sanction Summary (\$M)

 Breakdown
 Total Actual
 Original Project
 Variance

 Spend
 Sanction
 (Over) / Under

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-11 Page 2 of 5

	Attachini		IL L	
		Approval		I
Capex	0.979	0.225	(0.754)	-
Opex	0.107	0.030	(0.077)	-
Removal	0.252	0.040	(0.212)	•
Total	1.338	0.295	(1.043)	-
				_

Cost Variance Analysis

The project estimate did not account for the actual number of poles replaced. The majority of these poles were in the sidewalk, slowing productivity. The area in which the work was performed was a high-traffic zone. In order to ensure crew safety, police details were needed throughout. The volume and cost of this was underestimated during the design phase. It was also necessary to perform some work outside normal working hours, resulting in additional labor and transportation charges. Taller poles and altering overhead wire construction required additional clearance to allow crews to work safely and ensure reliability against future outages. Finally, much of the work was performed in difficult winter weather which slowed productivity.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	(\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C051385	Capex	0.979	0.225	(0.754)
	Opex	0.107	0.030	(0.077)
	Removal	0.252	0.040	(0.212)
	Total	1.338	0.295	(1.043)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	0.979	0.225	(0.754)
	Opex	0.107	0.030	(0.077)
	Removal	0.252	0.040	(0.212)
	Total	1.338	0.295	(1.043)

Improvements / Lessons Learned

A comprehensive review of the area in which the work is to be performed needs to occur as part of the detailed design phase. Age and condition of all equipment should be considered. Specific issues with the area itself, such as traffic conditions, safety concerns and the ability to schedule outages are factors that need to be better considered and included in the estimate during the design phase.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ◯ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ◯ No
Project documentation archived per department	⊖Yes ●N/A

procedures	
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	⊖Yes ●N/A
Accounting provided for ongoing costs	⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions	P
approve this paper.	
DocuSigned by:	
Mike Gillespie	
Signature09F411044CFF47A	
1/25/2021	
Jait	

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-11 Page 5 of 5

Appendix

N/A

national**grid**

Closure: U	IS Sanction Paper		
Title:	IRURD Mystery Farms Estates	Sanction Paper #:	USSC-18-270C
Project #:	C047375	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	10/26/2021
Author:	Sullivan, Patrick	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Sullivan, Patrick
Executive Su	mmary		
This paper is pro-	control to close CO47275. The total	anond was \$1 691M	

This paper is presented to close C047375. The total spend was 1.681M. The original sanctioned amount for this project was 0.620M at +/- 10%.

Note: The latest sanction amount was \$1.900M.

Project Summary

This project was to complete the rehabilitation of Mystery Farms Estates Underground Residential Development (URD) in Cranston, RI. The project replaced 6,200 feet of three-phase direct-buried URD cable and 1200 feet of secondary voltage of direct-duried with cable in conduit which all supplied single phase load.

Schedule Variance Table				
	Scheo	lule Variance		
Project Grade - Ready to use Dat	ate 5/31/2019			
Actual Ready to use Date	2/13/2019			
Schedule Variance	0 year(s), 3 month(s), 17 day(s)			
Schedule Variance Explana	Schedule Variance Explanation			
The delay in the construction com project.	pletion is a result	of a switching error d	uring the cutover pl	hase of the
Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under

Capex	1.106	0.558	(0.548)
Opex	0.002	0.031	0.029
Removal	0.573	0.031	(0.542)
Total	1.681	0.620	(1.061)

Cost Variance Analysis

The project's civil construction costs were originally underestimated prior to awarding the work, and during the construction phase of the project, it was decided to add 1700 feet to the project scope resulted in an increase to the overall project cost.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C047375	Capex	1.106	0.558	(0.548)
	Opex	0.002	0.031	0.029
	Removal	0.573	0.031	(0.542)
	Total	1.681	0.620	(1.061)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.106	0.558	(0.548)
	Opex	0.002	0.031	0.029
	Removal	0.573	0.031	(0.542)
	Total	1.681	0.620	(1.061)

Improvements / Lessons Learned

The original scope did not include any information related to adding duct for the secondary cable. This increase in scope significantly increased the overall civil project costs. The Company should confirm that the scope is accurate to ensure that there are no significant cost increases.

Closeout Activities

ACTIVITY	COMPLETED	
All work has been completed in accordance with all National Grid policies	● Yes ○ No	
All relevant costs have been charged to project	● Yes ○ No	
All work orders and funding projects have been closed	● Yes ○ No	
All unused material have been returned	● Yes ○ No	
All as-builts have been completed	● Yes ○ No	
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No	
Project documentation archived per department procedures	⊖Yes ●N/A	
CIAC reconciled per the appropriate tariff	⊖Yes	
Project specific contracts closed	⊖Yes ●N/A	
Accounting provided for ongoing costs	⊖Yes ●N/A	
Statement of Support		
-----------------------------	-----------------	---
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Kapxhiu, Ana
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

	DocuSigned by:	
Signature	Mike Gillespie	
Date	11/1/2021	_

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-12 Page 5 of 5

Appendix		
N/A		

Closure: U	S Sanction Paper		
Title:	C046697 Hope Flood Closure	Sanction Paper #	USSC 18-282c
Project #:	C046697	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	1/5/2021
Author:	Barraclough, Stephen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Barraclough, Stephen

Executive Summary

This paper is presented to close C046697. The total spend was \$1.599M. The original sanctioned amount for this project was \$1.541M at +/- 10%.

Project Summary

This project has installed flood mitigation equipment to address the 2010 flood with water levels that reached an elevation of 21 inches inside the control house and partially submerged the station battery and several relays at the Hope 15 station located at 15 Hope Furnace Road, Scituate, RI. The project has relocated five mechanical reclosing relays, installed two new simplex panels and four new SEL351- 6 relays with reclosing function, installed directional ground and overcurrent elements with an annunciator, and installed a new outdoor battery cabinet. This will allow for operation of the station during a flood up to 33" inside the control house.

Schedule Variance Table	
Schedu	le Variance
Project Grade - Ready to use Date	3/16/2020
Actual Ready to use Date	2/27/2020
Schedule Variance	0 year(s), 0 month(s), 18 day(s)
Schedule Variance Explanation	

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	1.595	1.526	(0.069)

			Attachm	ent D
Opex	0.001	0.000	(0.001)	Ра
Removal	0.003	0.015	0.012	
Total	1.599	1.541	(0.058)	_

Cost Variance Analysis

Labor costs were higher than expected due to weather delays and removal costs was less than estimated.

Final Cost by Project				
Actual Spending (\$M) vs. Sanction	n (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C046697 Hope Flood Mitigation	Capex	1.595	1.526	(0.069)
	Opex	0.001	0.000	(0.001)
	Removal	0.003	0.015	0.012
	Total	1.599	1.541	(0.058)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.595	1.526	(0.069)
	Opex	0.001	0.000	(0.001)
	Removal	0.003	0.015	0.012
	Total	1.599	1.541	(0.058)
Improvements / Lessons Le	arned			

Detailed review of impact to combined projects must consider schedule, outage, and financial outcomes.

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	● Yes ○ N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	● Yes ◯ N/A
Accounting provided for ongoing costs	⊖Yes

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I approve this paper.

DocuSigned by: Mike Gillespie Signature -09F411044CFF47A 1/14/2021 Date

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

			national grid		
Closure: U	S Sanction Paper				
Title:	Westerly #4 Xfrmer D/F	Sanction Paper #:	USSC-18-310C		
Project #:	C081110	Sanction Type:	Closure		
Operating Company:	The Narragansett Electric Company	Date of Request:	10/6/2020		
Author:	Reis, Robert	Sponsor(s):	Sedewitz, Carol A. VP Trnsmsn Asset Mgmt Plan & Del		
Utility Service:	Electricity T&D	Project Manager:	Reis, Robert		
Executive Summary					
This paper is presented to close C081110. The total spend was \$1.456M.					

The original sanctioned amount for this project was \$1.123M at +/- 10%. Note: The latest sanction amount was \$1.468M.

Project Summary

This project covered activities related to the unexpected Westerly Substation # 16 number 4 transformer failure. The work for this project included the mobilization and installation of mobile substation #7879 and circuit switcher #7409 to bypass the westerly substation transformer number 4, along with installation of a system spare and procurement of a new transformer.

Schedule Variance Table						
	Sche	dule Variance				
Project Grade - Ready to use Dat	e		9/1/2018			
Actual Ready to use Date			9/1/2018			
Schedule Variance		0 yea	ar(s), 0 month(s), 0	day(s)		
Schedule Variance Explana	tion					
N/A						
Cost Summary Table						
Project Sanction Summary (\$M)						
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under		

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			Attachme	nt D
Capex	1.456	1.123	(0.333)	Р
Opex	0.000	0.000	0.000	
Removal	0.000	0.000	0.000	
Total	1.456	1.123	(0.333)	_

Cost Variance Analysis

The original project sanction covered the procurement of the new transformer and damage failure costs. The project cost variance is attributed to labor and overheads associated with the procurement of the new transformer.

Final Cost by Project

Actual Spending (\$M) vs. Sanction	ı (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	1.456	1.123	(0.333)
	Opex	0.000	0.000	0.000
	Removal	0.000	0.000	0.000
	Total	1.456	1.123	(0.333)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.456	1.123	(0.333)
	Opex	0.000	0.000	0.000
	Removal	0.000	0.000	0.000
	Total	1.456	1.123	(0.333)

Improvements / Lessons Learned

The project should be re-estimated to cover overhead rates once the final bid was available for the transformer cost, along with the teams time to secure the replacement transformer.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ○ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	● Yes ○ N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	●Yes ○N/A
Accounting provided for ongoing costs	⊖Yes

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards

Reviewers				
Function	Individual			
Finance	Harju, Andrew			
Regulatory	Azarcon, Carolyn; Long, James			
Jurisdictional Delegate(s)	Easterly, Patricia			
Procurement	Chevere, Diego			
Control Centers (CC)	Gallagher, Michael W.			

Decisions

I approve this paper.

DocuSigned by: Mike Gillespie Signature 2BE932F13D5E49 10/8/2020 Date .

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-14 Page 5 of 5

Appendix

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Closure: US Sanction Paper				
Title:	Warwick Mall Flood Mitigation	Sanction Paper #:	USSC 19-012C	
Project #:	CD01097	Sanction Type:	closure	
Operating Company:	The Narragansett Electric Company	Date of Request:	5/12/2020	
Author:	Barraclough, Stephen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning	
Utility Service:	Electricity T&D	Project Manager:	Barraclough, Stephen	
Executive Sur	mmary			

This paper is presented to close CD01097. The total spend was \$1.631M. The original sanctioned amount for this project was 1.195M at +/- 10%.

Note: The latest sanction amount was \$1.678M.

Project Summary

In 2010, the Warwick Mall Substation was impacted by flooding with water levels reaching a peak level of 51 inches above the substation grade. This project was intended to mitigate the risk of future floods having a significant impact on the substation if future flooding occurs.

Schedule Variance Table	
	Schedule Variance
Project Grade - Ready to use Date	4/29/2019
Actual Ready to use Date	4/29/2019
Schedule Variance	0 year(s), 0 month(s), 0 day(s)
Schedule Variance Explanation	

Cost Summary Table				
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
	Capex	1.616	1.137	(0.479)

			Attacini	DIV 5-1-15
Opex	0.005	0.000	(0.005)	Page 2 of 5
Removal	0.010	0.058	0.048	
Total	1.631	1.195	(0.436)	

Cost Variance Analysis

The original amount under estimated the following: Unexpected equipment modifications -labor=\$150k (including adders) -materials=\$150K (including adders) Increased civil scope for underground wire-ways (Trenwa) - \$90k Weather delays and tree removal - \$46k

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)						
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under		
	Capex	1.616	1.137	(0.479)		
	Opex	0.005	0.000	(0.005)		
	Removal	0.010	0.058	0.048		
	Total	1.631	1.195	(0.436)		
Project Sanction Summary (\$M)						
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under		
Total	Capex	1.616	1.137	(0.479)		
	Opex	0.005	0.000	(0.005)		
	Removal	0.010	0.058	0.048		
	Total	1.631	1.195	(0.436)		

Improvements / Lessons Learned

Estimate revisions for long standing projects need to consider current engineering and construction practices and costs required to upgrade projects. An estimate revision should be completed prior to construction start.

Closeout Activities

ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ○ No
All as-builts have been completed	● Yes ○ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A
Project specific contracts closed	●Yes ○N/A

Accounting provided for ongoing costs

 \odot Yes \bigcirc N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers			
Function	Individual		
Finance	Bostic, Christina		
Regulatory	Azarcon, Carolyn		
Jurisdictional Delegate(s)	Easterly, Patricia		
Procurement	Chevere, Diego		
Control Centers (CC)	Gallagher, Michael W.		

Decisions

I approve this paper.

	DocuSigned by:
O and a family	Christine McClure
Signature	957B264AFE26466
Date 6/2	5/2020

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-15 Page 5 of 5

Appendix

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Closure: U	S Sanction Paper		
Title:	Sockanosset No.1 Transformer Failure	Sanction Paper #	USSC-19-195C
Project #:	C082725	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	11/2/2021
Author:	Tofigh, Banafsheh	Sponsor(s):	Castro, Kathy US Dir UK Snr Mgr Eng Elec Plan & Des
Utility Service:	Electricity T&D	Project Manager:	Tofigh, Banafsheh
Executive Su	mmary		
This paper is prov	control to close C092725. The total	anond was \$1 924M	

This paper is presented to close C082725. The total spend was \$1.824M. The original sanctioned amount for this project was \$2.000M at +/- 10%.

Project Summary

This project was to cover activities related to the unexpected Sockanosset Substation Transformer No. 1 failure. The expected work for this project included: the mobilization and installation of Mobile Substation #7661 to bypass the Sockanosset Substation No.1; the installation of a system spare located the NEDC (New England Distribution Center) which moved and installed at Sockanosset Substation; and the purchase of a new spare to replenish the system spare, which stored at NEDC.

Schedule Variance Table	
Schedu	ule Variance
Project Grade - Ready to use Date	4/30/2020
Actual Ready to use Date	10/9/2020
Schedule Variance	0 year(s), 5 month(s), 12 day(s)
Schedule Variance Explanation	

The substation is in the flood zone and took longer to get the permit for construction. Also, the vendor for new spare transformer requested extension to submit the drawings for review which subsequently delayed the delivery of the new spare transformer.

Cost Summary Table Project Sanction Summary (\$M) Breakdown Total Actual Original Project Variance

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-16 (Over) / Under Page 2 of 5

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	Spend	Sanction Approval	(Over) / Under	I
Capex	1.652	1.798	0.146	
Opex	0.000	0.002	0.002	
Removal	0.172	0.200	0.028	_
Total	1.824	2.000	0.176	
				_

Cost Variance Analysis

The project cost was within tolerance.

Final Cost by Project				
Actual Spending (\$M) vs. Sanction	ו (\$M)			
Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C082725	Capex	1.652	1.798	0.146
	Opex	0.000	0.002	0.002
	Removal	0.172	0.200	0.028
	Total	1.824	2.000	0.176
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.652	1.798	0.146
	Opex	0.000	0.002	0.002
	Removal	0.172	0.200	0.028
	Total	1.824	2.000	0.176
Improvements / Lessons Le	arned			

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ○ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database	● Yes ○ No
Project documentation archived per department procedures	●Yes ○N/A
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-16 Page 3 of 5

Project specific contracts closed Accounting provided for ongoing costs

⊖Yes ●N/A ⊖Yes ●N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	McGrath, Jim	Endorses scope, design, conformance with design standards
Project Estimation		Endorses cost estimate
Project Management		Endorses resources, cost estimate, schedule

Reviewers			
Function	Individual		
Finance	Kapxhiu, Ana		
Regulatory	Azarcon, Carolyn		
Jurisdictional Delegate(s)	Easterly, Patricia		
Procurement	Chevere, Diego		
Control Centers (CC)	Gallagher, Michael W.		

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I approve this paper.

	DocuSigne	d by: edewitz		
Signature	5AF119357	0264C2		
0	11/15/2021			
Date			_	

Carol A. Sedewitz

Vice President Electric Asset Management & Engineering - New England

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-1-16 Page 5 of 5

Appendix

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Closure: U	IS Sanction Paper		
Title:	C078476 Hope Structure Replacement Closure	Sanction Paper #	USSC 19-447c
Project #:	C078476	Sanction Type:	Closure
Operating Company:	The Narragansett Electric Company	Date of Request:	12/22/2020
Author:	Barraclough, Stephen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Phillips, Mark A. Barraclough, Stephen
Executive Su	mmary		

This paper is presented to close C078476. The total spend was \$1.917M. The original sanctioned amount for this project was \$0.985M at +/- 10%.

Note: The latest sanction amount was \$1.917M.

Project Summary

An asset condition assessment (SEER) and osmose inspection was performed at Hope Substation. The final scope of work included the following :

-Replace the damaged F1 wooden structure with standard aluminum structure and foundations.

-Replace all F1 primary and secondary equipment at end of life expectancy on the structure, including

conductors, regulators, disconnects, service transformer, conduits, foundations, and wiring.

-Replace F2 regulators and wooden pole feeder structure & foundation.

-Control and integration improvements to meet current standards.

-Mobile substation to support construction schedule.

Schedule Variance Table

Schedule Variance

Project Grade - Ready to use Date

Actual Ready to use Date

Schedule Variance

Schedule Variance Explanation

One outages was not required and efficiencies gained during removal portion of the project.

Cost Summary Table

Project Sanction Summary (\$M)

5/5/2020 3/27/2020

0 year(s), 1 month(s), 9 day(s)

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Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under	F
Capex	1.773	0.879	(0.894)	_
Opex	0.010	0.051	0.041	-
Removal	0.134	0.055	(0.079)	-
 Total	1.917	0.985	(0.932)	<u> </u>

Cost Variance Analysis

The initial scope for only the wood pole replacement was revised and the estimate did not consider the full impact of the changes to replace the existing structure, foundations, and all the equipment. The final construction and outage details combined the Flood Project and Structure replacement projects to minimize the outage and customer impact. A mobile substation was also required due to the schedule impact. These changes increased labor (\$0.595m), materials (\$0.110m), (contractors \$0.096m), transportation (\$0.071m), other(\$0.060m) for the F1 & F2 structure replacements.

Final Cost by Project

Actual Spending (\$M) vs. Sanction (\$M)

Project	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
C078476 Hope Structure	Capex	1.773	0.879	(0.894)
Replacement	Opex	0.010	0.051	0.041
	Removal	0.134	0.055	(0.079)
	Total	1.917	0.985	(0.932)
Project Sanction Summary (\$M)				
	Breakdown	Total Actual Spend	Original Project Sanction Approval	Variance (Over) / Under
Total	Capex	1.773	0.879	(0.894)
	Opex	0.010	0.051	0.041
	Removal	0.134	0.055	(0.079)
	Total	1.917	0.985	(0.932)

Improvements / Lessons Learned

The revised scope of combining 2 projects needs a full evaluation and understanding of the impact to cost & schedule estimates prior to start of construction, even if a delayed start is required.

Closeout Activities	
ACTIVITY	COMPLETED
All work has been completed in accordance with all National Grid policies	● Yes ○ No
All relevant costs have been charged to project	● Yes ◯ No
All work orders and funding projects have been closed	● Yes ○ No
All unused material have been returned	● Yes ◯ No
All as-builts have been completed	● Yes ◯ No
All lessons learned have been entered appropriately into the lesson learned database Project documentation archived per department	● Yes ○ No

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procedures	●Yes ○N/A	Page 3 of 5
CIAC reconciled per the appropriate tariff	⊖Yes ●N/A	
Project specific contracts closed	● Yes ○ N/A	
Accounting provided for ongoing costs	◯Yes ◉N/A	

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards

Reviewers				
Function	Individual			
Finance	Harju, Andrew			
Regulatory	Azarcon, Carolyn; Long, James			
Jurisdictional Delegate(s)	Easterly, Patricia			
Procurement	Chevere, Diego			
Control Centers (CC)	Gallagher, Michael W.			

Decisions

I approve this paper.

DocuSigned by: Mike Gillespie Signature -09F411044CFF47A 12/30/2020 Date

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

Division 3-2

Request:

List all projects in the FY 2022, and FY 2023 ISR Plans requiring sanctioning in accordance with the Company's DOA governance policy and provide the Project Sanction Papers, including any re-sanctioning requests for additional funding.

Response:

A list of projects in the FY 2022 and FY 2023 ISR Plans requiring sanctioning in accordance with the Company's DOA governance policy is included on the next two pages of this response.

See Attachments DIV 3-2-1 through DIV 3-2-32 for copies of Sanction Papers.

Please note that the following attachments DIV 3-2-6, DIV 3-2-15, DIV 3-2-23 and DIV 3-2-31 have redactions in the public version because they contain Critical Energy/Electrical Infrastructure Information ("CEII").

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 In Re: Electric Infrastructure, Safety, and Reliability Plan FY2023 Responses to Division's Third Set of Data Requests Issued on January 5, 2022

Funding		USSC	
Project		Sanction Paper	Attachment
<u>Number</u>	Funding Project Description	<u>Number</u>	<u>Number</u>
C049291	IRURD Wood Estates Phase 2	USSC-13-316	Div 3-2-1
C049462	IRURD SIGNAL RIDGE, EAST GREENWICH	USSC-13-317	DIV 3-2-2
C049356	IRURD Silver Maple Phase 2	USSC-13-318	DIV 3-2-3
C047829	IRURD High Hawk	USSC-13-323	DIV 3-2-4
C051212	South St repl indoor subst D-SUB	USSC-14-195 v3	DIV 3-2-5
C051213	South St repl indoor subst D-LINE	USSC-14-195 v3	DIV 3-2-5
C055623	South St Sub 11kV Removal	USSC-14-195 v3	DIV 3-2-5
CD00656	Jepson Substation (D-Sub)	USSC-14-261v3	DIV 3-2-6
C028628	Newport SubTrans & Dist Conversion	USSC-14-262 v4	DIV 3-2-7
C054054	Jepson Substation (D-Line)	USSC-14-262 v4	DIV 3-2-7
C053657	Southeast Substation (D-Sub)	USSC-15-109 v2	DIV 3-2-8
C053658	Southeast Substation (D-Line)	USSC-15-109 v2	DIV 3-2-8
C055683	Pawtucket No 1 (D-Sub)	USSC-15-109 v2	DIV 3-2-8
C046726	East Providence Substation (D-Sub)	USSC-16-175	DIV 3-2-9
C046727	East Providence Substation (D-Line)	USSC-16-175	DIV 3-2-9
C051205	Dyer St replace indoor subst D-SUB	USSC-16-305 v2	DIV 3-2 10
C051211	Dyer St replace indoor subst D-LINE	USSC-16-305 v2	DIV 3-2 10
C065166	Warren Sub Expansion (D-Sub)	USSC-17-002	DIV 3-2-11
C065187	Warren Sub Expansion (D-Line)	USSC-17-002	DIV 3-2-11
C082439	Franklin Sq-Replace 11kV Sub Equip	USSC-17-326 v3	DIV 3-2-12
C075202	EB Alternative 9-3c Re-location	USSC-18-212	DIV 3-2-13
C080896	RI VVO Exp - Dexter 36 Dist	USSC-18-298 v3	DIV 3-2-14
C080900	RI VVO Exp - Dexter 36 Sub	USSC-18-298 v3	DIV 3-2-14
C082900	RI VVO/CVR Exp -WOONSOCKET 26	USSC-18-298 v3	DIV 3-2-14
C084731	RI VVO Expansion - Woonsocket 26	USSC-18-298 v3	DIV 3-2-14
C086391	Verizon Copper to Fiber Conversions	USSC-18-307 v2	DIV 3-2-15
C081006	Franklin Sq Breaker Replacement	USSC-18-331	DIV 3-2-16
C080588	24926794-D-EDP-NKngstwn-DryBrdge	USSC-18-334 v2	DIV 3-2-17
C080591	24926794-D-EDP-NKngstwn-DryBrdge	USSC-18-334 v2	DIV 3-2-17
C081665	26003838-D-ExeterSolar-MultLocation	USSC-18-334 v2	DIV 3-2-17
C081880	26012283-D-Exeter-Exeter-TenRod	USSC-18-334 v2	DIV 3-2-17
C081341	IRURD Woodland Manor-Coventry	USSC-18-345 v2	DIV 3-2-18

Division 3-2, page 2

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 In Re: Electric Infrastructure, Safety, and Reliability Plan FY2023 Responses to Division's Third Set of Data Requests Issued on January 5, 2022

Funding		USSC	
Project		Sanction Paper	Attachment
<u>Number</u>	Funding Project Description	<u>Number</u>	<u>Number</u>
C078543	18966776-D-RESAmerica-Cranston-Hope	USSC-19-278	DIV 3-2-19
C054052	No Aquidneck Retirement (D-Sub)	USSC-19-373	DIV 3-2-20
C058310	Harrison Sub Improvements (D-Sub)	USSC-19-373	DIV 3-2-20
C058401	Merton Sub Improvements (D-Sub)	USSC-19-373	DIV 3-2-20
C058404	Kingston Sub Improvements (D-Sub)	USSC-19-373	DIV 3-2-20
C058407	South Aquidneck Retirement (D-Sub)	USSC-19-373	DIV 3-2-20
CD00651	Bailey Brook Retirement (D-Sub)	USSC-19-373	DIV 3-2-20
CD00652	Vernon Retirement (D-Sub)	USSC-19-373	DIV 3-2-20
C078734	ProvStudy Admiral St 4&11kV Convert	USSC-19-434	DIV 3-2-21
C078800	ProvStudy Clarkson-Lippit12kV DLine	USSC-19-434	DIV 3-2-21
C084391	D-26676563-TPEDev-NorthSmith-OldOxf	USSC-20-012	DIV 3-2-22
C086327	Iron Mine Hill Road D-Line	USSC-20-053 v2	DIV 3-2-23
C080894	RI VVO Exp - Farnum Pike 123 Dist	USSC-20-075	DIV 3-2-24
C080898	RI VVO Exp - Farnum Pike 23 Dist	USSC-20-075	DIV 3-2-24
C080897	RI VVO Exp - Pontiac 27 Dist	USSC-20-076	DIV 3-2-25
C080901	RI VVO Exp - Pontiac 27 Sub	USSC-20-076	DIV 3-2-25
C083870	NARBAYCOM_NewSvc_PawtucketRI	USSC-20-247 v2	DIV 3-2-26
C085628	RI Mobile 3V0 Units	USSC-20-277	DIV 3-2-27
C074307	RI UG 79F1 duct Charles & Orms Sts	USSC-20-288 v3	DIV 3-2-28
C086046	27825278 -S-GDWGreenNoos	USSC-20-361 v2	DIV 3-2-29
C086055	27825278 -D-GreenNoos-WGreen-NoosRd	USSC-20-361 v2	DIV 3-2-29
C081675	New Lafayette 115/12kV (D-Sub)	USSC-20-388	DIV 3-2-30
C081683	New Lafayette 115/12kV (D-Line)	USSC-20-388	DIV 3-2-30
C074428	EMS Expansion - Wampanoag 48	USSC-21-020 FY22	DIV 3-2 31
C078805	ProvStudy Knightsville 4kV Convert	USSC-21-020 FY22	DIV 3-2 31
C078806	ProvStudy Knightsville 4kV D-Sub	USSC-21-020 FY22	DIV 3-2 31
C078857	ProvStudy Harris Ave 4&11kV Retire	USSC-21-020 FY22	DIV 3-2 31
C078735	ProvStudy New Admiral St 12kV D-Sub	USSC-21-273	DIV 3-2-32
C078796	ProvStudy Admiral St-Rochamb D-Line	USSC-21-273	DIV 3-2-32
C078797	ProvStudy Admiral St-Rochamb D-Sub	USSC-21-273	DIV 3-2-32
C078801	ProvStudy Admiral St Demolition	USSC-21-273	DIV 3-2-32
C078802	ProvStudy Olneyville 4kV D-Line	USSC-21-273	DIV 3-2-32
C078803	ProvStudy Admiral St 12kV MH&Duct	USSC-21-273	DIV 3-2-32
C078804	ProvStudy Admiral St 12kV Cables	USSC-21-273	DIV 3-2-32

Division 3-2, page 3

Short Form Sanction Paper

Title:	IRURD Wood Estates Phase 2	Sanction Paper #:	USSC-13-316
Project #:	C049291	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/19/2013
Author:	John Cerulli	Sponsor:	Cheryl A. Warren
Utility Service:	Electricity T&D	Project Manager:	Jim Patterson

1 <u>Executive Summary</u>

1.1 Sanctioning Summary

This paper requests partial sanction of project C049291 in the amount \$0.700M with a tolerance of +/- 10% for the purposes of engineering, material purchase and initial construction activities including cable insulation injection.

The sanction amount is \$0.700M broken down into:

\$0.600M Capex \$0.050M Opex \$0.050M Removal

NOTE the potential investment of \$1.900M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Engineering and Injection.

2 Project Detail

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

Wood Estates URD in Coventry, Rhode Island has received eight outages in three years and is a candidate for injection or replacement based on the URD/UCD Primary Cable Strategy.

This project would install 800' of new URD cable to create loops that enable injection without customer outages, inject 22,000' of cable and replace cable that could not be injected. See attached one-line.

2.1.1 Alternatives:

Alternative 1:

Complete replacement was estimated at \$4.4M.

IRURD Wood Estates Phase 2.doc

Short Form Sanction Paper

2.2 Investment Recovery

2.2.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.300M. 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 <u>Related Projects, Scoring, Budgets</u>

3.1 Summary of Projects:

	Project Type			Estimate	Amount
Project Number	(Elec only)	Project Title		(\$M)	
C049291	Distribution Line	Proj Name		\$	1.900
			Total	\$	1.900

3.2 Associated Projects:

Project Number	Project Title	Estimate Amount
	Total	\$-

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

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

Short Form Sanction Paper

3.4 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions
O Mandatory	URD/UCD Primary Cable Strategy
OPolicy-Driven	
O Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability	O Environment	O Health & Safety	O Not Policy Driven

3.6 Complexity Level:

O High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 17

Short Form Sanction Paper

4 **Financial**

4.1 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 - FY19 New England Distribution and Sub-transmission Electricity Business Plan	⊙Yes ONo	⊙ Over O Under O NA	1.845M

4.1.1 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.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CIAC/Reimbursement	\$ -	- 69	\$ -	\$-	\$-	\$ -	\$-	\$-

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
		Project			Yr. 1	Yr. 2	Yr, 3	Yr. 4	Yr. 5	Yr. 6 +	
Project		Estimate	1								
Number	Project Title	Level (%)	Spend	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
			CapEx	•	-	0.200	0.400	1.000	-	-	1,600
C040201	IRURD Wood Estates Phone 2	Est Lvi (e.g.	OpEx	-		-	0.050	0.100		•	0.150
0043231	INORD WOOD Estates Phase 2	+/- 10%)	Removal		-	•	0.050	0.100	•	-	0.150
			Total	•	•	0.200	0.500	1.200		-	1,900
			CapEx	•	•	0.200	0.400	1,000	(C+C)		1.600
	Total Project Sportion		OpEx	+	•	•	0.050	0.100	-		0.150
	Foreir reject adrictori		Removal	•	-		0.050	0,100			0,150
			Total	-	-	0.200	0.500	1,200		•	1,900

Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Costs per Business Plan

			Current Planning Horizon (\$M)					
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CapEx	\$ -	\$ -	\$ -	\$ 0.043	\$ -	\$ -	\$ -	\$ 0.043
OpEx	\$ -	\$-	\$ -	\$ 0.006	\$ -	\$ -	\$ -	\$ 0.006
Removal	\$ -	\$ -	\$ -	\$ 0.005	\$ -	\$ -	\$ +	\$ 0.005
Total Cost in Bus. Plan	\$ -	\$-	\$-	\$ 0.055	\$ -	\$ -	\$ -	\$ 0.055

Variance (Business Plan-Project Estimate)

			Current Planning Horizon (\$M)					
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CapEx	\$ -	\$ -	\$ (0.200)	\$ (0.357)	\$ (1.000)	\$ -	\$ -	\$ (1.557)
OpEx	\$-	\$ -	\$ -	\$ (0.044)	\$ (0.100)	\$ -	\$ -	\$ (0.144)
Removal	\$ -	\$ -	\$ -	\$ (0.045)	\$ (0.100)	\$ -	\$ ÷	\$ (0.145)
Total Cost in Bus. Plan	S -	\$ -	\$ (0.200)	\$ (0.445)	\$ (1.200)	\$ -	\$ -	\$ (1.845)

5 Key Milestones:

Milestone	Target Date: (Month/Year)
Make Ready Design Complete	6/14
Make Ready Construction Complete	12/14
Injection Design Complete	3/15
Injection Complete	9/15
Replacement Design Complete	3/16
Replacement Construction Complete	3/17
Closure	6/17

6 Statements of Support

6.1.1 Supporters
Short Form Sanction Paper

Role	Name	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Distribution Asset Management	Alan LaBarre	Endorses scope, design, conformance with design standards
Project Management	Tim Moore	Endorses Resources, cost estimate, schedule

6.1.2 Reviewers

Reviewers read the paper for content / language and recommends edits if necessary.

Reviewer List	Name
Finance	Fowler, Keith
Regulatory	Katsh, Gideon N.
Jurisdictional Delegates	Grimsley, Jenifer L.
Procurement	Curran, Art
Control Center	Gallagher, Mike

Short Form Sanction Paper

7. <u>Decisions:</u>



Short Form Sanction Paper

8. Other Appendices:

8.1 Sanction Request Breakdown by Project (Partial Sanction only)

\$M	C049291	Total
CapEx	\$0.60	\$0.60
OpEx	\$0.05	\$0.05
Removal	\$0.05	\$0.05
Total	\$0.70	\$0.70

IRURD Wood Estates Phase 2.doc

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Short Form Sanction Paper

8.2 URD One-line



Page 9 of 9

Short Form Sanction Paper

Title:	IRURD Stone Ridge Acres Phase 2	Sanction Paper #:	USSC-13-317
Project #:	C049462	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/19/2013
Author:	John Cerulli	Sponsor:	Cheryl A. Warren
Utility Service:	Electricity T&D	Project Manager:	Jim Patterson

1 <u>Executive Summary</u>

1.1 Sanctioning Summary

This paper requests partial sanction of project C049462 in the amount \$0.900M with a tolerance of +/- 10% for the purposes of engineering, material purchase and initial construction activities including cable insulation injection.

The sanction amount is \$0.900M broken down into:

\$0.700M Capex \$0.100M Opex \$0.100M Removal

NOTE the potential investment of \$1.900M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Engineering and Injection.

2 Project Detail

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

Stone Ridge Acres URD in East Greenwich, Rhode Island has received four outages in three years and is a candidate for injection or replacement based on the URD/UCD Primary Cable Strategy.

This project would install 1400' of new URD cable to create loops that enable injection without customer outages, inject 29,000' of cable and replace cable that could not be injected. Work includes injection of the attached Signal Ridge URD. See attached one-line and GIS sketch.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-2 Page 2 of 10

national**grid**

Short Form Sanction Paper

2.1.1 Alternatives:

Alternative 1:

Complete replacement was estimated at \$6.0M.

2.2 Investment Recovery

2.2.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.312M. 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 Type			Estir	mate Amount
Project Number	(Elec only)	Project Title		(\$M)	
C049462	Distribution Line	IRURD Stone Ridge Acres Phase 2		\$	1.900
			Total	\$	1.900

3.2 Associated Projects:

Project Number	Project Title	Estimate Amount
		36
	Total	\$ -

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

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type		
5/16/13	Powerplant	0.100	None	Preliminary Engineering		

Short Form Sanction Paper

3.4 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions							
O Mandatory	URD/UCD Primary Cable Strategy							
Policy- Driven								
O Justified NPV								

3.5 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

		vironment	O Health	& Safety	O Not Policy Driven		
3.6	Complexity Lev	vel:					
	O High Comple	exity	O Medium Con	nplexity	⊙ Low Com	olexity	O N/A
	Complexity Scor	re: 17					

Short Form Sanction Paper

4 <u>Financial</u>

4.1 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)		
FY15 - FY19 New England Distribution and Sub-transmission Electricity Business Plan	⊙ Yes O No	⊙ Over O Under O NA	1.791M		

4.1.1 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.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CIAC/Reimbursement	\$ -	\$ -	\$-	\$ -	\$ -	\$ -	\$ -	\$-

4.3 Cost Summary Table

					Current F	Planning Hor	izon (SM)				
		Project			Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
Project		Estimate		1							
Number	Project Title	Level (%)	Spend	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
			CapEx	-	-	0.200	0.500	0.800	•		1.500
CONDARD	IRURD Stone Ridge Acres	Est Lvi (e.g.	OpEx			0.050	0.050	0.100	(A)		0.200
0045402	Phase 2	+/- 10%)	Removal	•	-	0.050	0.050	0,100			0.200
			Total	-	_ •	0.300	0.600	1.000		2	1.900
											· ·
			CapEx	-	•	0.200	0.500	0.800	2.40		1.500
Total Project Separation		OpEx	-	-	0.050	0.050	0.100			0.200	
	I dial Project Sancton		Removal	-	•	0.050	0.050	0.100		-	0.200
			Total			0.300	0.600	1.000			1.900

Short Form Sanction Paper

national**grid**

4.4 Project Budget Summary Table

Project Costs per Business Plan

			Current Planning Horizon (\$M)					
	Prior Yrs	Уг. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CapEx	\$ -	\$ -	\$ 0.043	\$-	\$ 0.043	\$ -	\$ -	\$ 0.086
OpEx	\$ -	\$-	\$ 0.006	\$ -	\$ 0.006	\$ -	\$ -	\$ 0.013
Removal	\$ -	\$ -	\$ 0.005	\$ -	\$ 0.005	\$ -	\$-	\$ 0.010
Total Cost in Bus. Plan	\$ -	\$ -	\$ 0.055	\$ -	\$ 0.055	\$ -	\$ -	\$ 0.109

Variance (Business Plan-Project Estimate)

			Current Planning Horizon (\$M)					
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CapEx	\$ -	\$ -	\$ (0.157)	\$ (0.500)	\$ (0.757)	\$ -	\$ -	\$ (1.414)
OpEx	\$-	\$ -	\$ (0.044)	\$ (0.050)	\$ (0.094)	\$ -	\$ -	\$ (0.187)
Removal	\$ -	\$ -	\$ (0.045)	\$ (0.050)	\$ (0.095)	S -	\$ -	\$ (0.190)
Total Cost in Bus. Plan	\$ -	\$ -	\$ (0.245)	\$ (0.600)	\$ (0.945)	\$ -	\$ -	\$ (1.791)

5 Key Milestones:

Milestone	Target Date: (Month/Year)
Make Ready Design Complete	6/14
Make Ready Construction Complete	12/14
Injection Design Complete	3/15
Injection Complete	9/15
Replacement Design Complete	3/16
Replacement Construction Complete	3/17
Closure	6/17

Short Form Sanction Paper

6 <u>Statements of Support</u>

6.1.1 Supporters

Role	Name	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Distribution Asset Management	Alan LaBarre	Endorses scope, design, conformance with design standards
Project Management	Tim Moore	Endorses Resources, cost estimate, schedule

6.1.2 Reviewers

Reviewers read the paper for content / language and recommends edits if necessary.

Reviewer List	Name
Finance	Fowler, Keith
Regulatory	Katsh, Gideon N.
Jurisdictional Delegates	Grimsley, Jenifer L.
Procurement	Curran, Art
Control Center	Gallagher, Mike

Short Form Sanction Paper

7. <u>Decisions:</u>

Ŀ	
(a)	APPROVE the investment of \$0.900M and a tolerance of +/- 10 % for engineering, material purchase and initial construction activities including cable insulation injection.
(b)	NOTE the potential investment of \$1.900M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.
(c)	NOTE that Jim Patterson is the Project Manager and has the approved financial delegation to undertake the activities stated in (a).
Signa	ture

Short Form Sanction Paper

8. Other Appendices:

8.1 Sanction Request Breakdown by Project (Partial Sanction only)

\$M	C049462	Total
CapEx	\$0.70	\$0.70
OpEx	\$0.10	\$0.10
Removal	\$0.10	\$0.10
Total	\$0.90	\$0.90



Short Form Sanction Paper

8.2 URD One-line



Short Form Sanction Paper

8.3 URD GIS Print



IRURD Stone Ridge Acres Phase 2.doc

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Short Form Sanction Paper

Title:	IRURD Silver Maple Phase 2	Sanction Paper #:	USSC-13-318
Project #:	C049356	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/19/2013
Author:	John Cerulli	Sponsor:	Cheryl A. Warren
Utility Service:	Electricity T&D	Project Manager:	Jim Patterson

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction of project C049356 in the amount \$0.400M with a tolerance of +/- 10% for the purposes of engineering, material purchase and initial construction activities including cable insulation injection.

The sanction amount is \$0.400M broken down into:

\$0.300M Capex \$0.050M Opex \$0.050M Removal

NOTE the potential investment of \$1.100M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Engineering and Injection.

2 Project Detail

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

Silver Maple Drive URD in Coventry, Rhode Island has received three outages in three years and is a candidate for injection or replacement based on the URD/UCD Primary Cable Strategy.

This project would install 500' of new URD cable to create loops that enable injection without customer outages, inject 15,500' of cable and replace cable that could not be injected. See attached one-line and GIS sketch.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-3 Page 2 of 10

nationalgrid

Short Form Sanction Paper

2.1.1 Alternatives:

Alternative 1:

Complete replacement was estimated at \$3.1M.

2.2 Investment Recovery

2.2.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.164M. 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 Type	r		Estimat	e Amount
Project Number	(Elec only)	Project Title		(\$M)	
C049356	Distribution Line	IRURD Silver Maple Phase 2		\$	1.100
			Total	S	1.100

3.2 Associated Projects:

Project Number	Project Title	Estimate Amount
		D.:
	Total	\$ -

3.3 Prior Sanctioning History (including relevant approved Strategies):

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
5/16/13	Powerplant	0.100	None	Preliminary Engineering

Short Form Sanction Paper

3.4 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions
O Mandatory	URD/UCD Primary Cable Strategy
OPolicy- Driven	
O Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability	O Environment	O Health & Safety	O Not Policy Driven
· · · · · · · · · · · · · · · · · · ·			

3.6 Complexity Level:

O High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 17

Short Form Sanction Paper

4 <u>Financial</u>

4.1 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)	
FY15 - FY19 New England Distribution and Sub-transmission Electricity Business Plan	⊙ Yes O No	⊙ Over O Under O NA	1.045M	

4.1.1 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.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CIAC/Reimbursement	\$-	\$ -	\$ -	\$ -	\$-	\$-	\$ -	\$ -

4.3 Cost Summary Table

						Current F	Planning Hor	izon (\$M)			
		Project	Í		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
Project		Estimate									
Number	Project Title	Level (%)	Spend	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
			CapEx	-	-	0.100	0.200	0.600	-	-	0.900
01/0366	DUDD Silver Maele Dhare 2	Est LvI (e.g.	OpEx	•	•	•	0.050	0.050	-	•	0.100
0048330	CO13330 RORD Silver maple Filase 2	+/- 10%) 🦈	Removal	-	-	-	0.050	0.050	•	-	0.100
			Total	- •	•	0.100	0.300	0.700	-	•	1.100
			CapEx	- 1	-	0.100	0.200	0.600	-	-	0.900
Total Project Sanction		OpEx	_ •	-	•	0.050	0.050			0.100	
		Removal	-	-	•	0.050	0.050	•	-	0.100	
			Total	•	•	0.100	0.300	0.700	-	•	1.100

Short Form Sanction Paper

4.4 Project Budget Summary Table

Project Costs per Business Plan

			Current Planning Horizon (\$M)						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+		
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total	
СарЕх	\$ -	\$ -	\$ 0.043	\$ -	\$ -	\$ -	\$ -	\$ 0.043	
OpEx	\$ -	\$ -	\$ 0.006	\$ -	\$ -	\$ -	\$ -	\$ 0.006	
Removal	\$ -	\$-	\$ 0.005	\$-	\$ -	\$ -	\$ -	\$ 0.005	
Total Cost in Bus. Plan	\$ -	\$ -	\$ 0.055	\$ -	\$ -	\$ -	\$ -	\$ 0.055	

Variance (Business Plan-Project Estimate)

		_	Current Planning Horizon (\$M)						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total	
CapEx	\$ -	\$ -	\$ (0.057)	\$ (0.200)	\$ (0.600)	\$ -	\$ -	\$ (0.857)	
OpEx	\$ -	\$ -	\$ 0.006	\$ (0.050)	\$ (0.050)	\$ -	\$ -	\$ (0.094)	
Removal	\$ -	\$ -	\$ 0.005	\$ (0.050)	\$ (0.050)	\$ -	\$ -	\$ (0.095)	
Total Cost in Bus. Plan	\$ -	\$ -	\$ (0.045)	\$ (0.300)	\$ (0.700)	\$ -	\$-	\$ (1.045)	

5 Key Milestones:

Milestone	Target Date: (Month/Year)
Make Ready Design Complete	6/14
Make Ready Construction Complete	12/14
Injection Design Complete	3/15
Injection Complete	9/15
Replacement Design Complete	3/16
Replacement Construction Complete	3/17
Closure	6/17

Short Form Sanction Paper

6 Statements of Support

6.1.1 Supporters

Role	Name	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Distribution Asset Management	Alan LaBarre	Endorses scope, design, conformance with design standards
Project Management	Tim Moore	Endorses Resources, cost estimate, schedule

6.1.2 Reviewers

Reviewers read the paper for content / language and recommends edits if necessary.

Reviewer List	Name
Finance	Fowler, Keith
Regulatory	Katsh, Gideon N.
Jurisdictional Delegates	Grimsley, Jenifer L.
Procurement	Curran, Art
Control Center	Gallagher, Mike

Short Form Sanction Paper

7. <u>Decisions:</u>



Short Form Sanction Paper

8. Other Appendices:

8.1 Sanction Request Breakdown by Project (Partial Sanction only)

\$M	C049356	Total
CapEx	\$0.30	\$0.30
OpEx	\$0.05	\$0.05
Removal	\$0.05	\$0.05
Total	\$0.40	\$0.40

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-3 Page 9 of 10

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Short Form Sanction Paper

8.2 URD One-line



IRURD Silver Maple Phase 2.doc

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Short Form Sanction Paper

8.3 URD GIS Print



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Short Form Sanction Paper

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Title:	IRURD High Hawk	Sanction Paper #:	USSC-13-323
Project #:	C047829	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/19/2013
Author:	John Cerulli	Sponsor:	Cheryl A. Warren
Utility Service:	Electricity T&D	Project Manager:	Jim Patterson

1 <u>Executive Summary</u>

1.1 Sanctioning Summary

This paper requests partial sanction of project C047829 in the amount \$0.600M with a tolerance of +/- 10% for the purposes of engineering, material purchase and initial construction activities including cable insulation injection.

The sanction amount is \$0.600M broken down into:

- \$0.500M Capex
- \$0.050M Opex
- s \$0.050M Removal

NOTE the potential investment of \$1.200M with a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of Engineering and Civil Construction.

2 Project Detail

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

High Hawk URD in East Greenwich, Rhode Island is a candidate for proactive injection as part of the URD/UCD Primary Cable Strategy. URD was also recommended as a candidate by Operations due to having four outages in three years between 2007 and 2009 and long radial configuration on two of three phases. This proactive project may be deferred to a later date if a reactive project that addresses known outages becomes ready for construction.

Two of three phases at High Hawks URD are radial. This project would install a junction box to enable injection on all three phases, inject 24,300' of cable, and replace cable that can not be injected. See attached one-line and GIS sketch.

IRURD High Hawk doc

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2.1.1 Alternatives:

Alternative 1:

Complete replacement was estimated at \$4.86M.

2.2 Investment Recovery

2.2.1 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.200M. 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.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects:

	Project Type			Estimate	Amount
Project Number	(Elec only)	Project Title		(\$M)	
C047829	Distribution Line	IRURD High Hawk		\$	1.200
			Total	\$	1 200

3.2 Associated Projects:

Project Number	Project Title	Estimate Amount
	Total	\$ -

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

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type
1/31/13	Powerplant	0.550	None	Partial

Short Form Sanction Paper

3.4 Category:

Category	Reference to Mandate, Policy, or NPV Assumptions
O Mandatory	URD/UCD Primary Cable Strategy
O Justified NPV	

3.5 Asset Management Risk Score

Asset Management Risk Score: 36

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability	O Environment	O Health & Safety	O Not Policy Driven

3.6 Complexity Level:

O High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 17

Short Form Sanction Paper

4 Financial

4.1 Business Plan:

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY15 - FY19 New England Distribution and Sub-transmission Electricity Business Plan	© Yes O No	⊙ Over O Under O NA	0.209M

4.1.1 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.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CIAC/Reimbursement	\$ -	\$ -	\$-	\$-	\$ -	\$ -	\$-	\$-

4.3 Cost Summary Table

							Current R	Manning Hor	izon (SM)		
		Project			Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
Project		Estimate	ł								
Number	Project Title	Level (%)	Spend	Prior Yrs	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
	1		CapEx	•	•	0.050	0.450	0.500	-	-	1.000
C047820	IRLIPD Mich March	Est Lvi (e.g.	OpEx	•	•		0.050	0.050		-	0.100
0047025	CO47020 INORO FIGIL Hawk	+/+ 10%)	Removal	-	•		0.050	0.050	-		0.100
			Total	-		0.050	0.550	0.600	•.	•	1.200
			CapEx			0.050	0.450	0.500		•	1.000
Total Project Sanction		OpEx	-	•	-	0.050	0.050			0.100	
		Removal	- 1	-	-	0.050	0.050	¥0	•	0.100	
			Total	· ·	•	0.050	0.550	0.600		2	1.200

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4.4 Project Budget Summary Table

Project Costs per Business Plan

			Current Planning Horizon (\$M)					
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total
CapEx	\$ -	\$ -	\$ 0.043	\$ 0.680	\$ -	\$ -	\$ -	\$ 0.723
OpEx	\$ -	\$-	\$ 0.011	\$ 0.170	\$ -	\$ -	\$ -	\$ 0.181
Removal	\$-	\$ -	\$ 0.005	\$ 0.082	\$ -	\$ -	\$ -	\$ 0.087
Total Cost in Bus. Plan	\$ -	\$ -	\$ 0.059	\$ 0.932	\$ -	S -	\$ -	\$ 0.991

Variance (Business Plan-Project Estimate)

			Current Planning Horizon (\$M)						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
	(Actual)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Total	
CapEx	\$ -	\$ -	\$ (0.007)	\$ 0.230	\$ (0.500)	\$ -	\$ -	\$ (0.277)	
OpEx	\$ -	\$ -	\$ 0.011	\$ 0.120	\$ (0.050)	\$-	\$ -	\$ 0.081	
Removal	\$ -	\$ -	\$ 0.005	\$ 0.032	\$ (0.050)	\$ -	\$ -	\$ (0.013)	
Total Cost in Bus. Plan	\$ -	\$ -	\$ 0.009	\$ 0.382	\$ (0.600)	\$ -	\$ -	\$ (0.209)	

5 Key Milestones:

Milestone	Target Date: (Month/Year)
Make Ready Design Complete	6/14
Make Ready Construction Complete	3/15
Injection Design Complete	3/15
Injection Complete	9/15
Replacement Design Complete	3/16
Replacement Construction Complete	3/17
Closure	6/17

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6 <u>Statements of Support</u>

6.1.1 Supporters

Role	Name	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year plan or emergent work
Resource Planning	Jim Patterson	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Distribution Asset Management	Alan LaBarre	Endorses scope, design, conformance with design standards
Project Management	Tim Moore	Endorses Resources, cost estimate, schedule

6.1.2 Reviewers

Reviewers read the paper for content / language and recommends edits if necessary.

Reviewer List	Name
Finance	Fowler, Keith
Regulatory	Katsh, Gideon N.
Jurisdictional Delegates	Grimsley, Jenifer L.
Procurement	Curran, Art
Control Center	Gallagher, Mike

RURD High Hawk doc

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7. <u>Decisions:</u>

1:	
(a)	APPROVE the investment of \$0.600M and a tolerance of +/- 10 % for engineering, material purchase and initial construction activities including cable insulation injection.
(b)	NOTE the potential investment of \$1.200M and a tolerance of +/- 25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.
(c)	NOTE that Jim Patterson is the Project Manager and has the approved financial delegation to undertake the activities stated in (a).
Signa	ture

Short Form Sanction Paper

8. Other Appendices:

8.1 Sanction Request Breakdown by Project (Partial Sanction only)

\$M	C047829	Total
CapEx	\$0.50	\$0.50
OpEx	\$0.05	\$0.05
Removal	\$0.05	\$0.05
Total	\$0.60	\$0.60

IRURD High Hawk.doc



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This URD is primarily a three-phase radial

system except for Phase A.

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8.3 URD GIS Sketch







IRURD High Hawk.doc

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This document has been reviewed for Critical Energy/Electric Infrastructure Information (CEII). 7/9/2018

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US Sanction Paper

Title:	South Street Substation Rebuild	Sanction Paper #:	USSC-14-195 V3
Project #:	C051212, C051213, C055584, C055585, C055586, C055623	Sanction Type:	Sanction
Operating Company:	Narragansett Electric Co. and Electricity T&D	Date of Request:	6/25/2018
Author:	Nelson M. Antunes	Sponsor:	Carol A. Sedewitz, VP Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Nelson M. Antunes

1 Executive Summary

1.1 Sanctioning Summary

This paper requests project sanction of C051212, C051213, C055584, C055585, C055586, and C055623 in the amount of \$85.820M with a tolerance of +/-10% for the purposes of full project implementation.

The sanction amount is \$85.820M broken down into:

\$82.503M Capex \$0.177M Opex \$3.140M Removal With a CIAC/Reimbursement of \$6.983M

This project has undergone a Capital Efficiency Review with the following determination:

This project has secured the necessary agency approvals to proceed and is in construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project has been evaluated for any procurement or construction efficiency opportunities.

1.2 **Project Summary**

The projects summarized in Section 1.3 below are described in the "Providence Area Long Term Distribution and Supply Study" ("Providence Study") dated May 2014, and the "Providence Area Long Term Distribution and Supply Study Addendum" ("Study Addendum") dated May 2014. The Providence Study noted the significant asset condition issues at the South Street Substation ("South St. Sub"), the importance of this particular location, and the need to maintain an 11.5kV supply to the downtown Providence network from this location. As a result of these findings, the Providence Study presented a recommended plan to rebuild the South St. Sub.

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US Sanction Paper

The project consists of a new substation on the existing South St. Substation site in the City of Providence, R.I. The new substation includes three 115-11 kV, 33/44/55 MVA Load Tap Change transformers and an indoor substation building with indoor metal clad switchgear with 23 positions for 11 kV circuits, 4 position for the 23kV to 11kV transformers and 3 cap banks. Additionally, the project include rebuilding the three 115 kV transmission lines from overhead to underground for a distance of 0.3 miles from Franklin Square to the new South St. Substation. The existing South Street 115/11 kV station and existing overhead transmission lines will be removed.

The work to underground the 115 kV lines from Franklin Square to South Street is based on a request from the developer, C.V. Properties LLC. The rebuild of the existing transmission taps to South St. Sub in an underground configuration is not recommended, but was completed and paid for by the C.V. Properties LLC. The CIAC which is referenced in this paper, is the payment supplied by the C.V. Properties LLC for the undergrounding of the transmission lines.

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C051212	D-Sub	South Street Substation Rebuild - Dsub	37.549
C051213	D-Line	South Street Substation Rebuild - Dline	8.833
C055584	T-Sub	South Street Substation Rebuild - Tsub	25.281
C055585	T-Line	South Street Substation Rebuild - Tline	7.969
C055586	Remote Work	South Street Substation Rebuild - Remote Wo	3.120
C055623	Removal	South Street Substation Rebuild - Removal	3.068
		Total	85.820

1.3 Summary of Projects

1.4 Associated Projects

N/A

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
6/10/2015	USSC	\$74.500M	\$95.350M	Partial	+/- 25%
6/25/2014	USSC	\$23.74M	\$64.150M	Partial	+50%/-25%

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-5 Page 3 of 18

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US Sanction Paper

1.6 Next Planned Sanction Review

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

1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
O Mandatory	-National Grid USA Electrical Operations Internal Strategy Document
	-Distribution Planning Criteria Strategy
O Justified NPV	
O Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: 48

Primary Risk Score Driver: (Policy Driven Projects Only)					
Reliability	 Environment 	O Health & Safety	O Not Policy Driven		

1.9 Complexity Level

High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 29

1.10 Process Hazard Assessment

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

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• 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 (\$)
FY19-23 NE Distribution and Transmission Capital Plan	⊙ Yes O No	⊙ Over O Under ⊂ NA	\$2.019M

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

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

1.13 Current Planning Horizon

		Current Planning Horizon		lorizon
		Yr. 1	Yr. 2	
	Prior			
\$M	Yrs	2018/19	2019/20	Total
CapEx	72.873	4.569	4.539	81.981
OpEx	0.105	0.104	0.000	0.209
Removal	0.287	0.015	3.328	3.630
CIAC/Reimbursement	(6.983)	0.000	0.000	(6.983)
Total	66.282	4.688	7.867	78.837

1.14 Key Milestones

Milestone	Target Date: (Month/Year)
Partial Sanction	June 2014
Partial Sanction	June 2015
Permitting and Licensing Complete	December 2015

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US Sanction Paper

Milestone	Target Date: (Month/Year)
Complete Final Design	November 2016
Start of South Street Substation Construction (T,D & Sub)	February 2016
Ready for Load (In Phases)	January 2018
Project Sanction	June 2018
Complete Cutovers from Existing South Street to New Substation	April 2019
Existing Building and Transmission structure Removal	July 2019
Construction Complete	August 2019
Project Closure Report	November 2019

1.15 Resources, Operations and Procurement

Resou	irce Sourci	ng		
Engineering & Design Resources to be provided	✓ Internal		Contractor	
Construction/Implementation Resources to be provided	Internal		Contractor	
Reso	urce Delive	ry		
Availability of internal resources to deliver project:	O Red	OAmber	© Green	
Availability of external resources to deliver project:	O Red	OAmber	⊙ Green	
Opera	tional Impa	ct	1	
Outage impact on network system:	O Red	O Amber	 Green 	
Procur	ement Imp	act		
Procurement impact on network system:	O Red	O Amber	 Green 	

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

1	Potential transmission outage cancellation
2	Weather events

US Sanction Paper

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	 Neutral 	O Positive	O Negative
Impact on adaptability of network for future climate change:	 Neutral 	O Positive	O Negative

1.18 List References

1	Providence Area Long Term Distribution and Supply Study, May 2014
2	Providence Area Long Term Distribution and Supply Study Addendum, May 2014
3	Conceptual Engineering Report - New South Street Substation, May 2014
4	Asset Condition Report – South Street Substation, January 2011

US Sanction Paper

2 <u>Decisions</u>

The Senior Executive Sanctioning Committee (SESC) at a meeting held on 6/25/2018:

- (a) APPROVED this paper and the investment of \$85.820M and a tolerance of +/-10%
- (b) NOTED that Nelson M. Antunes is the Project Manager and has the approved financial delegation.

Jan 28,2018 Signature.Date. Margaret Smyth **US Chief Financial Officer** Chair, Senior Executive Sanctioning Committee

US Sanction Paper

3 Sanction Paper Detail

Title:	South Street Substation	Sanction Paper #:	USSC-14-195-V3
Project #:	C051212, C051213, C055584, C055585, C055586, C055623	Sanction Type:	Sanction
Operating Company:	Narragansett Electric Co. and Electricity T&D	Date of Request:	6/25/2018
Author:	Nelson M. Antunes	Sponsor:	Carol A. Sedewitz, VP Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Nelson M. Antunes

3.1 Background

The South Street Substation is a major 115/11 kV supply substation serving downtown Providence, RI and the surrounding area. In combination with the Franklin Square 115/11 kV Substation, the two substations serve a combined peak load of approximately 148 MVA. The South Street and Franklin Square substations supply the Providence Downtown network, one 23 kV substation, one 11 kV substation, eight 4 kV distribution substations, the Providence Hurricane Barrier, the main campus of Brown University, Women and Infants Hospital, Rhode Island Hospital, St. Joseph's Hospital, Roger Williams Hospital, the VA Hospital and local 11.5 kV distribution customers.

In 2014, the Company conducted the Providence Area Long Term Supply and Distribution Study (the Providence Study), which provides a high-level conceptual plan for the future development of the supply and distribution system in the City of Providence and adjacent communities. This study has identified the need for construction of a new 115/11 kV substation to replace the existing South Street Substation as a result of asset condition issues described in Section 3.2 below.

In the fail of 2013, National Grid was approached by C.V. Properties LLC proposing a large scale project in the immediate area of the South Street Substation. As currently envisioned by the C.V Properties, the former South Street Power Station ("Dynamo House") and the adjacent Davol Square property would be used to construct a state-of-the-art nursing education center for Rhode Island College and the University of Rhode Island, and administrative office space for Brown University.¹ This redevelopment plan

¹ Societal benefit represented informally by the Davol Square developer consists of job creation on the order of approximately 1,500 construction jobs and 540 permanent jobs with potential economic growth of \$29 million in annual earnings and \$64 million in statewide economic output.

US Sanction Paper

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included three potential factors that could impact the Providence Study recommendations:

- The relocation of the existing South St. Sub (away from the Dynamo House);
- The rebuild of the existing transmission taps to the South St. Sub in an underground configuration; and
 - The lease or transfer of a portion of the South St. Sub parcel for construction of a parking garage.

As described above, the Providence Study recommended rebuild or relocation of the South St. Sub on the existing site but away from the Dynamo House . Although not recommended in the Providence Study, rebuilding the South Street Substation 115kV taps in an underground configuration was estimated due to the request of the C.V. Properties LLC. The company communicated to the developer as requiring a customer contribution for the difference between the overheand and underground option if this option was selected. A Conceptual Engineering review was conducted in the Fall/Winter of 2013 to determine the feasibility of leasing a portion of the station property for a parking garage. This effort concluded the parking garage was feasible. Additional details regarding these factors are described in the Study Addendum. In summary:

- The relocation/rebuild of the existing South St. Sub was the potential recommendation of the draft Providence Study at the time of the Davol Square developer's request.
- The rebuild of the existing transmission taps to South St. Sub in an underground configuration is not recommended, but Was completed and paid for by the C.V. Properties LLC.
- The lease or transfer of a portion of the South St. Sub parcel for construction of a parking garage is technically feasible.

3.2 Drivers

The South Street Substation replacement is driven by asset condition concerns. These concerns are described in the Asset Condition Report for the South Street Substation which is summarized in the Providence Study.

The Asset Condition Report for the South Street Substation recommends the replacement of a variety of station components. For instance, the building layout is such that it precludes the implementation of modern installation standards in order to replace original equipment. Additionally, spare parts for the protection components are unavailable and will be irreplaceable in the event of a failure. Lastly, maintenance work is time consuming and because of previously stated issues results in custom site-specific repairs.

Specific issues of poor asset condition exist for the transformers, breakers, switches, feeder reactors, and the battery system. Transformer concerns include past bushing

US Sanction Paper

failures, top cover leaks, and partial internal discharge primarily associated with the #2216 11.5kV to 23kV unit. A number of 11.5kV breakers have reduced fault interrupting performance due to their outdated design. Also, replacement bushings, mechanisms and live parts for these breakers are no longer commercially available. Certain 11.5kV gang operated switches have operational issues. In some of the bays these switches are mounted in such a manner that replacement requires both the #1 and #2 11.5 kV buses to be taken out of service. The existing reactors are the limiting elements for some feeders and cannot be replaced with similar or larger units. Lastly, the battery system is approximately 18 years old and planned for replacement.

3.3 **Project Description**

The proposed project consists of constructing a new South Street substation on the existing South Street site, transferring all 11 kV circuits to the new substation, and removing the existing 115-11 kV substation.

The 115 kV supply to the new substation will be via three new 115 kV underground cables. The cables have been installed and terminated at new structures at the Franklin Square substation, and are routed along two diverse routes to the new South Street Substation. The first route, for the two cable circuits, is on National Grid owned land along the Providence River. A second route, for one circuit, is through a developer's property at Davol Square with a new easement, across South Street, along the front of the former South Street Power Station and into the new substation.

The new South Street T-Sub consists of three transmission risers that will be used to terminate the underground transmission cables from Franklin Square, and three circuit switches. In addition, three new 115-11 kV, 33/44/55 MVA LTC transformers will be installed.

A new substation building consisting of two stories and a basement has been constructed. The second floor of the new substation includes metal clad switchgear with 23 positions for 11 kV circuits, 4 position for the 23kV transformer feeds, and positions for the 11kV transformers and 3 cap banks if needed for future use. The control rooms for relay protection and controls are also on the second floor. The first floor will house feeder reactors and feeder-disconnect switches. The bottom floor is a basement for cable routing.

Following the cutover of all 11 kV circuits to the new substation, the existing South Street 11 kV substation will be de-energized. The South Street 11 kV substation building will be removed in 2019 upon the completion of the distribution cutovers.

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3.4 Benefits Summary

The recommended alternative addresses the indoor substation issues of poor asset condition with the existing South Street Substation.

3.5 **Business and Customer Issues**

The following business issues are associated with the recommended alternative solution:

- The proposed investment is included in National Grid's current Business Plan.
- The Narraganset Electric Company has concluded the existing substation site is suitable for the new South Street substation.
- The Narraganset Electric Company has concluded that there is adequate land available on the existing South Street Substation site to construct the new substation, and to also lease a portion of the site to the developer for construction of a parking garage.

For additional information, refer to the Providence Area Long Term Distribution and Supply Study

3.6 Alternatives

The Providence Study notes the importance of the South Street Substation location and the need to retain the 11.5kV supplied downtown Providence network. With this basis and the need to address the poor asset conditions, the study considered a variety of substation rebuild configurations. The recommended plan is the lowest cost station rebuild configuration then modified by the Study Addendum.

The work to underground the 115 kV lines from Franklin Square to South Street is based on a request from the developer, C.V. Properties LLC. The National Grid project to replace South Street substation does not require these lines to be placed underground.

3.7 Safety, Environmental and Project Planning Issues

A formal and detailed Cutover Plan has been developed for the transfer of all existing 11 kV circuits to the new substation. To assist with this complex outage planning, Energy Initiatives Group who supported the New England East to West Solution project with outage planning and is extremely knowledgeable of the electrical system has been contracted to lead this deliverable.

US Sanction Paper

Other required consents would include:

- Rhode Island Department of Environmental Management (RIDEM) approval of the project;
- Rhode Island Coastal Management Resources Council (CMRC) approval of the storm water discharge from the site;
- Rhode Island Energy Facility Siting Board (EFSB) approval of the project

There have been and continue to be environmental impacts associated with the construction of the substation. Specifically, the site abuts the Providence River. The Company designed storm water discharge to be in compliance with CMRC requirements. The Company developed a plan to manage and improve the quality of the rain water runoff from the station's impervious surfaces, including the substation building roof and paved areas.

The site is located in downtown Providence, in the heart of the City's Jewelry District. It is noted that the layout of the site has been planned with the parking garage along the Eddy Street frontage of the site. The garage was constructed by a developer on a portion of the site leased from National Grid. The parking garage provides screening of the substation site from Eddy Street.

When possible, the Company coordinated the environmental permitting for the National Grid South Street Substation project with the developer's environmental permitting for the South Street Landing project.

	CONTRACTOR SCIENCE	2	≥ Impact		Sc	ore	60000	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Sector States of		
Numbe	Numbe	Detailed Description of Risk / Opportunity	Probabili	Cost	Schedule	Cost	Schedule	Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
1	Obtaining the required scheduled outage	2	2	2	4	4	Accept	Develop plan and increase communication between as scheduled outage approaches.	Construction delays may result from outage postponement.	Continue frequent communication until outage work is concluded.	
2	Weather	2	2	2	×.		Accept	We do not have a mitigation plan for weather.	N/A	N/A	
4	Building Demo	2	I	2	12		Accept	Risk is accepted and can be retired once the building is taken down.	There are no know residual risks	N/A	

3.8 Execution Risk Appraisal

US Sanction Paper

3.9 **Permitting**

Permit Name	Probability Required (Certain/ Likely/Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
Coastal Resource Management Council	Certain	6 mos.	Complete	3/16
Rhode Island Department of Environmental Management	Certain	6 mos.	Complete	3/16
EFSB	Certain	3 mos.	Complete	3/16
Downtown Design Review Comittee	Certain	6 mos.	Complete	3/16

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

The investment classification for this project is policy-driven. Specifically it is driven by Asset Management's policy to provide for the networks safe, efficient, and reliable operation. The spending rational is performance/asset condition and the primary driver is reliability. The substation will be in service in FY2019 and has been included in each fiscal year's annual Electrical Infrastructure, Safety, and Reliability (ISR) Plan filing from FY2015.

3.10.2 Customer Impact

Customer impacts have been mitigated and/or avoided through careful outage planning and construction sequencing. Customer outages associated with this project are not expected. However, customers will have improved reliability by addressing the known asset condition related issues.

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$13.584M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the Project is included in the rate case.

US Sanction Paper

3.10.3 CIAC / Reimbursement

	1001	Yr. 2	Yr. 3	Steller State
\$M	Prior Yrs	2018/19	2019/20	Total
CIAC/Reimbursement	6.983	0.000	0.000	6.983

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

					Curren	t Planning H	lorizon
			—		Yr. 1	Yr. 2	
		Project					1
Project		Estimate					
Number	Project Title	Level (%)	Spend (\$M)	Prior Yrs	2018/19	2019/20	Total
[CapEx	35.537	1.802	0.000	37.339
C051212	South Street Substation	10%	OpEx	0.008	0.000	0.000	0.008
0001212	Rebuild - Dsub	10,0	Removal	0.002	0.000	0.000	0.002
			Total	35.547	1.802	0.000	37.349
			CapEx	7.578	1.129	0.018	8.725
C051213	South Street Substation	10%	OpEx	0.012	0.104	0.000	0.116
0031213	Rebuild - Dline	1070	Removal	0.010	0.000	0.000	0.010
			Total	7.600	1.233	0.018	8.851
			CapEx	20.668	1.457	2.820	24.945
0055504	South Street Substation Rebuild - Tsub	100/	OpEx	0.077	0.000	0.000	0.077
0000004		10%	Removal	0.241	0.000	0.000	0.241
			Total	20.986	1.457	2.820	25.263
	-			•			
			CapEx	6.461	0.120	0.950	7.531
0055505	South Street Substation	109/	OpEx	0.008	0.000	0.000	0.008
0000000	Rebuild - Tline	10%	Removal	0.002	0.000	0.428	0.430
			Total	6.471	0.120	1.378	7.969
	•	•	•	•			
			CapEx	2.590	0.060	0.569	3.219
0055500	South Street Substation	4.00/	OpEx	0.000	0.000	0.000	0.000
C055586	Rebuild - Remote Work	10%	Removal	0.001	0.000	0.000	0.001
			Total	2.591	0.060	0.569	3.220
						· · · · · ·	
			CapEx	0.039	0.001	0.182	0.222
0055000	South Street Substation	10%	OpEx	0.000	0.000	0.000	0.000
C055623	Rebuild - Removal	10%	Removal	0.031	0.015	2.900	2.946
		2	Total	0.070	0.016	3.082	3.168
1							

US Sanction Paper

3.11.2 Project Budget Summary Table

Project Costs per Business Plan - Distribution

		Current	Planning	Horizon
	C	Yr. 1	Yr. 2	
\$M		2018/19	2019/20	Total
CapEx		3.720	1.800	5.520
OpEx		0.000	0.000	0.000
Removal		0.000	0.000	0.000
Total Cost in Bus. Plan		3.720	1.800	5,520

Variance (Business Plan-Project Estimate)

	Current Planning Horizon		
	Yr. 1	Yr. 2	
\$M	2018/19	2019/20	Total
CapEx	0.789	1.600	2.389
OpEx	(0.104)	0.000	(0.104)
Removal	0.000	0,000	0.000
Total Cost in Bus. Plan	0.685	1.600	2.285

Project Costs per Business Plan - Transmission

	Current Planning Horizon		
	Yr. 1	Yr. 2	
\$M	2018/19	2019/20	Total
CapEx	1.637	0.859	2.496
OpEx	 0.000	0.000	0.000
Removal	0.120	2.400	2.520
Total Cost in Bus. Plan	1.757	3.259	5.016

Variance (Business Plan-Project Estimate)

	Current	Planning	Horizon
	Yr. 1	Yr. 2	
\$M	2018/19	2019/20	Total
CapEx	(0.001)	(3.580)	(3.581)
OpEx	0.000	0.000	0.000
Removal	0.105	(0.828)	(0.723)
Total Cost in Bus. Plan	0.104	(4.408)	(4.304)

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-5 Page 16 of 18



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3.11.3 Cost Assumptions

Cost assumptions based on current project spend, approved project change requests, and estimated remaining project spend.

3.11.4 Net Present Value / Cost Benefit Analysis

3.11.4.1 *NPV Summary Table* This is not a NPV Project

3.11.4.2 *NPV Assumptions and Calculations* N/A

3.11.5 Additional Impacts N/A

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3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibility	
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent	
	McColgan, Karen	work	
Long Term Resource Planning	Stelling, Danielle	Reviewing milestone dates for synchronization with	
	Govoni, Kevin	cash flows in order to move projects out of Step 0	
Posourco Planning	Marceau, Daniel	Endorses construction resources, cost estimate, schedule, and portfolio alignment	
nesource Fianning	Phillips, Mark		
Asset Management / Planning	Hayduk, Brian	Endorses scope, estimate, and schedule with the	
	Constable, Ryan	company's goals, strategies, and objectives	
	Larrabee, Mark	Endorses scope, design,	
Engineering and Design	Hellmuth, Kevin	conformance with design	
	Deschene, Natasha	standards	
	Swanson, Leonard G.		
Project Management	Vacher, Shaun / Quesnel, Marc	Endorses resources, cost estimate, schedule	
Electric Project Estimation	Duffy, John	Endorses Cost Estimate	

3.12.2 Reviewers

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

Function	Individual		
Finance	Midkiff, Felicia		
	Byrne, Andrew		
Regulatory	Turieo, Ed		
	Artuso, Michael		
Iurisdictional Delegate(s)	Anand, Sonny		
	Hill, Terron		
Procurement	Chevere, Diego		
Control Contoro (CC)	Gallagher, Michael		
	Lavallee, Philip		

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4 Appendices

4.1 Sanction Request Breakdown by Project

N/A

4.2 Other Appendices



South Street Substation building with parking garage on adjacent National Grid parcel.

4.3 NPV Summary

N/A

4.4 Customer Outreach Plan

Customer outreach has been ongoing for the South Street project. The company has established a working relationship between the National Grid project team for the South Street project, Brown University, and the C.V. Properties LLC, the developer of the South Street Landing project.

Additional customer outreach was performed for other stakeholders, including other abutters and City officials.

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This document has been redacted for Critical Energy/Electric Infrastructure Information (CEII). 10/29/2018 nationalgrid

US Sanction Paper

Title:	Newport Area Transmission Reinforcements	Sanction Paper #:	USSC-14-261 v3
Project #:	C041183, C041184, C041185, CD00656	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	10/22/2018
Author:	Michael Hughes	Sponsor:	Brian Gemmell VP Asset Management & Planning
Utility Service:	Electricity T&D	Project Manager:	Michael Hughes

Executive Summary 1

1.1 Sanctioning Summary

This paper requests sanction of C041183, C041184, C041185 and CD00656 in the amount of \$80.859M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$80.859M broken down into: \$73.864M Capex \$0.050M Opex \$6.945M Removal

This project has undergone a Capital Efficiency Review with the following determination:

This project is in final design and/or has secured the necessary agency approvals to proceed and is ready to be released for construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project will be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

1.2 Project Summary

Transmission Planning evaluated the thermal and voltage performance of the transmission system local to Aguidneck Island in Rhode Island, which consists of the Dexter Substation (115/69 kV), Jepson Substation (69/23/13.8 kV), Navy Substation (69/13.8 kV) and Gate 2 Substation (69/23 kV), as well as the 69 kV lines 61, 62 and 63.

The April 2015 Newport Area (Aquidneck Island) Transmission Solution Study (the "Study") documented potential concerns with respect to the transmission planning standards under certain contingencies related to the 69kV at lines 61 and 62. Specifically, if the 61 or the 62 line, or certain equipment at the Dexter or Jepson Substations, were to malfunction or to be taken out of service, other equipment could overload.

US Sanction Paper

The Study identified the following thermal concerns:

- Dexter Substation: The 115/69 kV transformers overload for loss of either the 56 Mega Volt Amp (MVA) paralleled bank or the 100 MVA 115/69 kV transformers.
- 61 and 62 lines: For loss of either 69 kV line, the remaining line overloads.
- Jepson Substation: Breaker failures of the 3764 and 3765 breakers opens the 69 kV ring, and forces the flow to go through the remaining path that connects the load serving transformers and the 63 line supplying Navy Substation and Gate 2 Substation.

The contingency thermal overloads described above occur at existing peak load levels or fractions thereof. These overloads were observed on the February 2017 Aquidneck Island Reliability Project System Impact Study in support of the Proposed Plan Application (the "2017 PPA Study").

To address the reliability, asset condition and environmental issues, the recommended plan is to:

- Rebuild Jepson Substation on a National Grid owned site across the street from the existing substation designed and operated at 115 kV.
- Convert the 61 and 62 lines from 69 kV to 115 kV. Upon converting these lines to 115kV, they will become extensions of the existing 115kV lines M13 and L14.
- Remove the 115/69 kV transformation at the Dexter Substation and reconfigure the substation to maintain supply to the existing 115/13.8 kV transformer.

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C041183	T-Sub	Jepson 115kV	19.520
C041184	T-Line	Line 61/62 Conversion	33.947
C041185	T-Sub	Dexter 115kV Station	5.444
CD00656	D-Sub	Jepson Substation	21.948
		Total	80.859

1.3 Summary of Projects

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1.4 Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C015158	NEWPORT SUBSTATION (D-SUB)	10.425
C024159	NEWPORT 69KV LINE 63 (D-LINE)	2.165
C028628	NEWPORT SUBTRANS & DIST CONVERSIO	18.926
C054052	NO AQUIDNECK RETIREMENT (D-SUB)	0.310
C054054	JEPSON SUBSTATION (D-LINE)	6.967
C058310	HARRISON SUB IMPROVEMENTS (D-SUB)	0.320
C058401	MERTON SUB IMPROVEMENTS (D-SUB)	0.330
C058404	KINGSTON SUB IMPROVEMENTS (D-SUB)	0.595
C058407	SOUTH AQUIDNECK RETIREMENT (D-SUB)	0.310
CD00649	GATE 2 SUBSTATION (D-SUB)	2.569
CD00651	BAILEY BROOK RETIREMENT (D-SUB)	0.448
CD00652	VERNON RETIREMENT (D-SUB)	0.310
	Total	43.675

Note: These associated projects are part of the distribution system reinforcements on Aquidneck Island. Besides addressing the concerns on the distribution system, these projects help address the voltage concerns observed on the transmission study. These associated projects are part of a separate sanction (USSC-14-262).

1.5 Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Potential Investment Tolerance
1/22/18	SESC	\$51.822M	\$71.705M*	Newport Area Transmission Reinforcements	Partial
12/10/14	USSC	\$8.500M	\$39.131M	Newport Area Transmission Reinforcements	Partial

* Note: Project No. CD00656 was transferred from sanction paper USSC-14-262 into this paper when this paper was partially sanctioned on 1/22/2018, since both the transmission and distribution components of the Jepson Substation will be implemented in parallel.

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
March 2021	Project Closure Sanction

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1.7 Category

Category	Reference to Mandate, Policy, NPV, or Other
 O Mandatory O Policy- Driven 	Comply with applicable reliability standards such as, North American Electric Reliability Corporation (NERC) planning standards, Northeast Power Coordinating Council (NPCC) criteria, ISO-New England planning procedures and National Grid's Transmission Planning
O Justified NPV	Guide (1GP28).
O Other	

1.8 Asset Management Risk Score

Asset Management Risk Score: _49___

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability	O Environment	O Health & Safety	O Not Policy Driven
-------------	---------------	-------------------	---------------------

1.9 Complexity Level

High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: _32___

1.10 Process Hazard Assessment

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

• Yes O No

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1.11 Business Plan

Business Plan Name & Period Business Plan? Over / Under Business Plan?		Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY19-23 NE Transmission Capital Plan	⊙ Yes O No	⊙ Over ⊃ Under ⊂ NA	11.034M
FY19-23 NE Distribution & Capital Plan	⊙ Yes O No	O Over ⊙ Under ⊂ NA	1.353M

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The project cost is over the existing FY19-23 NE Distribution & Transmission Capital Plan and the Potential Project Investment from the prior project partial sanction USSC-14-261 v2, dated 1/22/2018 as a result of the following variance:

• Several environmental and construction requirements (e.g., dewatering, Soil contamination, road improvements, retaining wall construction, matting, environmental control) were not fully developed during the preliminary and final engineering stages of the project. In return the planning grade estimates did not capture all the project's expected cost. The contractor cost obtained via competitive bidding process for the same scope resulted in increase of the project cost.

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

Re-allocation of funds within the FY 19-23 NE Transmission Capital Plan portfolio has been managed and approved by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

1.13 Current Planning Horizon

		-		Current	Planning H	lorizon	- 35	- 100 H
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
CapEx	17.761	35.906	13.106	7.091	0.000	0.000	0.000	73.864
OpEx	0.009	0.000	0.021	0.020	0.000	0.000	0.000	0.050
Removal	0.047	3.886	1.483	1.529	0.000	0.000	0.000	6.945
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	17.817	39.792	14.610	8.640	0.000	0.000	0.000	80.859

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1.14 Key Milestones

Milestone	Target Date: (Month/Year)		
Partial Sanction	December 2014		
Partial Sanction	January 2018		
Engineering Design Complete - EDC	May 2018		
Construction Start	May 2018		
Project Sanction	October 2018		
ISO Facility Ratings	March 2020		
Ready for Load/Use	September 2020		
Construction Complete - CC	November 2020		
Project Closure Sanction	March 2021		

1.15 Resources, Operations and Procurement

Resou	Irce Sourci	ng		
Engineering & Design Resources to be provided	Internal		Contractor	
Construction/Implementation Resources to be provided	✓ Internal		Contractor	
Reso	urce Delive	ry		
Availability of internal resources to deliver project:	O Red	O Amber	© Green	
Availability of external resources to deliver project:	O Red	O Amber	⊙ Green	
Opera	tional Impa	ict		
Outage impact on network system:	O Red	O Amber	⊙ Green	
Procur	ement Imp	act		
Procurement impact on network system:	O Red	OAmber	⊙ Green	

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

1	Outages are restricted to the spring and fall seasons. Construction sequence and planning is critical. Numerous outages will be required on the transmission and distribution lines. Coordination of outages with other planned projects in the Southern Massachusetts and Rhode Island region will be critical to timely delivery of the project.
2	Substation and transmission line work is contracted to different construction contractors. Coordination of the construction sequences and outages will be critical in order to avoid construction down time.
3	Transmission line work over and under distribution lines and road crossings is required. A PHA process will be put in place to identify and analyze the significance of hazardous situations associated with an activity to aid management in making critical safety decisions.
4	A major public outreach effort is required for communities impacted by the transmission line, substation, and distribution line construction activities.

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	O Negative
Impact on adaptability of network for future climate change:	O Neutral	Positive	O Negative

1.18 List References

1	Aquidneck Island Reliability Project System Impact Study, February 2017.
2	Newport Area (Aquidneck Island) Transmission Needs/Solution Study Report,
	April 2015. Regional Project System Identification: 1669, 1670 and 1671.
3	Asset Condition Report Addendum – Jepson Sub #37, October 2013
4	Newport Area Supply and Distribution Study, May 2007

US Sanction Paper

2 <u>Decisions</u>

The Senior Executive Sanctioning Committee (SESC) at a meeting held on 10/22/2018
(a) APPROVED this paper and the investment of \$80.859M and a tolerance of +/10%
(b) NOTED that Michael Hughes is the Project Manager and has the approved
financial delegation.
Signature.
Signature.
Margaret Smyth
US Chief Financial Officer
Chair, Senior Executive Sanctioning Committee

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3 Sanction Paper Detail

Title:	Newport Area Transmission Reinforcements	Sanction Paper #:	USSC-14-261 v3
Project #:	C041183, C041184, C041185, CD00656	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	10/22/2018
Author:	Michael Hughes	Sponsor:	Brian Gemmell VP Asset Management & Planning
Utility Service:	Electricity T&D	Project Manager:	Michael Hughes

3.1 Background

The Southeastern Massachusetts and Rhode Island (SEMA-RI) Area Needs Assessment (N-1) led by ISO-New England was presented to the Planning Advisory Committee (PAC) on February 19, 2014. This ISO-New England led study identified immediate potential thermal and voltage issues in the Somerset Area including the transmission facilities between the Dexter and Bell Rock substations in Aquidneck Island.

Transmission Planning confirmed the thermal and voltage performance of the transmission system local to Aquidneck Island in Rhode Island, which consists of the Dexter Substation (115/69/13.8 kV), Jepson Substation (69/23/13.8/4.16 kV), Navy Substation (69/13.8 kV) and Gate 2 Substation (69/23 kV), as well as the 69 kV lines 61, 62 and 63. The Study documents the thermal and voltage performance of the transmission system local to Aquidneck Island.

The Study identified low voltage concerns for loss of the 115kV lines M13 or L14 that supply the Dexter Substation. The primary driver of low voltage is excessive voltage drop across the transmission system when a single line is forced to carry the entire Somerset/Bell Rock area and the Aquidneck Island load following the loss of the other line. This voltage concern is being addressed by the SEMA-RI suite of projects.

The Study identified the following thermal concerns, which were also observed in the 2017 PPA Study:

- At the Dexter Substation: The 115/69 kV transformers overload for loss of either the 56 MVA paralleled bank or the 100 MVA 115/69 kV transformers.
- 61 and 62 lines: For loss of either 69 kV line, the remaining line overloads.
- At the Jepson Substation: Breaker failures of the 3764 and 3765 breakers opens the 69 kV ring and forces the flow to go through the remaining path that connects

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the load serving transformers and the 63 line supplying Navy and Gate 2.

The Jepson Substation is the main point of transmission supply into the Aquidneck Island distribution and consists of 69 kV, 23 kV, 13.8 kV and 4.16 kV yards. The Jepson Substation contains numerous poor asset condition issues and environmental concerns, as this substation is located entirely within the Zone A Watershed Protection Overlay.

3.2 Drivers

Based on the critical load level analysis documented on the April 2015 Newport Area (Aquidneck Island) Study, the need to resolve the thermal issues on the 69 kV lines 61 and 62, the 69 kV ring at the Jepson Substation and the 115/69 kV transformers at Dexter Substation is immediate. The 2017 PPA Study observed the thermal issues described above.

Besides the Jepson Substation being entirely within the Zone A Watershed Protection Overlay, the 69 kV, 23 kV and 4 kV equipment suffer from issues related to poor asset condition. Below is a summary of the asset condition issues at the Jepson Substation:

Jepson 69 kV Station:

- The 69 kV breakers are 1950s vintage and oil filled, with problematic air systems.
- The 69 kV structure consists of older transmission equipment with pin type insulators and an obsolete style switch for which parts are no longer available. The pin type insulators are recommended for replacement due to the failure rate history of the pin type design.
- The foundations for four oil-filled breakers would not match the dimension of the standard replacement gas circuit breaker.
- There is insufficient space in the control house for adding controls for any new 69 kV breakers, upgrading the obsolete Remote Terminal Unit (RTU) or adding breaker failure scheme for the current 69 kV ring bus.

Jepson 23 kV Station:

- Predominantly 1950s vintage equipment. All 23 kV breakers are obsolete.
- 23 kV bus is supported by pin type insulators. This design is unreliable and obsolete. The bus no longer meets current clearance and work space requirements.
- The 23 kV bus voltage is regulated by a Load Tap Changer (LTC) control scheme that often produces voltage problems and needs to be disabled and reset a few times a year. This scheme should be retired or replaced.
- Three power transformers in the yard are vintage 1950's and have no oil containment.

Jepson 4.16 kV Station:

• 1960s vintage 23/4.16 kV station with mostly original equipment.

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- Obsolete design with single set of regulators supplying both feeders
- Entire bay no longer meets current clearances to energized parts.
- No Energy Management System (EMS) and both transformer and circuit recloser testing that indicates significant equipment deterioration is occurring.

Additionally, a portion of the Jepson Substation floods in the spring. On numerous occasions, the Jepson 13.8 kV station has been in the flooded area.

Furthermore, there is load at risk served from Jepson Substation, as described below:

- For loss of the Jepson 69/13.8kV transformer, on peak approximately 22MW of load on Aquidneck Island would remain un-served until the transformer is replaced or a mobile is installed, resulting in an estimated exposure of 550MWh.
- For loss of the 69kV line section between the Jepson and Navy substation, on peak approximately 21MW of load on Aquidneck Island would remain un-served, resulting in an estimated exposure of 500MWh.

3.3 **Project Description**

To address the identified concerns, the recommended plan is to:

- Rebuild the Jepson Substation on a National Grid owned site across the street in Middletown, designed and operated at 115 kV. The proposed configuration is a three bay breaker and half design initially with one 115/69 kV transformer, two 115/23 kV transformers and two 115/13.8 kV transformers. The ultimate layout will allow for two future 115 kV interconnections. The existing substation will be retired and all equipment removed.
- Rebuild and convert the 61 and 62 lines from 69 kV to 115 kV. Remove double circuit tower arrangement, which will eliminate a potential single point of supply failure.
- Remove the 115/69 kV transformation at the Dexter Substation and reconfigure the 115 kV to maintain supply to the existing 115/13.8 kV transformer.

3.4 Benefits Summary

The recommended plan will address the thermal, poor asset condition and load at risk concerns. It will also move the existing Jepson Substation out of the Zone A watershed Protection Overlay.

This plan results in more robust system performance and provides additional margin for future load growth, which is superior to other alternatives.

3.5 Business and Customer Issues

The success of this project is dependent upon full implementation of the projects associated with the distribution system reinforcements on Aquidneck Island. Besides addressing the concerns on the distribution system, these projects help address the

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thermal concerns observed on the transmission study. These associated projects are part of a separate sanction (USSC-14-262).

For the Company's treatment of additional customer issues, refer to Section 4.4.

3.6 Alternatives

Alternative 1: Reinforce the Dexter Substation, Reconductor the 61/62 lines and Rebuild the Jepson Substation at 69 kV

Dexter Substation:

Replace the existing 115/69 kV 56 MVA transformers with a new 100 MVA transformer paralleled with a 56 MVA transformer. Add a new 115/69 kV 56 MVA transformer paralleled with the existing 115/69 kV 100 MVA transformer. Re-arrange the 115 kV by installing a breaker and a half with two bays initially operated with four breakers.

Jepson Substation:

Rebuild the Jepson Substation on a National Grid owned site across the street in Middletown, designed and operated at 115 kV. The proposed configuration is a three and a half breaker design, two 115/23 kV transformers and two 115/13.8 kV transformers. The ultimate layout would allow for two future transmission interconnections. The existing substation would be retired and all equipment removed.

61/62 69 kV lines:

Reconductor the 69 kV 61 and 62 lines with 795 Aluminum Conductor Steel Supported (ACSS) conductor and replace the double circuit structures with 69 kV designed structures.

The limiting N-1 contingencies with this alternative are the breaker failures that would take out one of the 115 kV lines and the parallel transformers supplying the 61 line. This alternative only provides a load growth margin of 9% due to potential voltage collapse regardless of any upgrades south of the Jepson Substation. In order for this alternative to work beyond a 9% load growth margin, the 61/62 lines would then need to be reconstructed to operate at 115 kV and the transformation at the Dexter Substation would have to be removed or a new transmission supply would have to brought into the new Jepson Substation. This alternative does not compare favorably with the selected alternative (immediate conversion to 115kV operation), which provides a more robust supply system able to accommodate a larger amount of future load growth.

Compared to the chosen option, this alternative would require significant upgrades and additions at the Dexter Substation. This alternative moves the Jepson Substation out of the Zone A Watershed Protection Overlay, and it addresses the identified thermal issues similar to chosen plan, but it will not work beyond a load growth margin of 9%. Therefore, this option is not recommended.

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Alternative 2: Non-Wires Alternative

An evaluation was performed for a Non-Wires Alternative (NWA) that would involve adding sufficient demand-side resources (energy efficiency, demand response, and distributed generation) at strategic locations on Aquidneck Island to defer or eliminate the need for the Project.

The feasibility of this approach was assessed consistent with the criteria set forth in Section 2.1.D of the System Reliability Procurement Standards (SRP Standards), adopted by the Rhode Island Public Utilities Commission (RIPUC) on June 10, 2014.

Given that proposed upgrade of the Jepson Substation is driven by asset condition issues, this upgrade will fail criterion 1 of the SRP Standards. In addition, as a result of the possible thermal overloads at the Jepson Substation 69 kV ring bus, which cannot be addressed through load reductions less than 20 percent of the relevant peak load in the area (criterion 3 of the SRP Standards), the Company concluded that there is no NWA for the Jepson Substation portion of the Project.

The Company identified load reductions that would be required on Aquidneck Island to address the possible thermal overloads driving the need to upgrade the 61 and 62 lines. In making these calculations, the Company assumed the conductor clearance limitations on the 61 and 62 lines would be removed. Based on the load levels analyzed as part of the Study, the Company determined the following:

- In 2014, 23 MW of load reductions at the Gate II and Navy No. 1 Substations would be needed to address the possible N-1 contingency thermal overloads on the 61 and 62 lines. Peak load for this area is approximately 63 MW. The required load reduction therefore is approximately 36% of the relevant peak load.
- In 2022, 24 MW of load reductions at the Gate II, Navy and Newport substations would be needed to address the potential N-1 contingency thermal overloads on the 61 and 62 Lines. Peak load for this area was projected to be approximately 75 MW. The required load reduction is therefore approximately 32% of the relevant peak load.

A NWA for the 61 and 62 Line Upgrades clearly would fail criterion 3 of the SRP Standards. In addition, the construction start for the 61 and 62 Line Upgrades is less than 36 months called for in criterion (4) of the SRP Standards. Therefore, the Company concluded that an NWA for this portion of the project would not be feasible.

3.7 Safety, Environmental and Project Planning Issues

The Company will develop a health and safety plan and follow all National Grid safety and environmental rules.

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Safety Issues:

- Outages will be taken to allow for work to be performed. However, work must be performed in proximity to live equipment.
- A thorough safety brief shall be conducted and emphasized via daily tailboard meetings. Proper personal protective equipment (PPE) shall be worn at all times.
- Grounding and tagging all isolation points will be performed to ensure equipment is de-energized before work can begin. Safety observers will be used as appropriate.
- Transmission line work over and under distribution lines and road crossings is required. A PHA process will be put in place to identify and analyze the significance of a hazardous situation associated with an activity to aid management in making critical safety decisions.

Environmental Issues:

 In-situ soil pre-characterization will be performed prior to removal or disposal of any soil excavated during construction. Several environmental and construction requirements (e.g., dewatering, Soil contamination, road improvements, retaining wall construction, matting, environmental control) were not fully developed during the preliminary and final engineering stages of the project. In return the planning grade estimates did not capture all the project's expected cost. The contractor cost obtained via competitive bidding process for the same scope resulted in increase of the project cost. Also, contingent has been added for soil removal in the existing Jepson substation previously thought to be less significant.

Project Planning Issues:

- Outages are restricted to the spring and fall seasons. Construction sequence and planning is critical. Numerous outages will be required on the transmission and distribution system. Coordination of outages with other planned projects in the Southern Massachusetts and Rhode Island region will be critical to timely delivery of the project.
- Substation and transmission line work is contracted to different construction contractors. Coordination of the construction sequences and outages will be critical in order to avoid construction down time.
- A major public outreach effort is required for communities impacted by the transmission line, substation, and distribution line construction activities

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3.8 Execution Risk Appraisal

300	A STATE OF A	2	ា	pact	Sc	07 0	POINTS STA	KEN SCHOOL STOLEN	A CONTRACTOR OF TAXABLE PARTY	THE REAL PROPERTY OF THE PARTY OF THE PARTY.
Number	Detailed Description of Risk / Opportunity	Probabilit	Cost	Schedule	Cost	Schedule	Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
1	If National Grid cancels an outage that was included in the contractors schedule then National Grid is responsible for any achedule recovery costs directly attributable to the cancelled Outage (only if the outage was cancelled by National Grid and not by others)	3	3	4	9	12	Avoid	Schedule Outages during the Fall and Spring as far from peak demand seasone as possible - i.e. avoid scheduling on the shoutders of Spring and Fall seasons. Hold regular coordination meetings with other projects in the aree (i.e. SEMA RI project). Request missed outage contingency plans from finalist contractors during Q&A - modistribution of work through faxible/contingency scheduling to use available time and resources effectively.	N/A	Implement missed outage contigency plan as agreed with the contractor during the RFP event
2	Both Dexter and Jepson substations may have building and/or soil contaminants. Risks include unforeseen types or levels of contamination that would result in: a) greater re-mediation expense than budgeted; b) impacts to the EPC construction schedule: c) additional construction labor to work around contaminants; and/or asaist with segregation of contaminants; d) need for additional Hazmat Training for contractor personnel; e) possible stand-by time for EPC Contractor if crews are unable to access portions or all of work-site; 1) possible furlough of crews with de-mobilization and re- mobilization to ellow contaminants to be removed.	3	4	2	12	8	Accept	National Grid will test the soils and/or any material suspected to be containing hazardous material. Advise contractors of the potential hazardous material risks and ask for adaptive scheduling that will allow more faxibility in craw assignments while the approved environmental management company is removing contaminants.	NVA	If contaminated materials are found, National Grid will coordinate the abatment, transporation and disposel of hazardous waste in a timely manner so that it does not impact the contractors schedule. If the contamination is more than estimated, National Grid may also be responsible for additional effort on the contractors part to a) work around contaminants and b) cease work and possibly demobilize until contaminants are removed.
3	Delays dus to transmission line cutovers Into the depson Sub. National Grid's Transmission Line Services (TLS) will sebuild and upgrade the existing 60kV Lines 61 & 62 Into 115kV lines.	1	3	4			Avoid	Schedule re-occruing project meeting status between TLS and substation contractor to asses project resources and status	NA	NA
4	Relocation of unforseen utilities such as electric, gas, or water lines on the each of the project sites.	3	3	1	9		Accept	The contractor scope of work includes detailed surveying of all work sites that require excavaling. The purpose of the survey is to discover any unforseen subsurface conflicts prior to final engineering	NA	If evidence of a conflict/mammade obstruction does exist for which a no cost (In- scope) angineering design or work around solution cannot be developed, then National Grid expects the contractor to provide a one-time lump-sum adjustment (documented as an itemized fixed price change-orden) to remove or relocate the identified construction(e)

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3.9 Permitting

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
RIHPHC (RI Historic Preservation Office & Tribal Historic Preservation Consultation under Section 106 of the National Historic Preservation Act	Required	3 months	Complete	01/2016
RI Department of Environmental Management (RIDEM) Freshwater Wetlands Permit	Required	6 months	Complete	05/2017
RI Pollutant Discharge Elimination System (RIPDES) - Storm Water Discharge Associated with Construction Activities	Required	6 months	Complete	05/2017
Water Quality Certification Under Section 401 of the Clean Water Act	Required	6 months	Complete	05/2017
Army Corp of Engineers (ACOE) Section 404 Permit	Required	12 months	Complete	05/2017
RI Energy Facility Siting Board (EFSB) License	Required	12 months		06/2017
Local Flatiling &			Compiete	00/2017

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Zoning Boards		
Approval –		
Special Variances	7	

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

C041183 is 69% Pool Transmission Facility (PTF), C041184 is 100% PTF and C041185 is 40% PTF. CD00656 is a Distribution project.

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

3.10.2 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$12.221M. This is indicative only. Recovery is through the following: Regional Service (RNS) of \$6.936M; Local Network Service (LNS) of \$1.337M; and distribution rates of \$3.948M, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3.10.3 CIAC / Reimbursement

N/A

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3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

							Curren	t Planning H	lorizon		
		Destant			Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
Project Number	Project Tille	Estimate Level (%)	Spend (\$M)	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
	r		CapEx	6.553	6.631	3.150	2.285	0.000	0.000	0.000	18.619
C041183	lenson 115kV	Est LvI (e.g.	OpEx	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.008
0041105	Jepson make	+/- 10%)	Removal	0.014	0.003	0.251	0.625	0.000	0.000	0.000	0.893
			Total	6.575	6.634	3.401	2.910	0.000	0.000	0.000	19.520
			CapEx	5.773	19.720	3.152	0.665	0.000	0.000	0.000	29.310
C041184	Line 61/62 Comparion	Est LvI (e.g.	OpEx	0.000	0.000	0.021	0.020	0.000	0.000	0.000	0.041
0041104	Line 01/02 Conversion	+/- 10%)	Removal	0.000	3.713	0.712	0.171	0.000	0.000	0.000	4.596
			Total	5.773	23.433	3.885	0.856	0.000	0.000	0.000	33.947
			CapEx	2.169	0.714	0.965	0.734	0.000	0.000	0.000	4.582
C041185	Devter 115kV/ Station	Est Lvi (e.g.	OpEx	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
0041100	Cexter Flore Clarion	+/- 10%)	Removal	0.032	0.170	0.401	0.258	0.000	0.000	0.000	0.861
			Total	2.202	0.884	1.366	0.992	0.000	0.000	0.000	5.444
	r	r	CapEx	3.266	8.841	5.839	3.407	0.000	0.000	0.000	21.353
CD00656	Jenson Substation	Est LvI (e.g.	OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0000000	ocpatin o boatanon	+/- 10%)	Removal	0.001	0.000	0.119	0.475	0.000	0.000	0.000	0.595
			Total	3.267	8.841	5.958	3.882	0.000	0.000	0.000	21.948
			CapEx	17.761	35.906	13.106	7.091	0.000	0.000	0.000	73.864
	Total Project Sanction		OpEx	0.009	0.000	0.021	0.020	0.000	0.000	0.000	0.050
		Removal	0.047	3.886	1.483	1.529	0.000	0.000	0.000	6.945	
		Total	17.817	39.792	14.610	8.640	0.000	0.000	0.000	80.859	

Note that Project No. CD00656 was transferred from sanction paper USSC-14-262 into this paper when this paper was partially sanctioned on 1/22/2018 since the distribution component of the Jepson Substation will be implemented in parallel with the transmission component (Project No. C041183).

It is expected that the plant will be capitalized at the ready for load date, unless otherwise specified.

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan – Transmission

			Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	1.1	
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total	
CapEx	14.495	21.696	5.913	2.786	0.000	0.000	0.000	44.890	
OpEx	0.009	0.372	0.074	0.023	0.000	0.000	0.000	0.478	
Removal	0.046	1.279	0.637	0.547	0.000	0.000	0.000	2.509	
Total Cost in Bus. Plan	14.550	23.347	6.624	3.356	0.000	0.000	0.000	47.877	

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Variance - Transmission (Business Plan-Project Estimate)

		Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
CapEx	0.000	(5.369)	(1.375)	(0.918)	0.000	0.000	0.000	(7.662)
OpEx	0.000	0.372	0.074	0.023	0.000	0.000	0.000	0.469
Removal	0.000	(2.607)	(0.727)	(0.507)	0.000	0.000	0.000	(3.841)
Total Cost in Bus. Plan	0.000	(7.604)	(2.028)	(1.402)	0.000	0.000	0.000	(11.034)

Project Costs Per Business Plan – Distribution

		OT ETÉ	Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Үг. 3	Yr. 4	Yr. 5	Yr. 6 +		
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total	
CapEx	3.266	8.800	9.627	1.104	0.000	0.000	0.000	22.797	
OpEx	0.000	0.000	0.000	0.251	0.000	0.000	0.000	0.251	
Removal	0.001	0.000	0.000	0.251	0.000	0.000	0.000	0.252	
Total Cost in Bus. Plan	3.267	8.800	9.627	1.606	0.000	0.000	0.000	23.300	

Variance - Distribution (Business Plan-Project Estimate)

			Current Planning Horizon						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total	
CapEx	0.000	(0.041)	3.788	(2.303)	0.000	0.000	0.000	1.444	
OpEx	0.000	0.000	0.000	0.251	0.000	0.000	0.000	0.251	
Removal	0.000	0.000	(0.119)	(0.224)	0.000	0.000	0.000	(0.343)	
Total Cost in Bus. Plan	0.000	(0.041)	3.669	(2.276)	0.000	0.000	0.000	1.352	

3.11.3 Cost Assumptions

The costs presented in this sanction paper are based on the following assumptions:

- C041183 Cost is based on the Project Grade Estimate developed on 7/17/2018.
- C041184 Cost is based on the Project Grade Estimate developed on 9/18/2018.
- C041185 Cost is based on the Project Grade Estimate developed on 7/17/2018.
- CD00656 Cost is based on the Project Grade Estimate developed on 7/17/2018.

The accuracy level of estimate for each project is identified in table 3.11.1.

3.11.4 Net Present Value / Cost Benefit Analysis

This is not a NPV project.

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3.11.4.1 PV Summary Table

N/A

3.11.4.2 NPV Assumptions and Calculations

N/A

3.11.5 Additional Impacts

No additional impacts have been identified at this time.

3.12 Statements of Support

3.12.1 Supporters

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

Department	Individual	Responsibilities
Investment Planning	Glen DiConza Karen McColgan	Endorses relative to 5-year business plan or emergent work
Resource Planning	Mark Phillips	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Brian Hayduk Al Labarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Mark Larrabee Natasha Deschene Leonard G. Swanson	Endorses scope, design, conformance with design standards
Project Management	Dave Arthur Sara Migdal	Endorses resources, cost estimate, schedule
Electric Project Estimation	John Duffy	Endorses Cost Estimate

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3.12.2 Reviewers

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

Function	Individual
Finance	Felicia Midkiff
	Andrew Byrne
Regulatory	Ed Turieo
	Michael Artuso
Jurisdictional Delegate(s)	Patricia Easterly
	Terron Hill
Procurement	Diego Chevere
Control Centers (CC)	Michael Gallagher
	Philip Lavalle

4 Appendices

4.1 Sanction Request Breakdown by Project

- N/A
- 4.2 Other Appendices
- N/A
- 4.3 NPV Summary
- N/A

4.4 Customer Outreach Plan

National Grid has hired a consultant to develop and implement a comprehensive public outreach plan for all of proposed projects on Aquidneck Island. This outreach effort is part of a comprehensive and proactive public outreach process to establish and maintain communications with stakeholders (e.g., project abutters, residents, businesses, federal, state and local officials, and community groups).

This process will include opportunities for public education and communication regarding the need for the project, the permitting and siting processes, the detailed construction plans, the dissemination of construction updates and outreach prior to and during construction, and follow-up outreach after project completion. The process is designed to engage the community in a two-way dialogue, facilitate transparency throughout the project, foster public participation, and solicit feedback from stakeholders.

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Long: US	Sanction Paper		national grid
Title:	Aquidneck Island - Distribution Projects	Sanction Paper #	USSC-14-262 v4
Project #:	C015158, C024159, C028628, C054054, CD00649	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	8/26/2019
Author:	Hughes, Michael	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Hughes, Michael

Executive Summary

This paper requests Sanction of C015158, C024159, C028628, C054054, CD00649 in the amount of \$55.477M with a tolerance of +/-10% for the purposes of full implementation.

This sanction amount is \$55.477M broken down into:

\$47.819M Capex \$2.290M Opex \$5.368M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project has been evaluated for capital efficiencies, which are reflected in sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

This paper encompasses work at Newport Substation, associated distribution line reconductoring and conversions, Line 63 Reconfiguration, Jepson Substation Distribution Line reconfigurations. Additional upgrades are required to several area distribution lines to support the Aquidneck Island Reliability project. These upgrades are part of the overall Aquidneck Island Reliability Project (AIRP) which include additional transmission system improvements and retirements to several area substations and will resolve reliability concerns in southern Middletown and the Newport, RI area.

Background

The Newport Study Area encompasses the City of Newport and the towns of Middletown, Jamestown and Portsmouth (including Prudence Island). The area has approximately 34,000 customers with a peak load of 146MW. Aquidneck Island has most of the load and peaks at 135MW, Jamestown peaks at 10MW and Prudence Island at 1MW.

The area is supplied by two (2) 115kV lines (L14 & M13) which terminate on the northern half of Aquidneck Island at Dexter substation. From Dexter substation, two (2) 69 kV lines (Lines 61 & 62) continue south to supply Jepson substation. From Jepson substation, a single 69kV line (Line 63) continues south to supply the US Naval Base (Navy 1 substation) and Gate 2 Substation.

A single 115/13.8kV transformer at Dexter substation supplies the distribution load on the northern section of Aquidneck Island and a single 69/13.8kV transformer at Jepson supplies the middle section of Aquidneck Island. The remainder of the load is supplied by five (5) 23kV lines sourced from Jepson and Gate 2 substations which supply a 4.16kV distribution system with approximately 70MW of load. Twelve 23/4.16kV substations, ten located in the southern half of Aquidneck Island and two in Jamestown, supply this 4.16kV system.

Interruptions to the Newport electrical system resulting in significant customer outages occurred in the summer of 2003. One of the action items proposed by the Company to the Rhode Island Public Utilities Commission (RI PUC) was to conduct a planning study to identify and resolve electrical related issues in the area.

This area study was published in May 2007 and titled "The Newport Area Supply and Distribution Study". The Study identified an immediate need to build a new substation in the City of Newport to address both normal and contingency overloads. The study recommended construction of a new substation consisting of a single transformer supplying four (4) 13.8kV feeders. The new station was to be sourced from Line 63, a radial 69kV supply line that supplies the US Navy and Gate 2 substations.

Construction of a new substation was contingent on the Company acquiring a parcel of land in Newport for this substation. The Company encountered significant challenges in acquiring a suitable land parcel which has impacted the in-service date of this substation. To address critical loading concerns in the City of Newport, the 2008 Annual Plan recommended accelerating some of the distribution construction identified in the 2007 study and recommended redistributing the area load on the supply and distribution systems to optimize all available capacity. All of these recommended investments are complete.

In 2011, the Company purchased a parcel of land in the City of Newport suitable for a new substation. The Company successfully worked with the city to amend the zoning ordinance to allow a substation to be built via a special permit. The substation site was encumbered by a lease that was released by the tenant in 2014. The substation construction started in the fall 2018 with an in-service date of summer 2019.

Transmission Planning has completed a review of the Aquidneck Island transmission supply system. This review identified various n-1 thermal overloads and voltage issues throughout Aquidneck Island. The review identified a need to upgrade the 69kV lines from Dexter to Jepson substation to 115kV and the need to rebuild Jepson substation as an 115kV station. The review also identified various asset condition, safety, and environmental concerns with Jepson substation.

Jepson substation consists of a 69kV station, a 23kV station, a 13.8kV station, and a 4.16kV station. The station is located within the 100 year floodplain and directly adjacent to Sisson Pond and entirely within Zone A Watershed Protection Overlay. The station will be rebuilt on Company owned land in Middletown and outside the 100 year floodplain and the Zone A Watershed Protection Overlay. The existing station will be retired and all equipment removed.

The new 115kV station in Middletown will be part of a separate transmission sanction paper, which will include the upgrades of the 69kV lines to 115kV and modifications to Dexter substation. The new 115/23kV station and the new 115/13.8kV station is part of the sanction for the Distribution Line Project. The existing 23/4.16kV station will be retired and load converted to the 13.8kV system. This is the most economical approach as opposed to building a new 23/4.16kV station in Middletown.

Project Descriptions

To address reliability and asset condition issues, National Grid plans to:

- Rebuild Jepson substation at 115 kV on a National Grid owned site. The proposed configuration is a 3 bay breaker and half design initially with one 115/69 kV transformers, two 115/23 kV transformers and two 115/13.8 kV transformers. The ultimate layout would allow for two future 115 kV interconnections.
- Retire and remove the existing Jepson substation.
- Build a new 69/13.8kV substation in Newport on a parcel of land recently purchased for this purpose.

The substation will consist of a single transformer supplying four (4) 13.8kV feeders. A short 69kV tap from the existing Line 63 is required to supply this station.

• Retire the 4.16kV load at Gate II substation and upgrade the 23kV relays.

Summary of Benefits

The recommended plan is in-line with commitments made by the Company to state regulators. The plan is part of a comprehensive solution for Aquidneck Island and addresses all asset condition, safety, environmental, thermal, and reliability concerns at the least cost.

The plan introduces new 13.8kV capacity in the heart of the existing Newport 4.16kV system sourced from the 69kV supply system. No load will be left un-served for loss of a transformer or supply line resulting in a very reliable supply to the City of Newport and southern Middletown.

The plan provides capacity to supply load growth on Aquidneck Island well beyond the study horizon period at relatively low cost. Spare capacity will exist at Dexter, Jepson and Newport substations to supply future load growth.

The plan eliminates substation equipment in need of replacement or upgrades; eliminates the need to upgrade manhole and ductline infrastructure to reinforce the 23kV supply system; and eliminates the need for a second 69kV line into Newport.

Business and Customer Issues

The project follows up on action items proposed by the Company to the RIPUC to identify and resolve electrical related issues in the area as a result of interruptions to the Newport electrical system that resulted in significant customer outages in previous years. Failure to execute this project may impact commitment made by the Company to state regulators.

Alternat	ives
Number	Title
1	Construct a new 69kV underground transmission line from the new 115kV substation in Middletown to the new substation in Newport. A comprehensive routing analysis was completed for this supply line and this analysis concluded the line would have to be built underground on city streets.
2	Construct a new 115/13.8kV and a new 115/23kV substation in Middletown (Jepson Substation) on the site of the proposed 115kV station. The 115/13.8kV station would consist of a single transformer supplying metal-clad switchgear with (4) 13.8kV feeder positions. The 115/23kV station would consist of two (2) transformers supplying a metal-clad switchgear with (3) 23kV supply lines.
3	Construct a new 69/13.8kV substation in Newport on a parcel of land acquired for this purpose. The station would consist of two (2) transformers supplying a metal-clad switchgear with (8) 13.8kV feeder positions with five feeders being initially installed. The 115/23kV station would consist of two (2) transformers supplying a metal-clad switchgear with (3) 23kV supply lines.
	This alternative would retire North Aquidneck, South Aquidneck, Bailey Brook, and Vernon substations to relieve the highly loaded 23kV supply system and is part of a comprehensive solution to address asset condition, environmental, thermal, and reliability concerns at least cost. However upgrading the 23kV supply system is not an economical approach because most of the infrastructure consists of small paper and lead cable installed in 3-inch ductline. The small ductline is not suitable to house the required larger solid dielectric cables. Thus, upgrading this infrastructure is not recommended due to the significant cost impact.
	The costs of alternatives are calculated during the options evaluation stage. Once an approach is selected, costs of alternatives are not updated or re-estimated.

Related Projects, Scoring and Budget

Summary	of Projects
---------	-------------

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C015158	D-Sub	Newport Sub	15.058
C024159	D-Line	Newport 69kV Line 63	1.761
C028628	D-Line	Newport SubTrans & Dist	29.038
C054054	D-Sub	Jepson Sub	7.154
CD00649	D-Sub	Gate 2 Substation	2.466
		1	otal: 55.477

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C041183	Jepson 115kV Substation (T-Sub)	19.520
C041184	Line 61 / 62 Conversion (T-Line)	33.947
C041185	Dexter 115kV Substation (T-Sub)	5.444
CD00656	Jepson Substation	21.948
C054052	N Aquidneck Retirement	0.330
C058310	Harrison Sub Improvement	0.326
C058401	Merton Sub Improvement	0.387
C058404	Kingston Sub Improvements	0.595
C058407	S Aquidneck Retirement	0.342
CD00651	Bailey Brook Retirement	0.463
CD00652	Vernon Retirement	0.302
		83.604

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
11/26/2018	USSC	31.174M	49.361M	Partial Sanction	USSC-14-262	+/-25%
2/10/2016	USSC	13.937M	55.827M	Partial Sanction	USSC-14-262	-25% / +50%
12/10/2014	USSC	10.000M	53.586M	Partial Sanction	USSC-14-262	+/-25%
11/9/2011	USSC	15.000M	42.000M	Partial Sanction	USSC-14-262	-25% / +50%
12/3/2008	DCIG	15.500M	15.50M	Strategy		+/-25%
4/2/2008	DCIG	3.500M	12.30M	Strategy		+/-25%
10/11/2005		1.000M	N/A	Strategy		10%

Electronic DoA

There are various cost drivers included the following:

Scope changes included increase in cost for limited hours that street work could be performed after the award of contract. This limited hours from the estimated 10 hours per day to six hours per day. Changes to field conditions included the discovery of unusable soil after excavation back on the substation site and the street work. Also the discovery of contaminated soil present on site resulted in changes associated with appropriate disposal and handling efforts. During the execution of distribution line Work Requests some scope (due to field conditions) was not initially identified, which increased the Storms estimates from the original amount.

As this project developed and various partial sanctions were brought forward, changes to the potential project investment amount were identified. When the partial sanction was brought forward in February 2016 with a potential investment amount of \$55.827M, the paper included a potential investment of \$15.567M for the CD00656 project at Jepson Substation. When the next partial sanction paper was submitted in November 2018, it removed CD00656 from USSC-14-262 and shifted it to associated paper USSC-14-261. This was done to try and organize transmission projects and distribution projects in to separate papers under the Aquidneck Island Reliability Project portfolio. This resulted in a reduction to the total investment amount with an overall estimate of \$49.361M under USSC-14-262. The submittal of the sanction for full implementation in August 2019 showed a final adjustment to the overall investment amount, increasing it to \$55.477M. This investment amount included additional costs associated with more mature distribution line designs/estimates from STORMS, increased costs associated with additional construction risks identified by the team and actual contractor costs, including change orders identified for the cost drivers outlined above.

Key Milestones

Milestone	Date (Month / Year)	S
Partial Sanction	November, 2011	
Partial Sanction	December, 2014	
Partial Sanction	February, 2016	
Engineering Design Complete - EDC	May, 2018	
Construction Start	September, 2018	
Partial Sanction	November, 2018	
Project Sanction	August, 2019	
Construction Complete / Ready for Load - Newport	August, 2019	
Construction Complete - CC - D-Line Circuits	October, 2021	
Gate D - Approval to Progress to Closeout	March, 2022	
Gate E - Approval to Close Project	July, 2022	
Project Closure Sanction	October, 2022	

Next Planned Sanction

Date (Month/Year) October, 2022 Purpose of Sanction Review Closure

Category

Category O Mandatory

Policy-Driven

Reference to Mandate, Policy, NPV, or Other National Grid USA Internal Strategy Document Distribution Planning Criteria Strategy Issue 1 – O Justified NPV

Other

February 2011

Asset Management Risk Score: 41

PRIMARY RISK SCORE DRIVER

● Reliability ○ Environment ○ Health & Safety ○ Not Policy Driven

Complexity Level: 33

● High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Process Hazard Assessment

Current Planning Horizon

Distribution

	Current Planning Horizon							
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	
CapEx	24.909	11.537	9.654	2.819	0.000	0.000	0.000	48.919
OpEx	1.100	0.305	0.550	0.259	0.000	0.000	0.000	2.214
Removal	2.534	0.608	0.793	0.409	0.000	0.000	0.000	4.344
Total	28.543	12.450	10.997	3.487	0.000	0.000	0.000	55.477

Capex	24.909	11.537	9.654	2.819	0.000	0.000	0.000	48.919
Opex	1.100	0.305	0.550	0.259	0.000	0.000	0.000	2.214
Removal	2.534	0.608	0.793	0.409	0.000	0.000	0.000	4.344
Total	28.543	12.450	10.997	3.487	0.000	0.000	0.000	55.477

Resources, Operations, & Procurement

RESOURCE SOURCING

Engineering & design Resources to be provided	✓ Internal ✓ Contractor		Contractor
Construction/Implementation Resources to be provided	✓ Internal		Contractor
	RESOURCE DELI	VERY	
Availability of internal resources to delivery project:	◯ Red	◯ Amber	Green
Availability of external resources to delivery project:	○ Red	◯ Amber	Green
	OPERATIONAL IM	PACT	
Outage impact on network system	◯ Red	⊖ Amber	Green
	PROCUREMENT IN	ИРАСТ	
Procurement impact on	○ Red	◯ Amber	Green

6

network system:

Key	Issues
1	A major public outreach effort is ongoing for communities impacted by the substation construction and distribution line construction and conversion work.
2	Coordination with RI Department of Transportation (RIDOT) is ongoing to review compliance with the Americans with Disabilities Act (ADA) for new pole sets or pole replacements.
3	A traffic mitigation plan is needed for the distribution line construction and the proposed conversion work

Climate Change

Chimate Change				
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	○ Negative	
Impact on adaptability of network for future climate change:	O Neutral	Positive	○ Negative	

List References

N/A

Safety, Enviro	onmental and Projec	t Planning Issues		
Project Planning	Voltage conversions are 13.8kV in Newport and areas at 13.8kV. These winter months to avoid o	e required to upgrade the Middletown. Outages are conversions and outage conflicts with the City of N	e distribution system e required to energi s may have to occu Newport's tourist se	n from 4.16kV to ize the converted ur during off hours or eason.
Permitting				
Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date
RIDEM	Certain	6 Months	Complete	June, 2017
Newport Special Use Permit	Certain	7 Months	Complete	February, 2018
EFSB Permit - Jepson & Line 61/62	Certain	12 to 18 Months	Complete	March, 2017
Road opening Permit	Certain	3 Months	Complete	August, 2018
Building Permit	Certain	4 Months	Complete	September, 2018
Investment Re	ecovery and Custom	er Impact		

Investment Recovery

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

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$8.842M.

Execution Risk Appraisal

Risk Breakdown	Qualitative Assessment / Risk Response Strategy						
Structure Category	Risk ID + Title	Risk ID + IF Statement THEN Statement		Risk Resp	Score		
3. Engineering	R1 - Limited Outage availability for Line 63 Construction	If outages can not be obtained as needed	Then construction will be delayed.	Reduce	Outages will be scheduled one year in advance and an outage coordination consultant will be brought onto project team. Schedule construction to finish during off	0	
11. Construction	R2 - Construction delays due to weather or damage from major storms	If National Grid is listed as the provider for certain equipment or materials for the project, and it is delivered late or defective, beyond the mutually agreed delivery date in the project schedule,	then National Grid is responsible for any schedule impact	Accept	Create slack in the schedule.	6	
2. Public Local Government	R3 - Limited opportunities for distribution system outages for cutovers during construction	As outage needs are identified they will be planned well in advance	Then outages can be managed by an outside consultant and worked into the overall plan of construction.	Reduce	Work with Engineering to determine best options.	9	
	2 0		1	1		84. St	

ſ	R4 -				1	
11. Construction	delays due to other utilities not transferring lines with in the project schedule.	If Construction delays due to other utilities not transferring lines with in the project schedule.	Planning well in advance to avoid conflicts.	Avoid	Coordinate with Verizon and Design.	12
11. Construction	R5 - General public opposition to the project and damage to property during construction.	If during planning stage there is opposition or during construction unavoidable damage is caused,	Then remediation will be implemented. A community relations consultant will be hired to help mitigate.	Reduce	Coordinate with Public Relations consultant (RDW) to inform public of progress and plans.	12
3. Engineering	R6 - FAA may require certain mitigation measures for construction near Newport Airport.	Submit requirements of each pole to be installed early	Obtain approval and adjust as needed.	Accept	Submit pole info as each pole is designed early in the design process.	0
11. Construction	R7 - Design of the distribution and subtransmiss ion work is on well travelled roadways	Develop Traffic control plans as needed then implement approved plans	0	Accept	Develop traffic control plan that is acceptable to DOT and implement.	9
3. Engineering	R8 - Poles appear to approach private property	Budget and time to be allocated to obtain the proper approvals.	Then implement design as needed.	Accept	Budget and time to be allocated to obtain proper rights and easements as required.	0
11. Construction	R9 - Steel Pole installation at Navy Base	Early coordination with the Navy Base will be needed.	Then implement design and construction to accommodate the Navy	Accept	Early coordination with the Navy to mitigate issues.	0
	R10 - Approval	Early coordination	Then implement		Early coordination	

11. Construction	from Navy for work at Navy base	with the Navy Base will be needed.	construction to accommodate the Navy	Accept	with the Navy to mitigate issues.	25
11. Construction	R11 - Limited Construction windows for work in Newport and Middleton	Early coordination with the towns will be needed.	Then implement design and construction to accommodate the towns.	Accept	Coordination with construction and schedule traffic management plan as needed in advance of construction activities.	8

Business Plan			
Business Plan Name & Period	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY20-24 NE Distribution Capital Plan	Yes O No	● Over ◯ Under ◯ N/A	(3.183)
If Cost > Approved			

if costs > 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.

Drivers

The primary driver of this project is reliability. Aquidneck Island is supplied by a highly utilized supply and distribution system. It is increasingly challenging to supply load in southern Middletown and in the City of Newport. The Jepson 13.8kV system has been utilized to provide relief to the 23kV supply system and the 4.16kV distribution system. However, this 13.8kV system has been extended to its limits.

The 23kV supply system is a mixture of overhead and underground construction in Middletown and predominantly underground construction in Newport. The underground system consists mostly of paper and lead cable installed in 3-inch ducts. The 3-inch ducts are not suitable to house required solid dielectric cables, making upgrades to the 23kV supply system challenging and costly.

For loss of the Dexter 115/13.8kV transformer on peak approximately 22MW of load on Aquidneck Island would remain un-served until the transformer is replaced or a mobile is installed resulting in an estimated exposure of 540MWh.

For loss of the Jepson 69/13.8kV transformer on peak approximately 22MW of load on Aquidneck Island would remain un-served until the transformer is replaced or a mobile is installed resulting in an estimated exposure of 550MWh.

For loss of the 69kV line section between Jepson and the Navy substation on peak approximately 21MW of load on Aquidneck Island would remain un-served resulting in an estimated exposure of 500MWh.

A number of 23/4.16kV stations in the area have asset condition, safety, environmental, and thermal concerns that need to be addressed. The recommendation is to retire these stations. This recommendation is part of a comprehensive solution developed for Aquidneck Island to address all concerns at least cost.

Cost Summary Table

Distribution								
Project Number C015158	Project Title	Newport Sub)				Project Estimate Level	+/- 10%
	Duine Ver	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	5 Yr 6	T -4-4
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotai
Capex	9.384	5.138	0.000	0.000	0.000	0.000	0.000	14.522
Орех	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.019
Removal	0.364	0.153	0.000	0.000	0.000	0.000	0.000	0.517
Total	9.767	5.291	0.000	0.000	0.000	0.000	0.000	15.058
Project Number	Project Title	Newport 69k	V Line 63				Project Estimate Level	+/- 10%
	Duio y Vro	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Tetel
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	Iotal
Capex	1.158	0.390	0.128	0.000	0.000	0.000	0.000	1.676
Opex	0.012	0.002	0.000	0.000	0.000	0.000	0.000	0.014
Removal	0.031	0.008	0.032	0.000	0.000	0.000	0.000	0.071
Total	1.201	0.400	0.160	0.000	0.000	0.000	0.000	1.761
Project Number	Project Title	Newport SubTrans & Dist			Project Estimate Level	+/- 10%		
	Duite a Marc	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	12.013	3.672	5.843	2.345	0.000	0.000	0.000	23.873
Opex	1.017	0.302	0.493	0.200	0.000	0.000	0.000	2.012
Removal	1.657	0.442	0.704	0.350	0.000	0.000	0.000	3.153
Total	14.687	4.416	7.040	2.895	0.000	0.000	0.000	29.038
Project Number	Project Title	Jepson Sub					Project Estimate Level	+/- 10%
Spond	Drior Vro	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	—Yr 6	Total
	FIUL 115	2020	2021	2022	2023	2024	2025	Totar
Capex	0.376	1.883	3.683	0.474	0.000	0.000	0.000	6.416
Opex	0.028	0.001	0.057	0.059	0.000	0.000	0.000	0.145
Removal	0.476	0.001	0.057	0.059	0.000	0.000	0.000	0.593
Total	0.880	1.885	3.797	0.592	0.000	0.000	0.000	7.154
Project Number CD00649	Project Title	Gate 2 Subst	ation				Project Estimate Level	+/-10%
Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total

Capex	1.978	0.454	0.000	0.000	0.000	0.000	0.000	2.432
Opex	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.024
Removal	0.006	0.004	0.000	0.000	0.000	0.000	0.000	0.010
Total	2.008	0.458	0.000	0.000	0.000	0.000	0.000	2.466
Total Project Sanctio	n							
Capex	24.909	11.537	9.654	2.819	0.000	0.000	0.000	48.919
Opex	1.100	0.305	0.550	0.259	0.000	0.000	0.000	2.214
Removal	2.534	0.608	0.793	0.409	0.000	0.000	0.000	4.344
Total	28.543	12.450	10.997	3.487	0.000	0.000	0.000	55.477
Project Costs pe	er Business	Plan				•		
Distribution			_					
\$M		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
	FIIOT TTS	2020	2021	2022	2023	2024	2025	
Capex	24.909	14.055	7.160	0.000	0.000	0.000	0.000	46.124
Орех	1.100	0.559	0.329	0.000	0.000	0.000	0.000	1.988
Removal	2.534	0.923	0.725	0.000	0.000	0.000	0.000	4.182
Total Cost in Bus. Plan	28.543	15.537	8.214	0.000	0.000	0.000	0.000	52.294
Variance								
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	Total
Capex	0.000	2.518	(2.494)	(2.819)	0.000	0.000	0.000	(2.795)
Opex	0.000	0.254	(0.221)	(0.259)	0.000	0.000	0.000	(0.226)
Removal	0.000	0.315	(0.068)	(0.409)	0.000	0.000	0.000	(0.162)
Total Variance	0.000	3.087	(2.783)	(3.487)	0.000	0.000	0.000	(3.183)

Cost Assumptions

Costs are from Project cost estimates and work request estimates.

Net Present Value / Cost Benefit Analysis

N/A

NPV Assumptions & Calculations

N/A

Additional Impacts

Some cost impacts are associated with unplanned contaminated soil removal and unanticipated unusable soil

as back fill for the distribution street trenches. Some additional cost impacts are from scope changes and additional costs are from unanticipated field conditions encountered during construction.

Statement of Support		
Department	Individual	Responsibilities
Project Management	Arthur, David; Migdal, Sara A.;	Endorses resources, cost estimate and schedule
Electric Project Estimation	Lutz, Sara E.;	Endorses Cost Estimate
Engineering and Design	Hellmuth, Kevin; Larrabee, Mark A.;	Endorses scope, design, conformance with design standards
Investment Planning	Diconza, Glen L.;	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark A.; Wyman, Anne;	Endorses construction resources, cost estimate, schedule, and portfolio alignmen
Asset Management / Planning	Labarre, Alan T.;	Endorses scope, estimate, and schedule with company's goals, strategies, and objectives.
Reviewers		
Function	Individual	
Finance	Bostic, Christina	;
Regulatory	Azarcon, Caroly	n;
Jurisdictional Delegate(s)	Easterly, Patricia	1;
Procurement	Chevere, Diego	;
Control Centers (CC)	Gallagher. Mich	ael W. :

Decisions

The Senior Executive Sanctioning Committee (SESC) approved this paper at a meeting held on 08/26/2019: (a) APPROVE the investment of \$55.477M and a tolerance of +/-10% for full implementation.

(b) NOTED that Hughes, Michael has the approved financial delegation

Signature _ Date

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

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-7 Page 15 of 15



This document has been reviewed for Critical Energy/ Electric Infrastructure Information (CEII). 08/09/19

Long: US	Sanction Paper		national grid
Title:	New Southeast Substation	Sanction Paper #	: USSC-15-109v2
Project #:	C053657, C053658, C055683, C055563, C056343, C055583 and C061766	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric and Gas Co.	Date of Request:	7/22/2019
Author:	Maximovich, George	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Gemmell, Brian VP Trnsmsn Asset Mgmt Plan & Del
Utility Service:	Electricity T&D	Project Manager:	Maximovich George

Executive Summary

This paper requests Sanction of C053657, C053658, C055683, C055563, C056343, C055583 and C061766 in the amount of \$38.182M with a tolerance of +/-10% for the purposes of full implementation.

This sanction amount is \$38.182M broken down into:

\$33.642M Capex \$0.781M Opex \$3.759M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project is in final design and/or has secured the necessary agency approvals to proceed and is ready to be released for construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project will be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

This project addresses safety, asset condition, and reliability concerns associated with the Pawtucket No 1 indoor station on the four story brick building located on Tidewater Street on the west bank of the Seekonk River in the City of Pawtucket. Pawtucket No 1 supplies approximately 36,000 customers with a peak electrical demand of 109 MW. The project includes the installation of a new eight feeder 115/13.8 kV metal clad substation with two transformers and breaker and a half design on a site adjacent to the transmission right of way on York Avenue in the City of Pawtucket; the supply to the proposed station from the existing 115 kV lines crossing the site, X-3 and T-7; the rearrangement of the 13.8kV distribution system in the City of Pawtucket to transfer approximately 55 MVA of load from Pawtucket No 1 to the new substation; the construction of a new control house at the Pawtucket No 1 substation site to house the control equipment for the 115 kV station presently located in the indoor station building; the upgrade of 115 kV line protection for P-11 at Valley station; and the decommission and removal of the indoor station and the demolition of the four story brick building at Pawtucket No 1 substation.

Background

Pawtucket No. 1 station is located on Tidewater Street on the west bank of the Seekonk River in the City of Pawtucket. It consists of a four story brick building constructed in 1907 and an outdoor switchyard. It has

nineteen 13.8 kV distribution circuits that supply approximately 36,000 customers with a peak electrical demand of 109 MW. Three feeders supply a network in downtown Pawtucket with approximately 3 MW of load.

The brick building was part of a former power plant that was decommissioned in 1975 and is less than 25% utilized. This building houses indoor distribution switchgear and other electrical equipment. The electrical equipment still in service within the building is associated with both the indoor switchgear and the outdoor yard. Some electrical equipment associated with the former power plant has been abandoned in place.

The indoor substation was designed based on the standards at the time it was built. Operating and working in this station now requires special procedures and added safeguards to be followed. Additionally, it is challenging to find replacement parts for the equipment in the station since parts have to be custom made or salvaged from facilities that have been removed from service. The building layout is such that it precludes the implementation of modern installation standards in order to replace original equipment.

The breakers in the indoor substation consist of General Electric "H"-type circuit breakers ranging in age from 40 to 94 years old. The 1920 breakers are live-tank, oil-filled circuit breakers which are obsolete due to a lack of spare parts, slow operation, and the potential for failure. The 1970 breakers have a history of poor reliability especially during switching operations with three documented failures of the breaker motor and two documented failures of the trip/close coils.

A contingency at Pawtucket No.1 involving loss of a transformer or main bus would require significant load to be transferred to adjacent stations utilizing feeder ties. Pawtucket No. 1 only has weak ties to Valley St. station, therefore a significant amount of Pawtucket No. 1 load cannot be picked up during these contingencies. The projected bus loading and projected un-served load at Pawtucket No 1 for each bus section is shown in the table below:

Cubatatian	ubstation Tract ID	Rating (MVA)		2019 Peak Load		2019 Projected Un-Served Load Under Contingency	
Substation Trant. ID.	SN	SE	MW	% SN	MW	MWh Exposure	
Pawtucket No.1	T71	47.8	47.8	43.9	92%	17.3	445
Pawtucket No.1	T73	47.8	47.8	35.0	73%	4.3	200
Pawtucket No.1	T74	47.8	47.8	29.8	62%	23.7	576

National Grid's Distribution Planning Criteria recommends mitigating any un-served load exposure in excess of 10 MW or 240 MWh. The loss of the T71 transformer, the T74 transformer, or a bus section at Pawtucket No. 1 would result in outage exposures in excess of those recommended by distribution planning criteria.

Project Descriptions

Construct a new 115/13.8 kV metal clad substation, breaker and a half design, adjacent to the transmission right of way on York Avenue. The new station designated as Dunnell Park will have an ultimate layout for eight distribution circuits with two 115/13.8 kV 33/44/55 MVA LTC transformers and two station capacitor banks. The station will be supplied from two 115 kV transmission lines on the right of way, X-3 and T-7.

Rearrange the 13.8kV distribution system in the City of Pawtucket to transfer approximately 55 MVA of load from Pawtucket No 1 to Dunnell Park substation. The remaining Pawtucket No. 1 load will be rearranged and supplied from switchgear sections 73 and 74. The new station will supply the bulk of the load east of the Seekonk River while Pawtucket No. 1 will supply most of the load west of the Seekonk River.

Install a new control house at Pawtucket No. 1 to house the control equipment for the 115 kV station that is presently housed in the indoor substation building. EMS functionality will be expanded to provide remote status, control and monitoring of all switching devices, transformers, voltage regulation and battery systems. Alarming will include transformer low oil; transformer, circuit breaker, relay and battery system trouble. Monitoring will include voltage and current for all three phases and neutral, MW, MVAR, and MVA. Control will include trip and close on all switching devices; reclose on/off on circuit breakers; ground relay control on feeders for switching, and control of voltage regulation.

Upgrade the 115 kV line protection for P-11 at Valley substation.

Remove the indoor station and all electrical equipment from the four story brick building, demolish the building and provide final grading and arrangement on this area at Pawtucket No. 1.

Summary of Benefits

This project addresses safety, asset condition, and reliability concerns associated with the Pawtucket No 1 indoor station. This work benefits all the customers in the City of Pawtucket and the surrounding areas.

Business and Customer Issues

There are no significant business or customer issues beyond what has been described elsewhere in this paper.

Alterna	tives
Number	Title
1	Install a new Metal Clad 115/13.8 kV Station at the Pawtucket No 1 This alternative proposes development of a new 115/13.8 kV metal clad substation, breaker and a half design, in the Pawtucket No. 1 yard. The station would be constructed with two 115/13.8 kV 33/44/55 MVA LTC transformers, eight distribution circuits and two station capacitor banks. After installation of the new switchgear, load at Pawtucket No 1 will be rearranged to allow for the elimination of the 71 bus.
	There are presently eight circuits on section 71, including three network feeders. The three network circuits are currently dedicated feeders with approximately 3.0 MVA of peak load. It is proposed to supply these network circuits from section 73. The remaining circuits will be resupplied from the new station. Three circuits in section 73 will be resupplied from the new station to free up feeders for the three network circuits. This work will reduce loading on section 73 below the rating of the 2,000 Amp bus.
	The distribution infrastructure from Pawtucket No 1 is all underground. Therefore, new manhole and ductline systems will be built from the new station out to city streets and intercept the existing underground system when practical. New underground feeder getaways will be installed from the new station and will intercept the existing cables or be routed directly to the riser poles.
	The existing manhole and ductline infrastructure predominantly consists of 3-inch conduits

installed on city streets. Although the age of this infrastructure is unknown, based on the age of the indoor substation it would be reasonable to assume that the majority of this infrastructure dates back to the early 1900's. The 3-inch duct diameter is not suitable for routing of the proposed solid dielectric cables required for the new feeders. New 5 inch diameter duct is required for the new cable. This plan would install a new manhole and duct system necessary to bypass the limiting 3-inch infrastructure.

The conceptual grade estimate for this plan was \$30.600M of which \$26.100M was capital, \$0.400M was O&M and \$4.100M was removal and the conceptual grade estimate for the recommended plan was \$23.000M of which \$18.100M was capital, \$0.300M was O&M and \$4.600M was removal. This alternative was estimated to be 33.0% more expensive than the recommended plan.

2 Non-Wires Alternative

The primary driver for this project is to address the asset condition, including the safety and reliability concerns with the Pawtucket No 1 indoor substation. Non Wires Alternatives are not applicable for this project. New supply and distribution infrastructure is the only reasonable alternative to address the asset conditions.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C053657	D-Sub	Southeast Sub (D -Sub)	10.766
C053658	D-Line	Southeast Sub (D-Line)	10.618
C055683	D-Sub	Pawtucket No 1 (D-Sub)	4.056
		Total:	25.440
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C055563	T-Line	Southeast Sub (T-Line)	1.305
C056343	T-Sub	Southeast Sub (T -Sub)	3.094
C055583	T-Sub	Pawtucket No 1 (T-Sub)	7.370
C061766	T-Sub	Valley Sub P11 Upgrades	0.973

Associated Projects					
Project Number	Project Title	Estimate Amount (\$M)			
C053249	Robinson Ave Control House Upgrades	9.087			
		9.087			

Total:

12.742

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
5/13/2015	USSC	5.600	23.000	Partial Sanction	USSC-15-109	-25%/+50%

The variance between the initial potential project investment and this sanction was caused by:

1. Addition of new 115kV equipment on Pawfucket No. 1 and on the new Dunnell Park substation as result of the review of protection requirements for the project. The updated scope includes the installation of 115kV CCVT's, Line Traps, Line Tuners and related relaying and civil & structural work on X-3 and T-7 transmission line terminals on both substations (\$4.485M).

2. Additional civil and environmental scope of work on Pawtucket No. 1 based on the final location of the new control house inside the 100 year floodplain and the alignment with Tidewater Environmental Project requirements (\$4.865M).

3. Underestimation on the scope and level of effort on the distribution line work for the new feeders and distribution circuits rearrangement on the City of Pawtucket (\$4.517M).

4. Increase on equipment market value and other miscellaneous additional costs (\$1.315M).

Milestone	Date (Month / Year)
Partial Sanction	May, 2015
Project Sanction	July, 2019
Engineering Design Complete - EDC	August, 2019
Gate C1 - Approval to Progress to Field Execution	September, 2019
Construction Start	October, 2019
Ready for Load / Use	May, 2021
Construction Complete - CC	October, 2021
Gate D - Approval to Progress to Closeout	December, 2021
Gate E - Approval to Close Project	September, 2022
Project Closure Sanction	October, 2022
Next Planned Sanction	
Date (Month/Year)	Purpose of Sanction Review
October, 2022	Closure

Category

Category Mandatory Policy-Driven Justified NPV

Other

Reference to Mandate, Policy, NPV, or Other

The investment is policy driven. The Asset Management & Engineering Business Management Standard (BMS 04) sets performance requirements for the "maintenance, repair, replacement, operations and retirement of assets".

Asset Management Risk Score: 44

PRIMARY RISK SCORE DRIVER

Complexity Level: 25

● High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project:
Yes
No

Current Planning Horizon

Distribution								
				Current	Planning Ho	rizon		
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	
CapEx	2.560	6.315	10.083	2.089	0.006	0.000	0.000	21.053
OpEx	0.006	0.111	0.449	0.108	0.000	0.000	0.000	0.674
Removal	0.065	0.153	1.542	1.953	0.000	0.000	0.000	3.713
Total	2.631	6.579	12.074	4.150	0.006	0.000	0.000	25.440
Transmission								
				Current I	Planning Ho	rizon		
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	
CapEx	1.185	2.455	8.610	0.335	0.004	0.000	0.000	12.589
OpEx	0.003	0.012	0.088	0.004	0.000	0.000	0.000	0.107
Removal	0.000	0.006	0.032	0.008	0.000	0.000	0.000	0.046
Total	1.188	2.473	8.730	0.347	0.004	0.000	0.000	12.742
Capex	3 745	8 770	18 693	2 424	0.010	0.000	0.000	33 642
Opex	0,009	0.123	0.537	0 112	0.000	0.000	0.000	0.781
Removal	0.065	0.120	1 574	1.961	0.000	0.000	0.000	3 759
Total	3 819	9.052	20.804	4 497	0.000	0.000	0.000	38 182
			20.001	1.101	0.010	0.000	0.000	00.102
Resources, O	perations, & i	Procurer	nent					
		RE	SOURCE	SOURCIN	G			
Engineering Resources to	g & design be provided		✓ International Action 1000 (1998)	ernal		√ C	ontractor	
Construction/Ir Resources to	plementation be provided		🗸 Inte	ernal	Contractor			
		RE	SOURCE	DELIVER	Y			
Availability resources to de	of internal elivery project:		◯ Red		⊖ Amber		Greener	en
Availability resources to de	of external elivery project:		O Red		O Amber		• Gre	en
		OP	ERATION		т			
Outage impac syst	t on network		⊖ Red				Greener	en
		PRO	CUREME		СТ			
Procuremen network	t impact on system:		⊖ Red		⊖ Amber		Greener	en

Key Issues

1

Permitting is required for the proposed new Dunnell Park substation.

2	Environmental, engineering design, permitting and construction coordination is required with
	Tidewater Environmental Project at Pawtucket No 1 substation.

3 Outages required on X-3, T-7 and P-11 transmission lines during construction activities on the new Dunnell Park substation and on Pawtucket No 1 and Valley substations will be coordinated with other projects in the same area.

Climate Change			
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	O Negative
Impact on adaptability of network for future climate change:	O Neutral	Positive	○ Negative

List References

- 1 E18-0203, E18-0057, E18-0056, E18-0055, E18-0054, E18-0053, E-18-0052 4.4 Estimates, dated April 2019
- 2 Distribution Annual Plan 2019 2024
- 3 Pawtucket Area Study December 2014
- 4 Conceptual Engineering Report and Estimates May 2014

Safety, Envir	onmental and Projec	t Planning Issues					
Safety	A health and safety plan will be developed for all project areas and all National Grid safety and environmental rules will be followed. During the development of the Transmission and Distribution Line works the Process Hazard Analysis (PHA) will be considered.						
Environmental	Environmental, engineering design, permitting and construction activities will continue in coordination with Tidewater Environmental Project at Pawtucket No 1 substation.						
Droject	The Permitting & Licensing and Outreach team will continue working with Project Management to address any permitting, environmental or community issues.						
Planning	Management to address	s any permitting, environ	mental or communi	ty issues.			
Planning	Management to address	s any permitting, environ	mental or communi	ty issues.			
Planning Permitting Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date			
Planning Permitting Permit Name EFSB Notice of Intent	Permitting & Licens Management to address Probability Required Certain	Duration to Acquire Permit 3 months	Status In Progress	Estimated Completion Date September, 2019			

Rhode Island Coastal Resources Management Council (CRMC) Maintenance Assent Permit	Certain	3 months	In Progress	September, 2019
Local Soil Erosion and Sediment Control (SESC) Permit	Certain	3 months	In Progress	September, 2019
Rhode Island Department of Environmental Management (RIDEM) Oil and Hazardous	Certain	1 month	In Progress	August, 2019
Pawtucket Riverfront Commission – Development Plan Review	Certain	2 months	In Progress	September, 2019
Pawtucket Zoning Board of Appeals – Special use permit	Certain	3 months	In Progress	September, 2019
Pawtucket Planning Board Staff – Development Plan Review	Certain	1 month	In Progress	August, 2019
Pawtucket Street Opening Permit	Certain	3 months	In Progress	September, 2019
Building Permit	Certain	1 month	In Progress	October, 2019

Investment Recovery and Customer Impact

Investment Recovery

The transmission project split is 65.5% PTF and 34.5% Non-PTF. The PTF-related plant will be recovered through New England Power's Regional Network Service ("RNS") rates, whereas the Non-PTF plant will be recovered through the Local Network Service ("LNS") rates.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$6.220M.

Execution Risk Appraisal								
Dick Prockdown		Qualitative Assess	ment / Risk Response	e Strateg	y	Diek		
Structure Category	Risk ID + Title	IF Statement	THEN Statement	Ris	Response Strategy	Score		
10. Line Outages	R1 - Outage Planning	If an outage is not approved	Then there will be schedule delay and extra expenses incurred	Accept	Reschedule the outage based on availability	4		
10. Line Outages	R2 - Missed Outage	If an outage is cancelled or missed during construction	Then there will be schedule delay and construction cost impact due to mob/demobs, stanby condition, equipment rental	Accept	Reschedule the outage based on availability	9		
5. Environmental	R3 - Hazardous Material at Dunnell Park Property	IF unknown Hazardous Material or contaminated soils located during excavation of structures and utilities	THEN additional costs will be incurred related to proper handling , removal and disposal	Accept	No action	4		
7. Procurement Contracts	R4 - Tarriff	IF a government tariff is passed	THEN the cost of equipment will increase and may be a delay in material delivery	Accept	No action	4		
11. Construction	R5 - Unknown Existing Conditions	IF unanticipated facilities or conditions are encountered	THEN additional engineering will be required and the construction schedule will be delayed	Reduce	Verify accurate and current as- built drawings	6		
4. Permitting	R6 - Noise and visual impact mitigation	IF residents oppose noise/dust associated with demolition of the four story brick building at Pawtucket No 1	THEN additional permitting will be required, work hours will be restricted, and the schedule will be delayed.	Accept	No action	4		
11. Construction	R7 - Equipment/M aterial Damage	IF equipment and/or material and new control house & switchgear are damaged due to congestion of the operational yard or building location	THEN additional equipment/material will need to be procured or repairs will be made and the schedule will be delayed.	Reduce	Construction methods and sequencing	4		

Business Plan							
Business Plan Name & Period	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)				
NE Distribution FY20-24 Capital Plan	● Yes 〇 No	● Over ◯ Under ◯ N/A	(7.348)				
NE Transmission FY20- 24 Capital Plan	● Yes 〇 No	● Over ◯ Under ◯ N/A	(8.537)				

if costs > approved Business Plan how will this be funded?

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

Drivers

This project is required to address safety, asset condition, and reliability concerns with the Pawtucket No.1 indoor substation. This project also addresses load at risk that exceeds the distribution planning criteria; feeder loading that exceeds summer normal ratings; and loading that exceeds the rated capacity of the station bus.

Cost Summary 1	lable							
Distribution								
Project Number C053657	Project Title	Southeast	Sub (D -Sul))		F E L	Project Estimate Level	10%
Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	2.101	4.150	3.713	0.718	0.002	0.000	0.000	10.684
Opex	0.003	0.000	0.049	0.030	0.000	0.000	0.000	0.082
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	2.104	4.150	3.762	0.748	0.002	0.000	0.000	10.766
Project Number	Project Title	Southeast	Sub (D-Line	:)		F E L	Project Estimate Level	10%
Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	0.330	2.100	6.270	1.107	0.002	0.000	0.000	9.809
Opex	0.003	0.111	0.400	0.078	0.000	0.000	0.000	0.592
Removal	0.000	0.108	0.092	0.017	0.000	0.000	0.000	0.217
Total	0.333	2.319	6.762	1.202	0.002	0.000	0.000	10.618

Project Number C055683	Project P Title	awtucket N	No 1 (D-Sub)			Pi E: Le	roject stimate evel	10%
Onend		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	T 1 1
Spend	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.129	0.065	0.100	0.264	0.002	0.000	0.000	0.560
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.065	0.045	1.450	1.936	0.000	0.000	0.000	3.496
Total	0.194	0.110	1.550	2.200	0.002	0.000	0.000	4.056

Transmission

Project Number C055563	Project Title	Southeast	Sub (T-Line)				Project Estimate Level	10%
Speed	Deine Ven	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	i Yr6	T-4-1
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.237	0.563	0.425	0.029	0.001	0.000	0.000	1.255
Opex	0.000	0.007	0.007	0.000	0.000	0.000	0.000	0.014
Removal	0.000	0.006	0.030	0.000	0.000	0.000	0.000	0.036
Total	0.237	0.576	0.462	0.029	0.001	0.000	0.000	1.305
Project Number C056343	Project Title	Southeast	Sub (T -Sub))			Project Estimate Level	10%
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	T-4-1
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Сарех	0.252	0.867	1.910	0.064	0.001	0.000	0.000	3.094
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	0.252	0.867	1.910	0.064	0.001	0.000	0.000	3.094
Project Number	Project Title	Pawtucket	No 1 (T-Sub)			Project Estimate Level	10%
	Drior Vra	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Tatal
	PHOLITIS	2020	2021	2022	2023	2024	2025	Total
Capex	0.554	0.845	5.645	0.232	0.002	0.000	0.000	7.278
Орех	0.003	0.005	0.078	0.004	0.000	0.000	0.000	0.090
Removal	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.002
Total	0.557	0.850	5.725	0.236	0.002	0.000	0.000	7.370
Project Number C061766	Project Title	Valley Sub	P11 Upgrad	es			Project Estimate Level	10%
Spend	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	0.142	0.180	0.630	0.010	0.000	0.000	0.000	0.962

Opex	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.003
Removal	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.008
Total	0.142	0.180	0.633	0.018	0.000	0.000	0.000	0.973
Total Project Sanctic	on							
Capex	3.745	8.770	18.693	2.424	0.010	0.000	0.000	33.642
Opex	0.009	0.123	0.537	0.112	0.000	0.000	0.000	0.781
Removal	0.065	0.159	1.574	1.961	0.000	0.000	0.000	3.759
Total	3.819	9.052	20.804	4.497	0.010	0.000	0.000	38.182
Project Costs p	er Business	s Plan						
Distribution								
\$M	Prior Yrs	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Total
		2020	2021	2022	2023	2024	2025	
Capex	2.560	6.250	4.400	0.350	0.000	0.000	0.000	13.560
Opex	0.006	0.111	0.087	0.006	0.000	0.000	0.000	0.210
Removal	0.065	1.608	2.616	0.033	0.000	0.000	0.000	4.322
Total Cost in Bus. Plan	2.631	7.969	7.103	0.389	0.000	0.000	0.000	18.092
Variance								
\$M	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	0.000	(0.065)	(5.683)	(1.739)	(0.006)	0.000	0.000	(7.493)
Орех	0.000	0.000	(0.362)	(0.102)	0.000	0.000	0.000	(0.464)
Removal	0.000	1.455	1.074	(1.920)	0.000	0.000	0.000	0.609
Total Variance	0.000	1.390	(4.971)	(3.761)	(0.006)	0.000	0.000	(7.348)
Project Costs p	er Business	s Plan				 it,	126.09	
Transmission	_							
\$M	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Capex	1.185	1.827	0.914	0.167	0.000	0.000	0.000	4.093
Opex	0.003	0.059	0.043	0.006	0.000	0.000	0.000	0.111
Removal	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001
Total Cost in Bus. Plan	1.188	1.886	0.958	0.173	0.000	0.000	0.000	4.205
Variance								
\$M	Prior Yrs	Yr 1 2020	Yr 2 2021	Yr 3 2022	Yr 4 2023	Yr 5 2024	Yr 6 2025	Total
Сарех	0.000	(0.628)	(7.696)	(0.168)	(0.004)	0.000	0.000	(8.496)
Opex	0.000	0.047	(0.045)	0.002	0.000	0.000	0.000	0.004

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Removal	0.000	(0.006)	(0.031)	(0.008)	0.000	0.000	0.000	(0.045)
Total Variance	0.000	(0.587)	(7.772)	(0.174)	(0.004)	0.000	0.000	(8.537)

Cost Assumptions

The accuracy level of estimate for the project is +/-10%.

Standard material procurement process to be followed, and there are no expected delivery delays.

Net Present Value / Cost Benefit Analysis	
N/A	

NPV Assumptions & Calculations

N/A

Additional Impacts

N/A

Statement of Support		
Department	Individual	Responsibilities
Project Management	Arthur, David; Migdal, Sara A.;	Endorses resources, cost estimate and schedule
Electric Project Estimation	Lutz, Sara E.;	Endorses Cost Estimate
Investment Planning	Diconza, Glen L.; McColgan, Karen A.;	Endorses relative to 5-year business plan or emergent work
Engineering and Design	Hellmuth, Kevin; Larrabee, Mark A.; Swanson, Leonard G.;	Endorses scope, design, conformance with design standards
Asset Management / Planning	Ahern, Barry (US); Labarre, Alan T.;	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Resource Planning	Wyman, Anne; Phillips, Mark A.;	Endorses construction resources, cost estimate, schedule, and portfolio alignment

Reviewers	
Function	Individual
Finance	Bostic, Christina ; Byrne, Andrew ;
Regulatory	Turieo, Edward ; Artuso, Michael V. ;
Jurisdictional Delegate(s)	Easterly, Patricia ; Hill, Terron P. ;
Procurement	Chevere, Diego ;
Control Centers (CC)	Lavallee, Phillip H. ; Gallagher, Michael W. ;

Decisions

The Senior Executive Sanctioning Committee (SESC) approved this paper at a meeting held on 07/22/2019: (a) APPROVE the investment of \$38.182M and a tolerance of +/-10% for full implementation.

(b) NOTED that Maximovich, George has the approved financial delegation

Signature Date

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

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-8 Page 16 of 16

Appendix

N/A

This document has been reviewed for Critical Energy Infrastructure Information (CEII). 2/23/2017 Page 1 of 16

US Sanction Paper

nationalgrid

Title:	East Providence Substation	Sanction Paper #:	USSC-16-175
Project #:	C049819, C049820, C046726, C046727	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	02/08/2017
Author:	Jack P. Vaz	Sponsor:	Carol Sedewitz, VP, Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Richard Boyle

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction in the amount \$5.800M with a tolerance of +/- 10% for the purposes of performing all engineering activities, permitting, procurement of long lead materials, and to initiate construction activities.

This sanction amount is \$5.800M broken down into:

\$4.920M Capex \$0.350M Opex \$0.530M Removal

NOTE the potential investment of \$17.200M with a tolerance of +200%/-50%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

1.2 Project Summary

This project resulted from a comprehensive study of the East Bay area in Rhode Island performed to identify existing and potential future distribution system performance concerns through 2030. The recommendations in that study provide a comprehensive solution to address all the system performance concerns in the East Bay area. This project consists of the following components:

Build a new 115/12.47kV substation in East Providence on a company owned parcel next to the 115kV transmission right of way. Construction will consist of a single 40MVA LTC transformer, straight-bus metal-clad switchgear, a 7.2 MVAR station capacitor bank, and four feeder positions. The station will be supplied by a short tap from the E-183W transmission line. This new station provides capacity to relieve heavily loaded distribution feeders; addresses MWh violations; and provides capacity to supply load growth. This new station is part of a comprehensive plan that eliminates the need for major upgrades on the 23kV sub-transmission system and eliminates the need to build a new 115/23kV station at Mink St.

Page 1 of 16

US Sanction Paper

1.3 Summary of Projects

Project Number	Project Type	Project Title	Estimate Amount (\$M)
C049819	T-Line	East Providence Sub (T-Line)	\$0.400
C049820	T-Sub	East Providence Sub (T-Sub)	\$0.800
C046726	D-Sub	East Providence Sub (D-Sub)	\$6.700
C046727	D-Line	East Providence Sub (D-Line)	\$9.300
Total			\$17.200

1.4 Associated Projects

Project Number	Project Type	Project Title	Estimate Amount (\$M)
C065806	D-Sub	Mink Street 23kV Retirement	\$0.270
C065166	D-Sub	Warren Sub Expansion (D-Sub)	\$4.000
C065187	D-Line	Warren Sub Expansion (D-Line)	\$4.700
C065293	D-Sub	Barrington Sub Retirement	\$0.370
C065295	D-Sub	Kent Corners Retirement	\$0.370
C065297	D-Sub	Waterman Ave Retirement	\$0.370
Total			\$10.080

The retirement projects shown above are dependent on the completion of East Providence Substation and Warren Substation Expansion projects. Both the East Providence Substation and the Warren Substation Expansion projects are interdependent and must be completed concurrently with each other and closely coordinated.

1.5 Prior Sanctioning History

None

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review	
Dec - 2019	Project Sanction	

1.7 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
O Mandatory	Distribution Planning Criteria Strategy, February 2011
Policy- Driven	
O Justified NPV	*

US Sanction Paper

1.8 Asset Management Risk Score

Asset Management Risk Score: 41

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability
O Environment
O Health & Safety
O Not Policy Driven

1.9 Complexity Level

High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 31

1.10 Process Hazard Assessment

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

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?		Over / Under Business Plan		Project Cost relative to approved Business Plan (\$)
FY17-21 NE Distribution Budget	© Yes	O No	O Over	⊙ Under C NA	\$4.194M
FY17-21 NE Transmission Budget	⊙ Yes	O No	Over	O Under O NA	\$0.294M

NOTE: The distribution costs associated with the East Providence Substation along with the distribution costs of the associated projects are included in the business plan under funding projects C046726 and C046727.

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

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

1.13 Current Planning Horizon

Distribution:

US Sanction Paper

	Current Planning Horizon (\$M)						
	FY18	FY19	FY20	FY21	FY22	FY23+	
Spend	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	0.800	2.680	4.020	5.900	0.000	13.400
OpEx	0.000	0.060	0.200	0.300	0.440	0.000	1.000
Removal	0.000	0.110	0.320	0.480	0.690	0.000	1.600
Total	0.000	0.970	3.200	4.800	7.030	0.000	16.000

Transmission:

	Current Planning Horizon (\$M)						
	FY18	FY19	FY20	FY21	FY22	FY23+	
Spend	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	0.060	0.240	0.360	0.540	0.000	1.200
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	0.060	0.240	0.360	0.540	0.000	1.200

1.14 Key Milestones

	Target Date: (Month/Year)				
Planning Sanction Complete	Feb-2017				
Start Preliminary Engineering	Apr-2018				
Engineering Design Complete	Oct-2019				
Project Sanction	Dec-2019				
Construction Start	Mar-2020				
ISO Facility Ratings	Sep-2021				
Ready for Load	Mar-2022				
Construction Complete	Apr-2022				
Project Closure	Jul-2022				

1.15 Resources, Operations and Procurement

Resource Sourcing						
Engineering & Design Resources to be provided	Internal		✓ Contractor			
Construction/Implementation Resources to be provided	Internal		Contractor			
Resource Delivery						
Availability of internal resources to deliver project:	O Red	OAmber	© Green			
Availability of external resources to deliver project:	O Red	O Amber	© Green			

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Opera	tional Impa	ct	
Outage impact on network system:	O Red	O Amber	© Green
Procur	ement Impa	act	
Procurement impact on network system:	O Red	O Amber	⊙ Green

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

1	Permitting will be required for the proposed East Providence Substation
2	EFSB notification will be required for the transmission tap to the new station
3	Close coordination will be required with the associated projects
4	Site borders residential abutters and will need coordination with these abutters.
5	Site remediation will be required for the substation site in accordance with soil
	management plan of site. Coordination with Environmental Department (Site
	Investigation and Remediation Group) will be required.

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	O Positive	O Negative
Impact on adaptability of network for future climate change:	O Positive	O Negative

1.18 List References

_1	East Bay Area Study Report - Aug 2015
2	Substation Investment Grade Report – May 2015
3	Transmission Line Investment Engineering Report – Mar 2015
4	Transmission Planning Preliminary Assessment Report – May 2016

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2 <u>Decisions</u>

The US Sanctioning Committee (USSC) at a meeting held on February 8, 2017:

(a) APPROVED the investment of **\$5.800M** and a tolerance of +/- 10 % for the purposes of performing all engineering activities, permitting, procurement of long lead materials, and to initiate construction activities.

(b) NOTED the potential investment **\$17.200M** to and a tolerance of +200%/-50 %, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that **Richard Boyle** has the approved financial delegation to undertake the activities stated in (a).

hlle Signature.....

Christopher Kelly Senior Vice President – Electric Process and Engineering

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3 Sanction Paper Detail

Title:	East Providence Substation	Sanction Paper #:	USSC-16-175
Project #:	C049819, C049820, C046726, C046727	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	02/08/2017
Author:	Jack P. Vaz	Sponsor:	Carol Sedewitz, VP, Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Richard Boyle

3.1 Background

This project resulted from a comprehensive study of the East Bay area in Rhode Island that was performed to identify existing and potential future distribution system performance concerns. The recommendations in that study provide a comprehensive solution to address all the system performance concerns existing and anticipated in the East Bay area thru the year 2030.

The study area consists of the City of East Providence and the towns of Barrington, Bristol, and Warren. The area is bounded to the east by the Commonwealth of Massachusetts, to the north by the City of Pawtucket, and to the west and south by the Providence River. The geographic area is shown in Figure 1. The area has 43,000 customers with a peak electrical demand of 178MW.

3.2 Drivers

The study identified several loading, asset condition, and safety concerns through the study horizon period year of 2030. System Capacity and Performance is the primary driver justifying the recommended projects with Asset Condition as a secondary driver. This project is a component of a comprehensive solution to address all the system performance concerns in the East Bay area at least cost.

The electrical distribution system in this area is heavily loaded with limited capacity to supply new load. Excluding out of phase feeders and the small pocket of 4.16kV load, by 2020 approximately 53% of the feeders are projected to be loaded above 90% of Summer Normal (SN) rating. By 2026, 73% of the feeders are projected to be loaded above 90% of SN rating.

An analysis was performed for all feeders in the area and the MWh exposure calculated for each feeder along with any remaining un-served load once all available tie capacity was utilized. Because the feeders are heavily loaded and have geographic limitations

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nearly all feeders exceed the MWh exposure recommended in the Distribution Planning Guide.

Mink Street is a low-profile station with two transformers. It is located in Seekonk, MA, but includes a three-winding power transformer with a 23kV tertiary winding supplying East Bay area load. Peak loading on the 23kV winding is limited to 12MVA because capacity is needed to supply the Massachusetts 13.2kV load. This limit results in approximately 14MW of un-served load for loss of the preferred supply to Barrington substation and limits the ability to add load to the 23kV system.

A number of substations in this area have asset condition, safety, and reliability concerns that will be addressed by the projects in this paper. These substations include Barrington substation, Kent Corners substation, and Waterman substation.

Additional details regarding loading, asset condition, and safety issues are included in the East Bay Study report.

3.3 Project Description

Build a new 115/12.47 kV substation on First Street in East Providence on a company owned parcel adjacent to the 115kV transmission right of way. Construction will consist of a single 40MVA LTC transformer, straight-bus metal-clad switchgear, a 7.2 MVAR station capacitor bank, and four feeder positions. The station will be supplied from the E-183W (115 kV) Tap to Phillipsdale substation. A one line of this proposed station is shown in Figure 2.

The four new feeders will be routed on public roadways in new manhole and ductline infrastructure. Kent Corners 4.16kV load will be converted to the 12.47kV system thru direct conversions and the use of step-down transformers to minimize cost. One industrial customer and one solar generator will be converted from the 23kV sub-transmission system to the 12.47kV distribution system. The area distribution will be reinforced and reconfigured as a result of the new feeders.

3.4 Benefits Summary

This project addresses safety, asset condition, and reliability concerns in the East Bay area and is part of a comprehensive solution for the area. This work benefits all the customers in the East Bay area. Refer to the East Bay Study report for additional details on the benefits of this project.

3.5 Business and Customer Issues

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

US Sanction Paper

3.6 Alternatives

Alternatives and their associated cost are documented in the East Bay Study report issued in August 2015. The recommended plan, Plan 1, can generally be described as increased medium voltage capacity sourced from the existing 115kV transmission system. Plan 1 includes the East Providence Substation, proposed in this sanction document, plus the Warren Substation Expansion project, Phillipsdale Substation Expansion project and minor station retirement projects.

Alternatives 2 and 3 to the recommended plan would increase medium voltage capacity through expansion and rebuild of the 23kV system. Alternative 2 includes a more substantial Phillipsdale and Warren Substation Rebuild project, a Kent Corners Substation project, a Rumford Substation project, a Mink Street Substation project, approximately 7.5 miles of 23 kV sub-transmission line rebuild, and minor station retirement projects. Alternative 3 combines parts of the first two plans to determine if an economic hybrid solution could be created.

Plan 1, including the scope represented in this sanction document, was selected as the least cost and technically superior plan.

3.7 Safety, Environmental and Project Planning Issues

Safety, environmental, and project planning issues are described in Section 6 of the East Bay Study report.

A detailed cutover plan will be developed for the interconnection of the existing and newly installed feeders. This plan will be developed during the final engineering and design phase.

3.8 Execution Risk Appraisal

			Im	pact	Sc	ore					
Numbe	Detailed Description of Risk / Opportunity	Probabili	Cost	Schedule	Cost	Schedule	Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan	
1	Obtaining the required scheduled outage	L	1	I			Accept	Develop plan and increase communication as scheduled outage approaches.	Construction delays may result from outage postponement.	Continue frequent communication until outage work is concluded.	
2	Obtaining the proper distribution line easement rights or ability to enact existing rights.	2	2	2			Mitigate	Identify Individual to address potential property issues immediately after Distribution Line design is completed.	Unable to acquire proper easements.	Circle back to design to determine potential alternate routes.	
3	Material/equipment damaged during substation construction extending schedule	1	2	2			Mitigate	Require contractor to provide site security and be responsible for potential damage.	Vandalism occurs.	Enhance security measures and expedite replacement of materials and/or equipment.	

Note: The proposed substation site will require remediation in accordance with the soil management plan of site. Coordination with Environmental Department (Site

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Investigation and Remediation Group) will be required. The site may also require a subsurface investigation which may involve a ground penetrating radar survey.

3.9 Permitting

Permit Name	Probability Required	Duration To Acquire Permit	Status	Estimated Completion Date
EFSB Notice of Intent	Certain	4 Months	Not Applied For	TBD
Building Permit	Certain	3 Months	Not Applied For	TBD
Historic Commission Review	Certain	TBD	Not Applied For	TBD
Street Opening Permits	Certain	3 Months	Not Applied For	TBD

NOTE: Additional permitting details are described in section 6 of the East Bay Study report.

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Based on current schedule the substation will enter service in FY23 and the distribution projects will be included in each fiscal year's Annual ISR Filing until that time.

3.10.2 Customer Impact

Distribution: This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.330M. 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.

Transmission: This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.223M. This is indicative only. Recovery is through Local Network Service (LNS) rates depending on the location of the asset.

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3.10.3 CIAC / Reimbursement

Not Applicable.

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Distribution:

				the same same		Curren	r manning F	ionzon		
	NELS	Project		FY18	FY19	FY20	FY21	FY22	FY23+	1000
Number	r Project Title Level (%)	Spend (\$M)	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total	
			CapEx	0.000	0.360	1.200	1.800	2.640	0.000	6.000
C046726	East Providence	+200/-50%	OpEx	0.000	0.040	0.120	0.180	0.260	0.000	0.600
0040720	Sub (S-Sub)	200/-30 /6	Removal	0.000	0.010	0.020	0.030	0.040	0.000	0.100
			Total	0.000	0.410	1.340	2.010	2.940	0.000	6.700
							1			- 20
		+200/-50%	CapEx	0.000	0.440	1.480	2.220	3.260	0.000	7,400
C046727	East Providence		OpEx	0.000	0.020	0.080	0.120	0.180	0.000	0.400
0010121	Sub (D-Line)		Removal	0.000	0.100	0.300	0.450	0.650	0.000	1.500
			Total	0.000	0.560	1.860	2.790	4.090	0.000	9.300
			CapEx	0.000	0.800	2.680	4.020	5,900	0.000	13,400
Total Project Sanction		OpEx	0.000	0.060	0.200	0.300	0.440	0.000	1.000	
		Removal	0.000	0.110	0.320	0.480	0.690	0.000	1.600	
Total				0.000	0.970	3.200	4.800	7.030	0.000	16.000

Transmission:

				Current Planning Horizon						
		Project		FY18	FY19	FY20	FY21	FY22	FY23+	
Project Number	Project Title	Estimate	ate Spend (\$M)	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
		1	CapEx	0.000	0.020	0.080	0.120	0.180	0.000	0.400
C0/0810	East Providence	+200/-	OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0049019	Sub (T-Line)	50%	Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.020	0.080	0.120	0.180	0.000	0.400
								_	·	
			CapEx	0.000	0.040	0.160	0.240	0.360	0.000	0.800
CU40830	East Providence	+200/- 50%	OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0043020	Sub (T-Sub)		Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Total	0.000	0.040	0.160	0.240	0.360	0.000	0.800
			CapEx	0.000	0.060	0.240	0.360	0.540	0.000	1.200
Total Project Sanction OpEx Remove		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	0.060	0.240	0.360	0.540	0,000	1.200	

3.11.2 Project Budget Summary Table

Project Costs Per Business Plan (Distribution)

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		Current Planning Horizon									
	FY18	FY19	FY20	FY21	FY22	FY23+	12 James				
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total				
CapEx	0.200	1.020	2.400	7.860	5.900	0.000	17.380				
OpEx	0.013	0.069	0.142	0.552	0.440	0.000	1.216				
Removal	0.015	0.081	0.158	0.654	0.690	0.000	1.598				
Total Cost in Bus. Plan	0.228	1.170	2.700	9.066	7.030	0.000	20.194				

Variance (Business Plan-Project Estimate)

	Current Planning Horizon									
	FY18	FY19	FY20	FY21	FY22	FY23+				
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total			
CapEx	0.200	0.220	(0.280)	3.840	0.000	0.000	3.980			
OpEx	0.013	0.009	(0.058)	0.252	0.000	0.000	0.216			
Removal	0.015	(0.029)	(0.162)	0.174	0.000	0.000	(0.002)			
Total Cost in Bus. Plan	0.228	0.200	(0.500)	4.266	0.000	0.000	4.194			

Project Costs Per Business Plan (Transmission)

	Current Planning Horizon									
	FY18	FY19	FY20	FY21	FY22	FY23+				
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total			
CapEx	0.000	0.040	0.140	0.186	0.540	0.000	0.906			
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 Cost in Bus. Plan	0.000	0.040	0.140	0.186	0.540	0,000	0.906			

Variance (Business Plan-Project Estimate)

		Current Planning Horizon					
	FY18	FY19	FY20	FY21	FY22	FY23+	
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	(0.020)	(0.100)	(0.174)	0.000	0.000	(0.294)
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 Cost in Bus. Plan	0.000	(0.020)	(0.100)	(0.174)	0.000	0.000	(0.294)

3.11.3 Cost Assumptions

Cost estimate accuracy is - 50% to +200%. Project sanction cost estimates (+/- 10%) will be developed after final design is completed.

3.11.4 Net Present Value / Cost Benefit Analysis

Not financially driven.

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3.11.4.1 NPV Summary Table Not Applicable.

3.11.5 Additional Impacts

Not Applicable.

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual	Responsibilities
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year business plan or emergent work
Investment Planning	Michelle Park	Endorses relative to transmission 5-year business plan or emergent work
Investment Planning	Laura McLaughlin	Reviewing milestone dates for synchronization with cash flows in order to move projects out of Step 0.
Resource Planning	Anne Wyman	Endorses D-Line resources, cost, estimate, schedule and Portfolio alignment
Resource Planning	Mark Phillips	Endorses substation resources, cost, estimate, schedule and Portfolio alignment
Asset Management / Planning	Brian Hayduk	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Asset Management / Planning	Alan LaBarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering / Design	Suzan Martuscello	Endorses substation scope, design, conformance with design standards
Engineering / Design	Lisa Sasur	Endorses transmission line scope, design, conformance with design standards
Engineering / Design	Len Swanson	Endorses substation scope, design, conformance with design standards
Project Management	Andrew Schneller	Endorses Resources, cost estimate, schedule

3.12.2 Reviewers

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

Function	Individual
Finance	Patricia Easterly / Richard Helm
Regulatory	Peter Zschokke
Jurisdictional Delegates	Jim Patterson / Terron Hill
Procurement	Art Curran
Control Center	Michael Gallagher

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Control Center Wi	Vill Houston
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4 Appendices

4.1 Sanction Request Breakdown by Project

\$M	C049819	C049820	C046726	C046727	Total
CapEx	\$0.130	\$0.270	\$2.020	\$2.500	\$4.920
OpEx			\$0.200	\$0.150	\$0.350
Removal			\$0.030	\$0.500	\$0.530
Total	\$0.130	\$0.270	\$2.250	\$3.150	\$5.800

4.2 Other Appendices

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FIGURE 1 – GEOGRAPHIC AREA

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Long: US	Sanction Paper		
Title:	Dyer Street Outdoor Substation	Sanction Paper #:	USSC 16-305 V2
Project #:	C051205, C051211	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	4/14/2021
Author:	Antunes, Nelson	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Antunes, Nelson

Executive Summary

This paper requests Sanction of C051205, C051211 in the amount of \$21.730M with a tolerance of +/-10% for the purposes of full implementation.

This sanction amount is \$21.730M broken down into:

\$16.652M Capex \$0.865M Opex \$4.213M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

Build a new 11 kV to 4.16 kV outdoor distribution substation on National Grid's South Street Substation site. Retire the existing Dyer St Indoor Substation. Remove all 11 kV and 4.16 kV equipment and demolish the building that houses the current substation. This work will allow the retirement of a circa 1925 indoor substation. The dated substation presents a challenging work environment for National Grid employees as compared to a contemporary substation.

Background

Dyer St Indoor Substation is located in what is known as the AC building. This four story brick building, constructed in 1925, serves 13 MVA of summer peak load from it's nine 4.16 kV distribution circuits. The station also has an 11 kV bus that supports five supply circuits (three from South St and two from Franklin Square) one distribution circuit (1103), and two Network Circuits (1105 and 1109).

Located about 50ft west of the indoor substation is second brick structure known as the DC building. This building was the original structure on the 1.04 acre site that The Narragansett Electric Company purchased in 1897 for \$100. The building was used to generate DC power to supply street lights and the trolley line. The last DC circuits were retired in the early 1980s. Since then, the building has been used for general storage. There are no plans to address the DC building within the scope of this project.

The Providence Area Long Term Supply and Distribution Study, completed in May 2014, recommended the replacement of Dyer St Indoor Substation.

Project Description

The Dyer Street project is designed to address safety and asset conditions due to the age of the indoor substation. As a result of excessive EPC bid values that were received from multiple EPC contractors for the scope of work that was presented in the partial sanction, our team was challenged with deriving a more cost effective solution to address the need. With input from various departments, our team derived a more cost effective solution.

The new scope of work consists of building an external substation at the South Street Substation. The proposed substation layout will not impact the potential build out of the South Street Substation that is planned for the future. With assistance from various departments, we were able to derive a conceptual engineering solution that reduces the scope of work to the installation of 2 new 11 kV to 4.16 kV transformers and the corresponding risers and switches, the installation of a Metal Clad Switch Gear, and the needed distribution feeder getaways. In addition we will demolish the building that is housing the existing substation.

The benefits of building within an existing substation are that we do not have to install numerous components such as; the ground grid, the substation fence, lighting, Trenwa, etc. This new option eliminates the need to decontaminate and refurbish the DC building which results in additional project savings.

Summary of Benefits

The Dyer Street Outdoor Project addresses safety and asset condition issues identified in the Dyer St Asset condition report. In addition, the new station will have status and control of the 11 KV and 4 kV breakers at the regional control center in Northborough.

The AC building will be demolished and the site will be capped. This will address the building contamination while improving the aesthetics of Providence's down town area.

Business and Customer Issues

Impact to Business and Customer Issues are expected to be minimal. Demolition of the AC building will be welcomed by the city because it improves the aesthetics of the Providence down area.

Drivers:

Asset Condition and Safety are the main drivers of this project.

National Grid's Network Asset Planning Group completed an Asset Condition Report on the Dyer St Indoor Station in March of 2011. After reviewing equipment test records, operating history, and applying industry knowledge, it was concluded that the existing station presents operational, safety and maintenance challenges as compared to operating a modern indoor substation. Replacement of the indoor substation allows for the retirement of the breakers, reactors, and relay schemes that were identified in the Asset condition report as deficient in performance and difficult to maintain.

This indoor substation ranked as the highest priority for replacement following the completion of the 2011 indoor substation replacement prioritization exercise performed by Distribution Asset Strategy.

Alternatives	
Number	Title

1

Build a new Indoor Substation at the Dyer St Substation yard utilizing the DC building. Demolish the existing Indoor Substation

This was the preferred solution through the planning phase of the project. However, upon going through a procurement event to obtain a EPC contractor, we concluded that the cost of this solution was much higher then anticipated.

2 Install a new Outdoor Substation at Dyer St. Demolish the existing Indoor Substation.

The cost of this alternative was 10 % less than the recommended option. However this alternative involves knocking down the DC building, which the Providence Planning Board has identified as historically significant. It is extremely unlikely the city would grant the zoning variance required to demolish this structure.

3 Install a new Outdoor Substation behind a Façade. Demolish the existing Indoor Substation

This alternative cost 3 % less than the recommended alternative. It involves creating a façade out of two sides of the historically significant DC building. An outdoor substation would then be constructed behind the façade. After initial contact with the Providence Planning Board, permitting for this alternative is also considered improbable. This option will be retained as part of the permitting strategy but has a low probability of success.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C051211	D-Line	Dyer Street Substation - Dline	7.030
C051205	D-Sub	Dyer Street Substation - Dsub	14.700
		Total:	21.730

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C051212	South Street Project - Dsub	43.068
C078474	Franklin Square Sub. 1105 & 1109	0.827
		43.895

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
2/8/2017	USSC	\$6.028	\$14.154	Partial	USSC 16-305	+50 /- 25%

- EPC project bids were much higher than anticipated.

- Cost to fully implement the project including both internal and external cost based on EPC bids was \$34M

- We have since re-scoped the project to address the project need.

- Estimated cost to implement the new scope of work is \$21.73M.

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	February, 2017

Engineering Design Complete - EDC	August, 2021
Construction Start	September, 2021
Construction Complete - CC	August, 2022
Construction Complete / Ready for Load / Use	July, 2022
Gate D - Approval to Progress to Closeout	October, 2022
Project Closure Sanction	February, 2023

Next Planned Sanction

Date (Month/Year) February, 2023 Purpose of Sanction Review Closure

Category	
Category 〇 Mandatory	Reference to Mandate, Policy, or NPV -National Grid Indoor Substation Strategy, December
Policy-Driven	21, 2011.
◯ Justified NPV	-The Asset Management & Engineering Business Management Standard (BMS 04) sets performance requirements for the "maintenance, repair, replacement, operations and retirement of assets". One of the core principals of the standard is to make decisions based on reliability, safety, environmental performance, and cost.

Asset Management Risk Score: 45

PRIMARY RISK SCORE DRIVER

 \bigcirc Reliability \bigcirc Environment O Health & Safety \bigcirc Not Policy Driven

Complexity Level: 27

 \odot High Complexity \bigcirc Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Process Hazard Assessment

Current Planning Horizon

				Current F	Planning Ho	orizon		
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	
CapEx	4.872	11.704	0.076	0.000	0.000	0.000	0.000	16.652
OpEx	0.025	0.840	0.000	0.000	0.000	0.000	0.000	0.865
Removal	0.027	0.511	3.675	0.000	0.000	0.000	0.000	4.213
Total	4.924	13.055	3.751	0.000	0.000	0.000	0.000	21.730
Totals								

Capex

								7 ttueinne			
	4.872	11.704	0.076	0.000	0.000	0.000	0.000	16.652			
Opex	0.025	0.840	0.000	0.000	0.000	0.000	0.000	0.865			
Removal	0.027	0.511	3.675	0.000	0.000	0.000	0.000	4.213			
Total	4.924	13.055	3.751	0.000	0.000	0.000	0.000	21.730			
Resources, Operations, & Procurement											
		RE	SOURCE	SOURCIN	IG						
Engineering & design [Resources to be provided			✓ In	ternal			Contractor				
Construction/In	anlamantatio	•					_				

Resources to be provided	✓ Internal ✓ Contraction		Contractor
	RESOURCE DEL	IVERY	
Availability of internal resources to delivery project:	\bigcirc Red	◯ Amber	 Green
Availability of external resources to delivery project:	⊖ Red	⊖ Amber	 Green
	OPERATIONAL I	MPACT	
Outage impact on network system	◯ Red	◯ Amber	 Green
	PROCUREMENT	IMPACT	
Procurement impact on network system:	◯ Red	⊖ Amber	 Green

Key Issues

- Permitting The Dyer St Site is in Providence's D-1 Zone. By zoning ordinance, the Downtown Design Review Committee reviews and approves of all exterior building alterations in the zone. This includes open landscapes, roof lines and demolition requests. This issue has drastically diminished by eliminating the need to rehab the AC building to build the indoor substation. Currently we only have to update the CRMC (Coastal Resource Management Committee) about the additional structures (Metal Clad Switch Gear).
- 2 Material Although we are in the process of going through procurement events for the transformers and MCSG (Metal Clad Switch Gear) and we have received tentative delivery dates for the material, due to COVID-19 there are potential delays due to material not being available.
- 3 Environmental costs of demolishing the existing Dyer St Indoor building are dependent on the findings of the pre-characterization assessment which will be completed when the environmental engineering contractor is able to access to all de-energized parts of the existing indoor substation.

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	 Neutral 	○ Positive	○ Negative
Qualifies for Green Financing:	• Yes	○ No	○ N/A

List References

1	National Grid Substation O&M Services Asset Condition Report – Dyer St Station, March 2011
2	National Grid Indoor Substation Strategy, December 21, 2011.
3	Providence Area Long Term Supply and Distribution Study, May 2014
4	National Grid. Doc PR.02.00.004 Investment Grade Report of Substations. 'Dyer St – Existing Substation Retirement and New Substation Location, April 2016
5	Coneco Engineering 'Site Characterization Activities and remediation abatement and disposal of hazardous materials Cost Estimate, April 2016
6	Odeh Civil Engineers, Dyer St Substation Building - Summary of Construction Options, April 2016

Safety, Environmental and Project Planning Issues

Safety A health and safety plan will be developed to insure employees and contractors understand how to perform work that is compliant with the company's safety regulations.

Permitting									
Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date					
Coastal Resource Management Committee	Likely	2 months	Not Applied For	May, 2021					
Zoning	Unlikely	2	Not Applied For	May, 2021					
Investment Recovery and Customer Impact									

Investment Recovery

Recovery will occur at the time of the next rate case for any operating company receiving allocations of these costs. This project is Non-PTF

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$3.079M.

Execution Risk Appraisal

Risk Breakdown	Qualitative Assessment / Risk Response Strategy							
Structure Category	Risk ID + Title	IF Statement	THEN Statement	Risk Resp	isk Response Strategy			

4. Permitting	R1 - City of Providence Permitting	If the City of Providence requires additional permitting.	Then it will delay the schedule of the project.	Accept	Obtain needed permits.	10
10. Line Outages	R2 - Distribution cutover	If cutovers are completed in the Summer	Then we might be limited to the switching that is allowed to perform the cutovers.	Reduce	Schedule the cutovers in the Spring or Fall	4
5. Environmental	R3 - Hazardous Material	If the energized sections of the existing substation are heavily contaminated	Then additional remediation will have to take place.	Accept	We will perform additional sample testing once the station is de-energized	12
11. Construction	R4 - Storm Duty/Emerge ncy Response Efforts	If we have an active storm seasor	Then it can delay the project schedule.	Accept	To address the schedule delays, we could add additional labor force	9

Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 NE Distribution Capital Plan		● Over ◯ Under ◯ N/A	(3.510)

If Cost > Approved

if costs > 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.

Cost Summary Table

Project Number C051211	Project D Title	yer Street	Substation	- Dline	Pr Es Le	roject stimate 10 evel)%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.630	5.364	0.000	0.000	0.000	0.000	0.000	5.994
Opex	0.000	0.511	0.000	0.000	0.000	0.000	0.000	0.511

Removal

	0.014	0.511	0.000	0.000	0.000	0.000	0.000	0.525
Total	0.644	6.386	0.000	0.000	0.000	0.000	0.000	7.030
Project Number	Project Title	Dyer Stree	t Substatior	ו - Dsub	F E L	Project Estimate 1 evel	0%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	TOLA
Capex	4.242	6.340	0.076	0.000	0.000	0.000	0.000	10.658
Opex	0.025	0.329	0.000	0.000	0.000	0.000	0.000	0.354
Removal	0.013	0.000	3.675	0.000	0.000	0.000	0.000	3.688
Total	4.280	6.669	3.751	0.000	0.000	0.000	0.000	14.700
Total Project Sanctio	n							
Capex	4.872	11.704	0.076	0.000	0.000	0.000	0.000	16.652
Opex	0.025	0.840	0.000	0.000	0.000	0.000	0.000	0.865
Removal	0.027	0.511	3.675	0.000	0.000	0.000	0.000	4.213
Total	4.924	13.055	3.751	0.000	0.000	0.000	0.000	21.730
Project Costs pe	er Busines	s Plan						
\$M	Drier Vro	FY	FY	FY	FY	FY	FY	Tatal
		2022	2023	2024	2025	2026	2027	TOLAI
Capex	4.872	9.717	0.047	0.000	0.000	0.000	0.000	14.636
Opex	0.025	0.736	0.000	0.000	0.000	0.000	0.000	0.761
Removal	0.027	0.503	2.293	0.000	0.000	0.000	0.000	2.823
Total Cost in Bus. Plan	4.924	10.956	2.340	0.000	0.000	0.000	0.000	18.220
Variance								
	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
\$M		2022	2023	2024	2025	2026	2027	Total
Capex	0.000	(1.987)	(0.029)	0.000	0.000	0.000	0.000	(2.016)
Opex	0.000	(0.104)	0.000	0.000	0.000	0.000	0.000	(0.104)
Removal	0.000	(0.008)	(1.382)	0.000	0.000	0.000	0.000	(1.390)
Total Variance	0.000	(2.099)	(1.411)	0.000	0.000	0.000	0.000	(3.510)

Cost Assumptions

The project management group is with the opinion that the project cost at completion, will be less then the 4.2 estimate that was created for the project in the preliminary design phase for the new scope of work. Utilizing the same project manager for the Dyer Street Project and South Street project, allows us to determine if the estimated risk dollars will be needed to complete the scope of work. Understanding that the site grade was built up during the South Street project, we should be able to reduce the excavation risk. In addition, the

engineering costs for this project are currently lower then estimated. The forecast for the project has been adjusted to compensate for the risks that we no longer think exist.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

N/A

Additional Impacts

As the project continues to develop, we will verify our assumption that the project cost at completion will be less then what has been estimated. There is an opportunity to deliver this project at a lower cost than expected.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Joyce, Anisa
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 04/14/2021: (a) APPROVE the investment of \$21.730M and a tolerance of +/-10% for full implementation.

(b) NOTED that Antunes, Nelson has the approved financial delegation

	DocuSigned by:	
	Michael Gillespie	
Signature		_
Date	4/22/2021	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-10 Page 11 of 11

Appendix

N/A

US Sanction Paper

Title:	Warren Substation Expansion	Sanction Paper #:	USSC-17-002
Project #:	C065166, C065187	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	02/08/2017
Author:	Jack P. Vaz	Sponsor:	Carol Sedewitz, VP, Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Richard Boyle

1 Executive Summary

1.1 Sanctioning Summary

This paper requests partial sanction in the amount \$2.900M with a tolerance of +/- 10% for the purposes of performing all engineering activities, permitting, procurement of long lead materials, and to initiate construction activities.

This sanction amount is \$2.900M broken down into:

\$2.530M Capex \$0.140M Opex \$0.230M Removal

NOTE the potential investment of \$8.700M with a tolerance of +200%/-50%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

1.2 **Project Summary**

This project resulted from a comprehensive study of the East Bay area in Rhode Island performed to identify existing and potential future distribution system performance concerns through 2030. The recommendations in that study provide a comprehensive solution to address all the system performance concerns in the East Bay area. This project consists of the following components:

Expand Warren 115/12.47kV substation by adding two new distribution feeders and two 7.2 MVAR station capacitor banks. The new feeders will be routed into Barrington and be used to retire Barrington substation. This substation expansion addresses asset and safety concerns at Barrington substation and is part of a comprehensive plan that eliminates the need for major upgrades on the 23kV sub-transmission system and eliminates the need to build a new 115/23kV station at Mink St.

Warren Substation Expansion Partial Sanction Uncontrolled When Printed Page 1 of 14

US Sanction Paper

1.3 Summary of Projects

Project Number	Project Type	Project Title	Estimate Amount (\$M)	
C065166	D-Sub	Warren Sub Expansion (D-Sub)	\$4.000	
C065187 D-Line		Warren Sub Expansion (D-Line)	\$4.700	
	dina di Stati - E - St	Total	\$8.700	

1.4 Associated Projects

Project Number	Project Type	Project Title	Estimate Amount (\$M)
C049819	T-Line	East Providence Sub (T-Line)	\$0.400
C049820	T-Sub	East Providence Sub (T-Sub)	\$0.800
C046726	D-Sub	East Providence Sub (D-Sub)	\$6.700
C046727	D-Line	East Providence Sub (D-Line)	\$9.300
C065806	D-Sub	Mink Street 23kV Retirement	\$0.270
C065293	D-Sub	Barrington Sub Retirement	\$0.370
C065295	D-Sub	Kent Corners Retirement	\$0.370
C065297	D-Sub	Waterman Ave Retirement	\$0.370
Total			\$18.580

The retirement projects shown above are dependent on the completion of East Providence Substation and Warren Substation Expansion projects. Both the East Providence Substation and the Warren Substation Expansion projects are interdependent and must be completed concurrently with each other and closely coordinated.

1.5 Prior Sanctioning History

None

1.6 Next Planned Sanction Review

Date (Month/Year)	Purpose of Sanction Review
Dec - 2019	Project Sanction

1.7 Category

Category	Reference to Mandate, Policy, or NPV Assumptions
O Mandatory	Distribution Planning Criteria Strategy, February 2011
⊙ Policy- Driven	
O Justified NPV	

US Sanction Paper

1.8 Asset Management Risk Score

Asset Management Risk Score: 41

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability	O Environment	O Health & Safety	O Not Policy Driver
	CENVIORIMENT		V NOL POlicy Driven

1.9 Complexity Level

High Complexity O Medium Complexity O Low Complexity O N/A

Complexity Score: 31

1.10 Process Hazard Assessment

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

1.11 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-21 NE Distribution Budget	⊙Yes ONo	⊙ Over O Under O NA	\$8.700M

NOTE: The distribution costs associated with the Warren Substation Expansion along with the distribution costs of the associated projects are included in the business plan under funding projects C046726 and C046727.

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

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

1.13 Current Planning Horizon

Distribution:

US Sanction Paper

		Current Planning Horizon (\$M)					
	FY18	FY19	FY20	FY21	FY22	FY23+	
Spend	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
CapEx	0.000	0.450	1.440	2.160	3.530	0.000	7.580
OpEx	0.000	0.030	0.080	0.120	0.200	0.000	0.430
Removal	0.000	0.030	0.120	0.180	0.360	0.000	0.690
Total	0.000	0.510	1.640	2.460	4.090	0.000	8.700

1.14 Key Milestones

East Providence & Warren Substations	Target Date: (Month/Year)			
Planning Sanction Complete	Feb-2017			
Start Preliminary Engineering	Apr-2018			
Engineering Design Complete	Oct-2019			
Project Sanction	Dec-2019			
Construction Start	Mar-2020			
Ready for Load	Mar-2022			
Construction Complete	Apr-2022			
Project Closure	Jui-2022			

1.15 Resources, Operations and Procurement

Resource Sourcing							
Engineering & Design Resources to be provided	🗹 Internal		Contractor				
Construction/Implementation Resources to be provided	🔽 Internal		Contractor				
Resource Delivery							
Availability of internal resources to deliver project:	O Red O Amber		⊙ Green				
Availability of external resources to deliver project:	O Red O Amber		⊙ Green				
Opera	itional Impac	Ł					
Outage impact on network system:	O Red	O Amber	 ● Green 				
Procurement Impact							
Procurement impact on network system:	O Red	O Amber	© Green				

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

1	A new ductline and bridge crossing is required and needs to be coordinated
	with the Rhode Island Department of Transportation (RIDOT).

Warren Substation Expansion Partial Sanction Uncontrolled When Printed Page 4 of 14

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-11 Page 5 of 14

national**grid**

US Sanction Paper

1.17 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	O Negative
Impact on adaptability of network for future climate change:		O Positive	O Negative

1.18 List References

1	East Bay Area Study – Aug 2015	
2	Substation Investment Grade Report – May 2015	
3	Transmission Line Investment Engineering Report - Mar 2015	5

Warren Substation Expansion Partial Sanction Uncontrolled When Printed Page 5 of 14

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-11 Page 6 of 14

nationalgrid

US Sanction Paper

2 Decisions

The US Sanctioning Committee (USSC) at a meeting held on February 8, 2017:

(a) APPROVED the investment of **\$2.900M** and a tolerance of +/- 10 % for the purposes of performing all engineering activities, permitting, procurement of long lead materials, and to initiate construction activities.

(b) NOTED the potential investment **\$8.700M** to and a tolerance of +200%/-50 %, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that **Richard Boyle** has the approved financial delegation to undertake the activities stated in (a).

Christopher Kelly

Senior Vice President - Electric Process and Engineering

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-11 Page 7 of 14

nationalgrid

US Sanction Paper

3 Sanction Paper Detail

Title:	Warren Substation Expansion	Sanction Paper #:	USSC-17-002
Project #:	C065166, C065187	Sanction Type:	Partial Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	02/08/2017
Author:	Jack P. Vaz	Sponsor:	Carol Sedewitz, VP, Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Richard Boyle

3.1 Background

This project resulted from a comprehensive study of the East Bay area in Rhode Island that was performed to identify existing and potential future distribution system performance concerns. The recommendations in that study provide a comprehensive solution to address all the system performance concerns existing and anticipated in the East Bay area thru the year 2030.

The study area consists of the City of East Providence and the towns of Barrington, Bristol, and Warren. The area is bounded to the east by the Commonwealth of Massachusetts, to the north by the City of Pawtucket, and to the west and south by the Providence River. The geographic area is shown in Figure 1. The area has 43,000 customers with a peak electrical demand of 178MW.

3.2 Drivers

The study identified several loading, asset condition, and safety concerns through the study horizon period year of 2030. System Capacity and Performance is the primary driver justifying the recommended projects with Asset Condition as a secondary driver. This project is a component of a comprehensive solution to address all the system performance concerns in the East Bay area at least cost.

The electrical distribution system in this area is heavily loaded with limited capacity to supply new load. Excluding out of phase feeders and the small pocket of 4.16kV load, by 2020 approximately 53% of the feeders are projected to be loaded above 90% of Summer Normal (SN) rating. By 2026, 73% of the feeders are projected to be loaded above 90% of SN rating.

An analysis was performed for all feeders in the area and the MWh exposure calculated for each feeder along with any remaining un-served load once all available tie capacity was utilized. Because the feeders are heavily loaded and have geographic limitations nearly all feeders exceed the MWh exposure recommended in the Distribution Planning Guide.

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Warren Substation Expansion Partial Sanction Uncontrolled When Printed

US Sanction Paper

Mink Street is a low-profile station with two transformers. It is located in Seekonk, MA, but includes a three-winding power transformer with a 23kV tertiary winding supplying East Bay area load. Peak loading on the 23kV winding is limited to 12MVA because capacity is needed to supply the Massachusetts 13.2kV load. This limit results in approximately 14MW of un-served load for loss of the preferred supply to Barrington substation and limits the ability to add load to the 23kV system.

A number of substations in this area have asset condition, safety, and reliability concerns that will be addressed by the projects in this paper. These substations include Barrington substation, Kent Corners substation, and Waterman substation.

Additional details regarding loading, asset condition, and safety issues are included in the East Bay Study report.

3.3 Project Description

Expand Warren 115/12.47kV substation by adding two new feeders and two 7.2 MVAR station capacitor banks. The new feeders will be routed into Barrington to provide capacity to retire Barrington substation. This expansion addresses the asset and safety concerns at Barrington substation, eliminates the need for a new 115/23kV station at Mink Street, and eliminates the need for major upgrades on the 23kV supply system. A one line of the proposed station expansion is shown in Figure 2.

The new Warren feeders will be routed into Barrington. The feeders will utilize a bridge crossing and underground infrastructure to be built on a bike path as part of a Department of Transportation (DOT) bridge rebuild project. The company is currently coordinating the bridge crossing with the DOT bridge rebuild project.

3.4 Benefits Summary

This project addresses safety, asset condition, and reliability concerns in the East Bay area and is part of a comprehensive solution for the area. This work benefits all the customers in the East Bay area. Refer to the East Bay Study report for additional details on the benefits of this project.

3.5 Business and Customer Issues

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

3.6 Alternatives

Alternatives and their associated cost are documented in the East Bay Study report issued in August 2015. The recommended plan, Plan 1, can generally be described as increased medium voltage capacity sourced from the existing 115kV transmission system. Plan 1 includes the Warren Substation Expansion project, proposed in this sanction document, plus a new East Providence Substation, Phillipsdale Substation Expansion project and minor station retirement projects.

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US Sanction Paper

Alternatives 2 and 3 to the recommended plan would increase medium voltage capacity through expansion and rebuild of the 23kV system. Alternative 2 includes a more substantial Phillipsdale Substation Rebuild project, a Kent Corners Substation project, a new Rumford Substation project, a Mink Street Substation project, approximately 7.5 miles of 23 kV sub-transmission line rebuild, and minor station retirement projects. Alternative 3 combines parts of the first two plans to determine if an economic hybrid solution could be created.

Plan 1, including the scope represented in this sanction document, was selected as the least cost and technically superior plan.

3.7 Safety, Environmental and Project Planning Issues

Safety, environmental, and project planning issues are described in Section 6 of the East Bay Study report.

A detailed cutover plan will be developed for the interconnection of the existing and newly installed feeders. This Plan will be developed during the Final Engineering and Design Phase.

۱.	-	≥	լ լա	pact	Sc	ore					
Numbe	Detailed Description of Risk / Opportunity	Probabili	Cost	Schedule	Cost	Schedule	Strategy Pre-Trigger Mitigation Plan		Residual Risk	Post Trigger Mitigation Plan	
1	Obtaining the required scheduled outage	1	1	1			Accept	Develop plan and increase communication as scheduled outage approaches.	Construction delays may result from outage postponement.	Continue frequent communication until outage work is concluded.	
2	Obtaining the proper distribution line easement rights or ability to enact existing rights.	2	2	2			Mitigate	Identify individual to address potential property issues immediately after Distribution Line design is completed.	Unable to acquire proper easements.	Circle back to design to determine potential alternate routes.	
3	Material/equipment damaged during substation construction extending schedule	1	2	2			Mitigate	Require contractor to provide site security and be responsible for potential damage.	Vandalism occurs.	Enhance security measures and expedite replacement of materials and/or equipment.	

3.8 Execution Risk Appraisal

NOTE: New Warren feeders will be routed into Barrington and will utilize a bridge crossing and underground infrastructure to be built on a bike path as part of a Department of Transportation (DOT) bridge rebuild project. The company is currently coordinating the bridge crossing with the DOT bridge rebuild project. If bridge project is delayed, it could impact the implementation of this project.

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US Sanction Paper

3.9 Permitting

Permit Name	Probability Required	Duration To Acquire Permit	Status	Estimated Completion Date
Street Opening Permits	Certain	3 Months	Not Applied For	TBD

3.10 Investment Recovery

3.10.1 Investment Recovery and Regulatory Implications

Based on current schedule the new substation feeders will enter service in FY23 and the project will be included in each fiscal year's Annual ISR Filing until that time.

3.10.2 Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.318M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

3.10.3 CIAC / Reimbursement

Not Applicable.

3.11 Financial Impact to National Grid

3.11.1 Cost Summary Table

Distribution:

				A CONTRACTOR OF A		Curren	t Planning H	orizon	and the second second	
		Project		FY18	FY19	FY20	FY21	FY22	FY23+	The state of the s
Project Number	Project Title	Estimate Level (%)	Spend (\$M)	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total
	Warran Sub		CapEx	0.000	0.220	0.700	1.050	1.530	0.000	3.500
C065166	Expansion (D.	+200/-50%	OpEx	0.000	0.020	0.060	0.090	0.130	0.000	0.300
0000100	Sub)	1200/-50 /8	Removal	0.000	0.010	0.040	0.060	0.090	0.000	0.200
	300)		Total	0.000	0.250	0.800	1.200	1.750	0.000	4.000
							10			1000
	Warren Sub	D- +200/-50%	CapEx	0.000	0.230	0.740	1.110	2,000	0.000	4,080
C065187	Expansion (D-		OpEx	0.000	0.010	0.020	0.030	0.070	0.000	0,130
0000107			Removal	0.000	0.020	0.080	0.120	0.270	0.000	0.490
	Carloy		Total	0.000	0.260	0.840	1,260	2.340	0.000	4,700
				100 C		1.3-07				
			CapEx	0.000	0.450	1.440	2,160	3,530	0.000	7.580
Total Briggt Sepation OpEx		OpEx	0.000	0.030	0.080	0.120	0.200	0.000	0.430	
Removal Total			Removal	0.000	0.030	0.120	0.180	0,360	0,000	0,690
			0,000	0.510	1.640	2.460	4.090	0,000	8,700	

Warren Substation Expansion Partial Sanction Uncontrolled When Printed Page 10 of 14

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3.11.2 Project Budget Summary Table

Project Costs per Business Plan

	Current Planning Horizon								
	FY18	FY19	FY20	FY21	FY22	FY23+			
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total		
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 Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000		

Variance (Business Plan-Project Estimate)

	Current Planning Horizon							
	FY18	FY19	FY20	FY21	FY22	FY23+		
\$M	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Total	
CapEx	0.000	(0.450)	(1.440)	(2.160)	(3.530)	0.000	(7.580)	
OpEx	0.000	(0.030)	(0.080)	(0.120)	(0.200)	0.000	(0.430)	
Removal	0.000	(0.030)	(0.120)	(0.180)	(0.360)	0.000	(0.690)	
Total Cost in Bus. Plan	0.000	(0.510)	(1.640)	(2.460)	(4.090)	0.000	(8.700)	

NOTE: The distribution costs associated with the Warren Substation Expansion along with the distribution costs of the associated projects are included in the business plan under funding projects C046726 and C046727. The money in these funding projects will be used to fund the work being proposed in this sanction paper.

3.11.3 Cost Assumptions

Cost estimate accuracy is - 50% to +200%. Project sanction cost estimates (+/- 10%) will be developed after final design is completed.

3.11.4 Net Present Value / Cost Benefit Analysis

Not financially driven.

3.11.4.1 NPV Summary Table

Not Applicable.

3.11.5 Additional Impacts

Not Applicable.

3.12 Statements of Support

3.12.1 Supporters

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

Role	Individual	Responsibilities	

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And the later of the		
Investment Planning	Glen DiConza	Endorses relative to distribution 5-year business plan or emergent work
Investment Planning	Laura McLaughlin	Reviewing milestone dates for synchronization with cash flows in order to move projects out of Step 0.
Resource Planning	Anne Wyman	Endorses D-Line resources, cost, estimate, schedule and Portfolio alignment
Resource Planning	Mark Phillips	Endorses substation resources, cost, estimate, schedule and Portfolio alignment
Asset Management / Planning	Alan LaBarre	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering / Design	Suzan Martuscello	Endorses substation scope, design, conformance with design standards
Engineering / Design	Lisa Sasur	Endorses transmission line scope, design, conformance with design standards
Engineering / Design	Len Swanson	Endorses substation scope, design, conformance with design standards
Project Management	Andrew Schneller	Endorses Resources, cost estimate, schedule

3.12.2 Reviewers

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

Function	Individual	
Finance	Patricia Easterly	
Regulatory	Peter Zschokke	
Jurisdictional Delegates	Jim Pattersonl	
Procurement	Art Curran	
Control Center	Michael Gallagher	
Control Center	Will Houston	

4 Appendices

4.1 Sanction Request Breakdown by Project

\$M	C065166	C065187	Total
CapEx	\$1.150	\$1.380	\$2.530
OpEx	\$0.100	\$0.040	\$0.140
Removal	\$0.070	\$0.160	\$0.230
Total	\$1.320	\$1.580	\$2.900

4.2 Other Appendices

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-11 Page 13 of 14



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national**grid**

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FIGURE 1 – GEOGRAPHIC AREA
The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-11 Page 14 of 14



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Warren Substation Expansion Partial Sanction Uncontrolled When Printed

national**grid**

US Sanction Paper

This document has been reviewed and does not contain Critical Energy/ Electric Infrastructure Information (CEII). 08/18/2021

			national grid				
Resanction: US Sanction Paper							
Title:	Franklin Square 115kV and 11.5kV Asset Replacement	Sanction Paper #:	USSC-17-326v3				
Project #:	C050584, C082439	Sanction Type:	Resanction				
Operating Company:	The Narragansett Electric Company	Date of Request:	8/11/2021				
Author:	Ducimo, Denise	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning				
Utility Service:	Electricity T&D	Project Manager:	Ducimo, Denise				

Executive Summary

This paper requests Resanction of C050584, C082439 in the amount of \$18.074M with a tolerance of +/-10% for the purposes of final design and execution; indicating that the baseline cost, scope, and schedule as described herein has been approved through the Capital Delivery Process.

This sanction amount is \$18.074M broken down into:

\$17.674M Capex \$0.002M Opex \$0.398M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Note the originally requested sanction amount of \$12.284M.

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

The Franklin Square 115kV Asset Replacement project consists of work related to the replacement of transmission assets due to their deteriorating condition. The assets include transformers #1, #2 and #3 with 115kV/11.5kV transformers, nineteen (19) sets of 2000A group operated 115kV disconnects, 115kV #2 bus lighting arresters, E-183 line 115kV capacitor voltage transformers (CCVTs), neutral grounding resistors and all outdoor yard lighting. In order to support the asset replacement scope, the following is required: engineering and design of a new mobile substation utilizing the existing spare 115kV/11.5kV transformer, removal of a drainage swale and culvert and reorientation of the fence that runs on the side of the transformers. The related distribution scope includes the replacement of three (3) indoor 11.5kV 3PST metal enclosed group operating disconnects (1T11-3, 2T11-3 and 3T11-3) with 3000 ampere units. Reconfiguration of the 11.5kV underground cables from new risers to the new outdoor structure.

Drivers:

The Franklin Square Substation is located at 469 Eddy Street in Providence, RI. The 115kV yard was constructed in the early 1930's and serves as a connection point for three 115kV 1transmission lines. The 11.5kV yard is served through three 115/11.5kV transformers. This station also feeds local distribution load

at the Point Street and South Street Substations. The 115kV transformers were manufactured in 1930 and test results show significant paper deterioration as well as elevated insulation power factors outside the manufacturer specifications. Dissolved Gas Analysis reveals a history of thermal faults (high ethane). The 115kV disconnects are in poor condition and are difficult to operate due to linkage deterioration. Infrared tests indicate numerous hot spots. Five sets of these disconnects have failed since 2013 while attempting to isolate circuit breakers for planned maintenance.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)		Project Title		Estimate Amount(\$M)
C050584	T-Sub	Franklin Sq T 115kV			15.718
				Total:	15.718
Project Number	Project Type (Elec only)		Project Title		Estimate Amount(\$M)
C082439	D-Sub	Franklin Sq D 11kV			2.356
				Total:	2.356

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
6/12/2019	USSC	11.167M	12.284M	Sanction	USSC-17- 326v2	10%
10/1/2017	USSC	4.000M	8.300M	Partial	USSC-17-326	-25%/+50%

Variance driven by low labor estimate and additional job scope identified and executed during final engineering construction.

Over / Under Expendit	ure Analysis					
Summary Analysis	Capex	Opex	Removal	Total		
Resanction Amount	17.674	0.002	0.398	18.074		
Latest Approval	10.545	0.000	0.622	11.167		
Change	7.129	0.002	(0.224)	6.907		
Key Milestones						
Milest	tone	Date (Month / Year)				
Partial Sanction		October 2017				
Sanction		June 2019				
Gate C - Approval to Begin	Engineering & Design	June 2019				
Engineering Design Compl	ete - EDC	June 2020				
Gate C1 - Approval to Prog	ress to Field Execution	September 2020				
Construction Start		October 2020				
ISO NX9 Rating		June 2021				
Re-sanction		August 2021				
Overall Ready for Load			September 2022			

Envelope ID. 6545DADC-F50A-4950-9 IDF-E450		The Narraganse RIPU Atta	ett Electric d/b/a Nati UC Docket achment D	
Construction Complete - CC		Nove	ember 2022	Р
Project Closure Sanction		Μ	lay 2023	
Next Planned Sanction				
Date (Month/Year)		Purpose o	f Sanction Review	
Date (Month/ Fear)				
May 2023			Closure	
May 2023			Closure	
Net Zero Contribution to National Grid's 2050 80% emissions reduction target:	 Neutral 	 Positive 	Closure	
Date (Month Fear) May 2023 Net Zero Contribution to National Grid's 2050 80% emissions reduction target: Impact on adaptability of network for future climate change:	 Neutral Neutral 	PositivePositive	Closure Negative Negative	
May 2023 Net Zero Contribution to National Grid's 2050 80% emissions reduction target: Impact on adaptability of network for future climate change: Qualifies for Green Financing:	 Neutral Neutral Yes 	 Positive Positive No 	Closure Negative Negative Negative 	

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 NE Transmission Capital Plan	\odot Yes \bigcirc No	● Over ○ Under ○ N/A	(3.764)
FY22-26 NE Distribution Capital Plan	\odot Yes \bigcirc No	\odot Over \bigcirc Under \bigcirc N/A	(1.140)
If Cost > Approved			

if costs > 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.

Detailed Analysis Table			
Detail Analysis	Over/Under Expenditure?	Amount (M's)	
Engineering and Design	\odot Over \bigcirc Under		0.601
Material, Equipment, and Rental Costs	\odot Over \bigcirc Under		1.900
Construction Labor	● Over ◯ Under		3.800
Dig in repair costs	Over O Under		0.606
Explanation of Key Variations			

1. Engineering and Design

• MSA change orders for engineering design of 11kV disconnects, mobile sub package, rectifying

improper transformer phase markings in field.

- Redesign of 11kV due to no real estate to install 3 new manholes in a congested substation. In addition, no indoor disconnects at this voltage are no longer manufactured by any vendor. Replaced with outdoor structure and additional cable. Intercepted existing conduit and replaced in same location.
- 2. Construction Labor
 - Baseline craft labor underestimated for time and duration of project. Additional labor hours required due to scope increase during final engineering and design.
 - Under estimated underground electrical contractor labor for time and duration of project.
 - Added 4 sets 115kV disconnect from system damage/failure list. Not on original job scope.
 - Needed to also replace all strain bus and insulators on structure due to deteriorated condition. This was identified as possibility in job scope based on field findings but no labor or material on original job scope.
- 3. Material, Equipment, and Rentals
 - Rental equipment underestimated for time and duration of project.
 - Material costs 30% higher than estimated due to COVID 19 impact. Additionally, scope changes identified during final engineering increased required material and equipment. The 35kV 2,000kcmil Copper cable and total cost of 3 new 55MVA transformers collectively added \$1M in costs. Upgraded from 50 to 55MVA and increase in cost since original order over 3 years ago.
- 4. Accidental Dig In to Customer Owned Cable. In house crews dug up a six duct bank which was repaired by an outside 3rd party contractor. National Grid reimbursed the customer's contractor for the costs associated with fixing the damage.

Cost Summary Table

Transmission

Project Number	Project Title Fi	ranklin Sq	T 115kV		P E: Le	roject stimate % evel	/+10%	
		FY	FY	FY	FY	FY	FY	T . (.)
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotal
Capex	8.432	5.000	1.968	0.000	0.000	0.000	0.000	15.400
Opex	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.002
Removal	0.069	0.143	0.104	0.000	0.000	0.000	0.000	0.316
Total	8.502	5.144	2.072	0.000	0.000	0.000	0.000	15.718

Distribution

Project Number	Project Title F	ranklin Sq	D 11kV		Pi E: Le	roject stimate % evel	/+10%	
		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	lotal
Capex	1.156	1.118	0.000	0.000	0.000	0.000	0.000	2.274
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.008	0.074	0.000	0.000	0.000	0.000	0.000	0.082
Total	1.164	1.192	0.000	0.000	0.000	0.000	0.000	2.356

Total Project Sanctic	on							
Capex	9.588	6.118	1.968	0.000	0.000	0.000	0.000	17.674
Opex	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.002
Removal	0.077	0.217	0.104	0.000	0.000	0.000	0.000	0.398
Total	9.666	6.336	2.072	0.000	0.000	0.000	0.000	18.074
Project Costs p	er Business	s Plan						
Transmission								
\$M	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Сарех	8.432	2.262	0.940	0.131	0.000	0.000	0.000	11.765
Opex	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Removal	0.069	0.119	0.000	0.000	0.000	0.000	0.000	0.188
Total Cost in Bus. Plan	8.502	2.381	0.940	0.131	0.000	0.000	0.000	11.954
Variance								
	Drior Vro	FY	FY	FY	FY	FY	FY	Total
\$M		2022	2023	2024	2025	2026	2027	TOLA
Сарех	0.000	(2.738)	(1.028)	0.131	0.000	0.000	0.000	(3.635)
Opex	0.000	(0.001)	0.000	0.000	0.000	0.000	0.000	(0.001)
Removal	0.000	(0.024)	(0.104)	0.000	0.000	0.000	0.000	(0.128)
Total Variance	0.000	(2.763)	(1.132)	0.131	0.000	0.000	0.000	(3.764)
Project Costs p	er Business	s Plan						
Distribution								
\$M	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Сарех	1.156	0.049	0.001	0.001	0.000	0.000	0.000	1.207
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.008	0.001	0.000	0.000	0.000	0.000	0.000	0.009
Total Cost in Bus. Plan	1.164	0.050	0.001	0.001	0.000	0.000	0.000	1.216
Variance								
		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	lotal
Capex	0.000	(1.069)	0.001	0.001	0.000	0.000	0.000	(1.067)
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	(0.073)	0.000	0.000	0.000	0.000	0.000	(0.073)
Total Variance	0.000	(1.142)	0.001	0.001	0.000	0.000	0.000	(1.140)

Improvements / Lessons Learned

Lesson learned from accidental dig in with IHC civil workers on site. Dug in to customer owned cable. See IA (Inc No. 584441 - Franklin Sq. 11kV Cable Damage). It includes lessons learned when working on jointly owned property. During development stage of project work with additional land owner to discuss what if any underground they may have in the region. Important to note that both a GPR study and valid dig safe did not show any markings of the duct bank that was accidentally dug up.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen; McColgan, Karen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Ahern, Barry; Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	McGrath, Jim; Knauss, John- Paul H.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers					
Function	Individual				
Finance	Joyce, Anisa				
Regulatory	Azarcon, Carolyn				
Jurisdictional Delegate(s)	Easterly, Patricia				
Procurement	Chevere, Diego				
Control Centers (CC)	Gallagher, Michael W.; Cutler, Joseph H.				

Decisions

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 08/11/2021: (a) APPROVE the investment of \$18.074M and a tolerance of +/-10% for final design and execution; indicating that the baseline cost, scope, and schedule as described herein has been approved through the Capital Delivery Process.

(b) NOTED that Ducimo, Denise has the approved financial delegation

DocuSigned by:
Michael Gillespie
09F411044CFF47A

8/16/2021

Signature _____

Date

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

N/A

Title:	EB Alternative 9-3c Re-location	Sanction Paper #:	USSC-18-212
Project #:	C075202	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	5/15/2018
Author:	Frank Louis Carro	Sponsor:	Carol A. Sedewitz, VP Electric Asset Management
Utility Service:	Electricity T&D	Project Manager:	Nelson Antunes

1 <u>Executive Summary</u>

1.1 Sanctioning Summary

This paper requests sanction of project # C075202 in the amount of 5.450M with a tolerance of \pm 10 % for the purposes of performing all engineering, design, procurement of materials (including long lead items), permitting, construction, and testing/commissioning of equipment.

This sanction amount is \$5.450M broken down into:

\$4.680M Capex \$0.370M Opex \$0.400M Removal

With a total estimated Contribution in Aid of Construction (CIAC)/Reimbursement of \$5.978M (\$5.450M <u>plus</u> \$0.528M tax effect adder) required prior to commencement of the project.

NOTE given the accelerated customer schedule and political nature of the project, a partial CIAC of \$3.374M was invoiced to and received from the customer in April 2018. Partial CIAC will be used for procurement of long lead material items upon completion of sanctioning and Delegation of Authority (DOA). An estimated additional \$2.204M (\$2.000M plus \$0.204M tax adder) needs to be collected from the customer prior to commencement of construction.

This project has undergone a Capital Efficiency Review with the following determination:

This project is in final design and/or has secured the necessary agency approvals to proceed and is ready to be released for construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project will be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

1.2 Project Summary

General Dynamics Electric Boat (EB) is presently supplied by National Grid's 34.5 kV and 12.47 kV overhead electric distribution systems out of Davisville and Quonset Substations located in North Kingstown, RI. EB has requested that National Grid relocate existing overhead utilities into an underground system to accommodate EB's submarine manufacturing and proposed transporter route. This project proposes construction of new, and modification of existing, distribution facilities to accommodate EB's request.

2 Project Detail

2.1 Background

General Dynamics Electric Boat's Quonset Point Facility located in North Kingstown, RI was initially established in 1973 to provide off-site support to EB's Groton, CT shipyard. At the Quonset Point facility, major submarine components are manufactured using digitally controlled machines for cutting, machining, and bending. Completed submarine hull cylinders are outfitted with tanks, propulsion and auxiliary machinery, piping, wiring and lighting, special hull coatings and are then transported by barge to Groton, CT or Huntington Ingalls-Newport News Shipbuilding in Newport News, VA for completion. There are currently 2,700 employees working at EB.

EB has been commissioned to build thirteen (13) Virginia class nuclear powered fastattack submarines for the Navy at a cost of \$2.6 billion each. Construction of these submarines is scheduled to commence in 2019. EB will be replacing fourteen (14) of the Ohio class submarines with twelve (12) Columbia class ballistic missile submarines in 2021. Approximately 575,000 square feet of new manufacturing space and a new 8,000 square foot coatings facility is expected. This expansion expects to add an additional 1,300 manufacturing and 600 construction jobs over the next ten (10) years.

A new transporter route is required to provide access from the manufacturing facilities to the Quonset harbor. Approximately 2,500 feet of 34.5 kV and 12.47 kV electrical circuits located on both sides of Roger Williams Way in North Kingstown need to be buried to accommodate the required transporter clearance height of 70 feet.

2.2 Drivers

The primary driver for this project is the customer's request for National Grid to re-locate existing overhead utilities into an underground system by May 2019 to accommodate Electric Boat's proposed submarine manufacturing and transporter route.

2.3 Project Description

This project calls for the re-location of National Grid's 35 kV and 15 kV overhead electric facilities into a manhole and duct system to be constructed by others. All civil work will be built to National Grid Standards under the direct supervision of a National Grid employee/contractor. The scope of the required distribution work is detailed as follows:

Installs: (44)-poles, (109)-crossarms, (462)-anchors, (8)-15 kV loadbreak switches, (3)-15 kV pole top reclosers, (21)-15 kV disconnect switches, (9)-35 kV disconnect switches, (109)-arresters, (9,900 circuit feet)-3-1/C-1000 kcmil Cu EPR 15 kV cable, (4,800 circuit feet)-3-1/C-1000 kcmil Cu EPR 35 kV cable, (2,200 circuit feet)-3-1/C-477 Al bare conductor, (4,400 circuit feet)-3-1/C-1/0 Al bare conductor, and associated equipment.

<u>Removals</u>: (33)-poles, (158)-crossarms, (9)-15 kV loadbreak switches, (9)-15 kV disconnect switches, (79)-arresters, (500 circuit feet)-3-1/C-1000 kcmil, (200 circuit feet)-3-1/C-1000 kcmil EPR 35 kV cable, (4,800 circuit feet)-3-1/C-1/0 AI bare conductor, and associated equipment.

Transfer: Associated distribution equipment

Perform: Associated switching

A site plan showing General Dynamics Electric Boat's new manufacturing space, new coating facility, and proposed transporter route is shown in Figure 1.

2.4 Benefits

Re-location of National Grid overhead utilities is necessary to accommodate General Dynamics Electric Boat's proposed submarine manufacturing and transporter route.

2.5 Business & Customer Issues

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

2.6 Alternatives

Alternative 1: Leave as is

This is not a viable alternative given that EB has requested re-location of National Grid's overhead facilities. The chosen project is the least cost method of providing the level of service that meets the customer's needs and expectations.

2.7 Investment Recovery

National Grid's overhead electric utilities are being re-located solely to accommodate EB's proposed transporter route. Cost of requested re-locations shall be borne entirely by the customer. The estimated cost of the required work to be performed by National Grid is \$5.450M. The customer has previously paid \$0.400M for preliminary engineering, final engineering, and design for construction and an additional \$3.374M (\$3.050M plus \$0.324M tax adder) for procurement of long lead material items. An estimated additional \$2.204M (\$2.000M plus \$0.204M tax adder) needs to be collected from the customer prior to commencement of construction.

2.7.1 Customer Impact

This project is subject to a customer CIAC and will have no rate impact on customers.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C075202	D-Line	EB Alternative 9-3c Re-location	5.450
		Total	5.450

3.2 Associated Projects

N/A

3.3 **Prior Sanctioning History**

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other
 Mandatory 	Mandatory Customer Obligation
O Policy- Driven	
O Justified NPV	
Other	

3.5 Asset Management Risk Score

Asset Management Risk Score: 49

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability
 O Environment
 O Health & Safety
 O Not Policy Driven

3.6 Complexity Level

Complexity Score: 21

3.7 Next Planned Sanction Review

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

4 <u>Financial</u>

4.1 Business Plan

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY 19 – FY 23 NE Distribution & Transmission Capital Plan	⊙Yes ONo	⊙ Over O Under O NA	\$1.460M

4.1.1 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.

4.2 CIAC / Reimbursement

		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
\$M	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
CIAC/Reimbursement	0.400	5.050	0.000	0.000	0.000	0.000	0.000	5.450

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
		Project			Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
Project		Estimate Level				1.21110.201	100		VII 7585		
Number	Project Title	(%)	Spend	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
			CapEx	0.680	3.000	1.000	-		-	•	4.680
0075000		(1.10.0/)	OpEx	-	0.280	0.090	1	-	-	с. С.	0.370
CU75202 EB Alternative 9-30 Rehocation	(±10%)	Removal	-	0.300	0.100			-	•	0.400	
			Total	0.680	3.580	1.190	•	•	~	•	5.450
			CapEx	0.680	3.000	1.000	-	•	-	-	4 680
Total Project Sanction		OpEx	-	0.280	0.090	1	-	-	1	0.370	
		Removal		0.300	0.100	•	•	•	-	0.400	
			Total	0.680	3.580	1,190	•	1.00			5.450

4.4 **Project Budget Summary Table**

Project Costs Per Business Plan

	1	Current Planning Horizon (\$M)							
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total	
CapEx	0.000	0.050	0.300	1.250	1.250	0.000	0.000	2.850	
OpEx	0.000	0.010	0.060	0.250	0.250	0.000	0.000	0.570	
Removal	0.000	0.010	0.060	0.250	0.250	0.000	0.000	0.570	
Total Cost in Bus. Plan	0.000	0.070	0.420	1.750	1.750	0.000	0.000	3.990	

Variance (Business Plan-Project Estimate)

			Current Planning Horizon (\$M)							
	Prior Yrs	Yr. 1 Yr. 2 Yr. 3 Yr. 4 Yr. 5 Yr. 6+								
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total		
CapEx	(0.680)	(2.950)	(0.700)	1.250	1.250	0.000	0.000	(1.830)		
OpEx	0.000	(0.270)	(0.030)	0.250	0.250	0.000	0.000	0.200		
Removal	0.000	(0.290)	(0.040)	0.250	0.250	0.000	0.000	0.170		
Total Cost in Bus. Plan	(0.400)	(4.980)	0.420	1.750	1.750	0.000	0.000	(1.460)		

<u>Note</u>: National Grid's overhead electric utilities are being re-located solely to accommodate EB's proposed transporter route. Cost of requested re-locations shall be borne entirely by the customer.

The Narragansett Electric Company d/b/a National Grid National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-13 Page 8 of 11

Short Form Sanction Paper

5 Key Milestones

Milestone	Target Date: (Month/Year)
Engineering Design Complete - EDC	May 2018
Project Sanction	May 2018
Procurement of Long Lead Items	October 2018
Construction Start	December 2018
Construction Complete - CC	May 2019
Ready for Load/Use	May 2019
Project Closure Sanction	August 2019

6 Climate Change

Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	O Negative
Impact on adaptability of network for future climate change:	 Neutral 	O Positive	O Negative

7 Statements of Support

7.1.1 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 plan
Resource Planning	Daniel Marceau	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Ryan Constable	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Kevin Hellmuth	Endorses scope, design, conformance with design standards
Project Management	Shaun Vacher / Marc Quesnel	Endorses resources, cost estimate, schedule
Electric Project Estimation	John Duffy	Endorses Cost Estimate

7.1.2 Reviewers

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

Function	Individual
Finance – Rhode Island, NES	Felicia Midkiff
Regulatory – NE Electric	Ed Turieo
Jurisdictional Delegate – Electric, NE	Sonny Anand
Procurement	Diego Chevere
Control Center – New England Regional CC	Michael Gallagher

8 Decisions

1:	
(a)	APPROVE this paper and the investment of \$5.450M and a tolerance of \pm 10 %.
(b)	NOTE that Nelson Antunes is the Project Manager and has the approved financial delegation to undertake the activities stated in (a).
Signa	ature DXH. Capall Date 5/2-1/18
	David H. Campbell, Vice President ServCo Business Partnering, USSC Chair

9 Other Appendices

9.1 Sanction Request Breakdown by Project

N/A

9.2 Figures



<u>Figure 1</u>: Site Plan Showing General Dynamics Electric Boat's New Manufacturing Space, New Coating Facility, and Proposed Transporter Route.

nationalgrid

Short: US Sanction Paper					
Title:	RI VVO/CVR Expansion: Woonsocket 26, Dexter 36	Sanction Paper #:	USSC-18-298 v3		
Project #:	C082900, C080896, C084731, C080900	Sanction Type:	Sanction		
Operating Company:	The Narragansett Electric Company	Date of Request:	4/14/2020		
Author:	Hughes, Michael	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning		
Utility Service:	Electricity T&D	Project Manager:	Hughes, Michael		

Executive Summary

This paper requests Sanction of C082900, C080896, C084731, C080900 in the amount of \$2.129M with a tolerance of +/-10% for the purposes of full implementation of the project.

This sanction amount is \$2.129M broken down into:

\$1.828M Capex \$0.219M Opex \$0.082M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

This sanction is for construction of two (2) substations and 8 feeders within the total scope VVO/CVR expansion in FY20/FY21. The work includes the installation and implementation of VVO/CVR. The noted substations/feeder sets will have VVO/CVR technology deployed on them will be determined by the Grid Modernization Execution Group and Distribution Planning and Asset Management. Their collaboration is to ensure VVO/CVR deployment on the selected stations/feeder sets are implemented under the following conditions: implementation will maximize the value of the technology; implementation will be applied to distribution areas which have recently undergone study and were not identified for major infrastructure changes.

National Grid will build upon the infrastructure deployed during the Rhode Island VVO/CVR Pilot to cost effectively deploy the technology to high value substations in the service territory as an expansion project. The third year of this expansion includes 2 substations in the service territory. The expansion will utilize the existing Adaptivolt VVO/CVR server, deployed in Lincoln, RI. For this expansion, existing substation and distribution device locations will be retrofitted with advanced control and communications. The project estimates a 3% reduction in demand and energy usage for the <u>14k customers</u> in the project area of the 8 feeders.

Background

Advanced Volt VAR Optimization and Conservation Voltage Reduction (VVO/CVR) is a program where centralized, coordinated control is deployed to manage existing distribution assets with the intent of better optimizing the performance of the system, and deliver energy at a voltage which results in peak efficiency for the customer- saving the customer an estimated 3% on their energy and demand charges. This technology also provides the Company's internal groups with more granular information on distribution asset performance and operations with real time distribution information.

Advanced VVO/CVR technology was first proposed as part of the Infrastructure, Safety, and Reliability (ISR) process in December of 2012 (Docket 4382). At that time, the Public Utilities Commission approved a year of conceptual design and engineering analysis. In December of 2013, the pilot scope was proposed (Docket 4473), which included two target areas: 3 feeders out of the Putnam Pike substation, and 4 feeders out of the Tower Hill Substation. Construction began on the pilot in July of 2014, and was completed in March of 2017. Two of the seven total project feeders have been operational since March 2016, and have been used to provide quantifiable performance metrics. The pilot was extremely useful in a few key ways.

- Established a centralized controller, with expandable capability, which was networked into the Company Energy Management System (EMS)1 Supervisory Control and Data Acquisition (SCADA) system.
- Refined the approach taken for communicating with distribution devices to optimize cost of installation and ownership.
- Optimized the interaction and management that would be provided to EMS to avoid nuisance alarms and onerous operating resources.

This expansion proposal leverages these learnings and infrastructure to further deploy the technology in an improved cost efficient manner over the pilot. This paper seeks deploy this technology on the <u>Dexter and</u> <u>Woonsocket substations and their associated feeders</u>.

Project Description

The project has selected the following substations for the technology deployment in FY20/FY21.

This project will include modifying the substation regulator control/Line Tap Changers (LTCs) to allow remote data access from the VVO/CVR Server. 33 new advanced switching capacitors will be installed, and 7 existing switchable capacitors will be retrofitted with an advanced controller. Finally, 10 end-of-line voltage monitors will be deployed between Dexter and Woonsocket substation circuits.

The costs used for this project are developed from the actuals of the device installs of the VVO/CVR Pilot, deployed during FY15/16. As these expansion projects progress, these actual costs will be refined to represent improved deployment efficiencies.

The selection of these substations was created by examining the estimated cost to deploy a VVO/CVR system, as well as the projected benefits yielded. This was then dovetailed with Distribution Planning to select high value areas which also have recently undergone a planning study, to ensure the solution will be deployed to maximize the useful life without modification.

Summary of Benefits

Customer Benefits

The Customers in the areas identified will benefit from the deployment of this technology in several ways. The most significant reduction of peak demand and energy usage, resulting in lower bills. From the Company's pilot work, an estimated 3% reduction is anticipated. The program has an estimated 15-year benefit-cost ratio greater than 3.

Company Benefits

This proposal will also include EMS integration of the key operating parameters for the distribution devices in

the target project area. Real time interval data from these devices will provide increased visibility into system performance, outage management, and more accurate planning. These benefits are not quantified in this paper. The demand and energy reductions will incrementally reduce the Company's capacity cost, as wall as energy procurement costs.

Business and Customer Issues

The VVO/CVR technology proposed will integrate into the Company's existing distribution system and not introduce an impact to customers on the affected feeders. As the Company will now be monitoring key points of the distribution system in real-time, we expect an overall reduction in the voltage variation provided to customers. While lowering the voltage does impact the operating efficiency of some customers devices, the impact is so slight that it is generally unperceivable. The technology will improve our operational voltage profile by adaptively controlling voltage and VAR regulating devices in response to system demand changes in real time. This happens without customer involvement.

The core control technology is provided by Utilidata, a local business in Rhode Island. Utilidata was selected through an open competitive procurement process for this project. As part of the expansion project, licenses of their software were purchased in bulk, and will be deployed each year on the expansion projects.

Due to the current COVID-19 Pandemic, National Grid's ability to deliver this project/program/blanket may be at risk. We will continue to evaluate based on rapidly evolving conditions and take appropriate actions as needed.

Drivers:

National Grid view this expansion of VVO/CVR as advancing its US Connect21 Strategy, which seeks to transform National Grid's electricity and natural gas networks to support the 21st century digital economy with smarter, cleaner, and more resilient energy solutions. This expansion supports many of the Connect21 goals, particularly investing to grow and modernize the system, but also ensuring safety/compliance and reliability.

Deploying this technology will further refine the strategy that will ultimately be incorporated into these proposals. Moreover, this technology will provide the Company with greater visibility into the real time operation of the local distribution system.

Alternatives			
Number		Title	
1	"Do Nothing"		

The Company could "Do Nothing" in this area, and not pursue VVO/CVR control of the distribution system. This approach is not recommended for several reasons:

A significant amount of infrastructure was installed during the pilot, which can be leveraged to deploy this technology in a cost effective manner.

The Company will benefit from a significant increase in operational awareness through real time monitoring of distribution device locations. This will help in unquantified ways during storm restoration, planning, and operation of these areas. VVO/CVR investment is part of "grid modernization" proposals and demonstrations in other service territories.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C080896	D-Line	RI VVO/CVR Exp Dexter 36, Distribution	0.745

C080900	D-Sub	RI VVO/CVR Exp Dexter Substation		0.100
C082900	D-Line	RI VVO/CVR Expansion - Woonsocket Distribution		0.880
C084731	D-Sub	RI VVO/CVR Expansion - Woonsocket 26, Substation		0.404
			Total:	2.129

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
N/A		
		0.000

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
8/6/2019	USSC	1.100M	2.166M	Partial	USSC-18- 298v2	+/- 10%
9/25/2018	USSC	0.173M	1.706M	Partial	USSC-18-298	+/- 25%

Key Milestones			
Milestone	Date (Month / Year)		
Partial Sanction	August, 2019		
Engineering Design Complete - EDC	November, 2019		
Construction Start	December, 2019		
Sanction	April, 2020		
Construction Complete - CC	March, 2021		
Project Closure Sanction	July, 2021		

Next Planned Sanction			
Date (Month/Year)	Purpose of Sanction Review		
July, 2021	Closure		

Category

Category

O Mandatory

Policy-Driven

◯ Justified NPV

Reference to Mandate, Policy, or NPV Docket No. 4592 - National Grid's Electric Infrastructure, Safety, and Reliability (ISR) Plan

Asset Management Risk Score: 21

PRIMARY RISK SCORE DRIVER

 \odot Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc Not Policy Driven

Complexity Level: 20

 \bigcirc High Complexity \odot Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	Positive	○ Negative
Impact on adaptability of network for future climate change:	◯ Neutral	Positive	○ Negative
Qualifies for Green Financing:	• Yes	⊖ No	○ N/A

Investment Recovery and Customer Impact

Investment Recovery

Investment Recovery will be through standard rate recovery mechanisms and the project will be approved through the annual ISR process.

Customer Impact

Cost Summary Table

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.338M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21 - 25 NE Distribution Capital Plan	\odot Yes \bigcirc No	\odot Over \bigcirc Under \bigcirc N/A	(1.142)
If Cost > Approved			

if costs > 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.

Project Number	Project Title R	I VVO/CVI	R Exp Dext	er 36, Distr	ribution Es	roject stimate + evel	/-10%	
		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.520	0.143	0.000	0.000	0.000	0.000	0.000	0.663
Opex	0.041	0.011	0.000	0.000	0.000	0.000	0.000	0.052
Removal	0.029	0.001	0.000	0.000	0.000	0.000	0.000	0.030
Total	0.590	0.155	0.000	0.000	0.000	0.000	0.000	0.745

Project Number	Project Title	RI VVO/CV	′R Exp Dex	ter Substat	ion E L	Project Estimate ∟evel	+/-10%	
		FY	FY	FY	FY	FY	FY	T . ()
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.004	0.074	0.000	0.000	0.000	0.000	0.000	0.078
Opex	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018
Removal	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.004
Total	0.004	0.096	0.000	0.000	0.000	0.000	0.000	0.100
Project Number C082900	Project Title	RI VVO/CV Distribution	'R Expansio	on - Woons	ocket F E L	Project Estimate ₋evel	+/- 10%	
Creard		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.354	0.417	0.000	0.000	0.000	0.000	0.000	0.771
Opex	0.026	0.050	0.000	0.000	0.000	0.000	0.000	0.076
Removal	0.012	0.021	0.000	0.000	0.000	0.000	0.000	0.033
Total	0.392	0.488	0.000	0.000	0.000	0.000	0.000	0.880
Project Number	Project Title	RI VVO/CV 26, Substat	'R Expansio ion	on - Woons	socket E L	Project Estimate ∟evel	+/- 10%	
Spond		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Totai
Сарех	0.001	0.315	0.000	0.000	0.000	0.000	0.000	0.316
Opex	0.000	0.073	0.000	0.000	0.000	0.000	0.000	0.073
Removal	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.015
Total	0.001	0.403	0.000	0.000	0.000	0.000	0.000	0.404
Total Project Sanction								
Capex	0.879	0.949	0.000	0.000	0.000	0.000	0.000	1.828
Opex	0.067	0.152	0.000	0.000	0.000	0.000	0.000	0.219
Removal	0.041	0.041	0.000	0.000	0.000	0.000	0.000	0.082
Total	0.987	1.142	0.000	0.000	0.000	0.000	0.000	2.129
Project Costs per	Busines	s Plan						
\$M	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
Capex	0 870	0.000	0.000	0.000	0.000	0.000	0.000	0.870
	0.079	0.000	0.000	0.000	0.000	0.000	0.000	0.079
Removal	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.007
Total Cost in Bus.	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.041
	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.001

Plan								
Variance								
		FY	FY	FY	FY	FY	FY	T . (.)
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.000	(0.949)	0.000	0.000	0.000	0.000	0.000	(0.949)
Opex	0.000	(0.152)	0.000	0.000	0.000	0.000	0.000	(0.152)
Removal	0.000	(0.041)	0.000	0.000	0.000	0.000	0.000	(0.041)
Total Variance	0.000	(1.142)	0.000	0.000	0.000	0.000	0.000	(1.142)

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Altenburger, Peter F.; Swanson, Leonard G.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers				
Function	Individual			
Finance	Bostic, Christina			
Regulatory	Azarcon, Carolyn			
Jurisdictional Delegate(s)	Easterly, Patricia			
Procurement	Chevere, Diego			
Control Centers (CC)	Gallagher, Michael W.			

Decisions

I:

(a) APPROVE the investment of \$2.129M and a tolerance of +/-10% for full implementation of the project.

(b) NOTED that Hughes, Michael has the approved financial delegation.

	DocuSigned by:
Signature	Christine McClure
	957B264AFE26466
- //	

Date _____5/21/2020

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-14 Page 9 of 9

Appendix

N/A

REDACTED

This document has been redacted for Critical Energy/Electric Infrastructure Information (CEII). 01/07/2020

nationalgrid

Short: US Sanction Paper					
Title:	ST Leased Teleprotection Migration	Sanction Paper #	USSC-18-307 V2		
Project #:	C070108, C070109, & C086391	Sanction Type:	Sanction		

Operating Company:	NE Power / Narragansett Electric.	Date of Request:	10/6/2020
Author:	Mamo, Jeremiah	Sponsor(s):	Gemmell, Brian
			VP Trnsmsn Asset Mgmt Plan & Del
			Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Alexander. Thomas

Executive Summary

This paper requests Sanction of C070108, C070109, & C086391 in the amount of \$4.415M with a tolerance of +/-10% for the purposes of implementation of the FY21, FY22 and FY23 scope.

This sanction amount is \$4.415M broken down into:

\$3.952M Capex \$0.344M Opex \$0.119M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

This project will purchase JungleMUX (JMUX) communications equipment, 2200VA DC-AC inverters and wall mount brackets to be installed inside electric substations in Massachusetts and Rhode Island during FY21, FY22 and FY23. The work will prepare for the planned retirement of Verizon DS0 communications circuits and allow for continued protection scheme and telecommunication operation at each station after the transition to leased T1 equipment. See Table 1 in the Appendix for the list of stations in the FY21 Work Plan and Table 2 for the estimated amount of stations to be completed in FY22 and FY23.

Background

National Grid is continuing to install JungleMUX T1 Multiplexer (JMUX) devices in electric substations in Massachusetts and Rhode Island as Verizon continues to phase out its Plain Old Telephone Service (POTS) circuits throughout both regions. As outlined in Sanction Paper USSC-18-307, these circuits will be retired and replaced by Verizon's T1 lines.

signal down to a DS0 signal, which can be interpreted by National Grid's protection equipment within the substation.

Verizon circuits are powered by their Optical Network Terminal (ONT) equipment, which requires AC voltage. The ONT equipment comes equipped with a backup battery; however, National Grid Telecom Engineering has determined that this battery is not sufficient nor acceptable due to required circuit availability past the battery life along with battery maintenance issues. In order for the ONT equipment to maintain operability during an AC power outage, National Grid has determined that a 2200VAC DC-AC inverter is required to convert the substation's DC battery voltage to the 115vac required to power Verizon's ONT equipment. This application will ensure the continuity of a station's Remote Terminal Unit (RTU) and the station's phone line.

Project Description

This project will continue to purchase and install JMUX T1 multiplexer units, 2200VA DC-AC inverters and wall mount brackets to prepare National Grid-owned substations for eventual conversion of 4-wire DS0 communication circuits into T1 lines by Verizon. The exact number of JMUX devices, inverters and wall mounts are not known as Verizon has not released an official list of total sites with affected DS0 circuits; however, Verizon has provided a tentative list of specific substations in which these devices and associated equipment may be installed. The JMUX units are a direct installation to maintain the current DS0 protection system as it currently operates after the communication link between stations is converted to a T1 line by Verizon. The JMUX terminal equipment will convert the Verizon signal and will also be compatible with the future private telecommunication network planned for the area.

Work planned by fiscal year:

<u>FY21</u>

This project purchased (20) 2200VA, 130vdc to 115vac inverters, (8) 48vdc to 115vac inverters and (2) JMUX devices in FY21.

FY22 & FY23

In FY22 and FY23, the project will continue to purchase DC-AC inverters and JMUX devices as determined by site visits. The final amount of each will be known after Verizon officially launches its list of sites it plans to retire for these specific fiscal years. Based on the tentative list Verizon has provided and the timeline in which it would like to retire its DS0 circuits, it can be assumed Verizon will launch approximately 49 sites per fiscal year.

In summary, this project will purchase DC-AC inverters and JMUX devices as determined by site visits. These devices will be installed within National Grid substations in coordination with Verizon as they convert DS0 circuits to T1 circuits. The specific timing of these installations have yet to be determined. The partial sanction value will provide enough funding to meet Verizon demands through FY22.

Summary of Benefits

The project will prepare National Grid to maintain Class A connectivity between substations once Verizon retires their DS0 communication lines. It will also prepare the Company for the installation of a future private communication network owned and operated by National Grid. A private network gives National Grid greater control over communication between substations and expanded bandwidth to incorporate other communications such as station landline telephone and internet traffic. Should the company choose to lease out additional dark fibers in the future, it will also produce a new source of revenue. Response times for communication network failures will be faster as opposed to waiting for an external company to mobilize crews and make repairs.

Overall adoption of private communication networks will eliminate the significant operational expense of leasing communication bandwidth from Verizon. This project is the first step in achieving that goal because it installs equipment that works with both the leased network and with the future company-owned network.

Business and Customer Issues

Verizon has notified National Grid of aggressive timelines for retirement of their POTS communication circuits. National Grid has a limited amount of time to prepare for this conversion and if not successful, involved substations could be without protection schemes.

This project is progressing in parallel to the development of private network conversions across the National Grid system. If those projects are delayed, that would increase the number of stations where JMUX devices are required to bridge the gap between Verizon and National Grid-owned communications circuits.

The proposed list of circuits which Verizon intends to convert from DS0 to T1 is not finalized. There is absolute certainty of the need to purchase and install JMUX equipment, however the timing of when Verizon will retire DS0 circuits and therefore the specific number and location of where National Grid should be installing JMUX is unknown. This project will allow National Grid to maintain substation protection and keep pace with DS0 circuit conversion until more complete timelines are agreed on.

Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Drivers:

C086391

The proposed retirement of DS0 communication circuits by Verizon necessitates the conversion of terminal equipment at each affected station to ensure continued operation of the station protection systems. National Grid must be able to maintain Class A communication connectivity when Verizon is ready to retire their equipment.

Alternat	ives					
Number	Title					
1	Private Company-owned circuit: This is not a feasible alternative as Verizon's conversion of legacy communication protocols into T1 circuits is too aggressive for National Grid to wait for private company-owned communication solutions to be available. There is insufficient time to design and construct alternative communication circuits before Verizon removes existing circuits from service.					
2	Do Nothing: This not be able to co protection schem	is not a feasible solution because post Verizon conversation, Na ntinue operation of its transmission protection network and subst ses would become inoperable without this project.	ational Grid will ation			
Related	Projects, Scor	ing and Budget				
Summa	ry of Projects					
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)			
C070108	T-Sub	ST NEP Protection Circuit Migration	1.347			
C070109	T-Sub	ST NEC Protection Circuit Migration	0.828			
		Total	2.175			
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)			

Associated Projects - N/A

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
7/27/2020	Electronic DoA	\$1.800M	N/A	Partial	N/A	+/-25%
10/2/2018	USSC	\$4.000M	\$7.208M	Partial	USSC-18-307	+/-25%

Costs have significantly increased due to the amount of sites identified for this project as well as the implementation of inverters required for many of the sites.

Note: The original paper included funding projects C070108 and C070109. The electronic DOA was obtained for funding project C086391. This sanction paper is now combining all three funding projects to support this scope.

Key Milestones	
Milestone	Date (Month / Year)
FY21 Key Milestones	
Partial Sanction	October 2018
Engineering Design Complete - EDC	August 2020
Construction Start	August 2020
Construction Complete - CC	September 2020
Construction Complete / Ready for Load / Use	September 2020
Sanction	October 2020
FY22 Key Milestones	
Engineering Design Complete - EDC	August 2021
Construction Start	September 2021
Construction Complete - CC	February 2022
Construction Complete / Ready for Load / Use	February 2022
FY23 Key Milestones	
Engineering Design Complete - EDC	August 2022
Construction Start	September 2022
Construction Complete - CC	February 2023
Construction Complete / Ready for Load / Use	February 2023
Project Closure Sanction	August 2023

Next Planned Sanction

Date (Month/Year) August 2023 Purpose of Sanction Review Closure

Category

Category

Reference to Mandate, Policy, or NPV

 Mandatory Policy-Driven Justified NPV 	The Asset Management & Engineering Business Management Standard (BMS 04) sets performance requirements for the "maintenance, repair, replacement, operations and retirement of assets". One of the core principals of the standard is to make decisions based on reliability, safety, environmental, performance, and cost.

Asset Management Risk Score:44

PRIMARY RISK SCORE DRIVER

 \odot Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc Not Policy Driven

Complexity Level: 16

 \bigcirc High Complexity \bigcirc Medium Complexity O Low Complexity \bigcirc N/A

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target: 	Neutral	O Positive	Negative
Impact on adaptability of network for future climate change:	Neutral	○ Positive	○ Negative
Qualifies for Green Financing:	• Yes	\bigcirc No	○ N/A

Investment Recovery and Customer Impact

Investment Recovery

Indicative First Full Year Revenue By Company • 5360 Narragansett Electric Company (D): \$0.331M • 5360 Narragansett Electric Company (T): \$0.136M • 5410 New England Power Company: o PTF: \$0.079M o Non-PTF: \$.105M The PTF component (\$0.079M) will be recovered through the Regional Network Service (RNS) rate and Non-PTF component (\$0.105) will be recovered from customers through the Local Network Service (LNS) rate. The total customer impact is \$0.652M.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.652M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-25 NE Transmission Capital Plan	● Yes ○ No	⊖ Over Under ○ N/A	0.211
FY21-25 NE Distribution Capital Plan	🔿 Yes 🖲 No	\odot Over \bigcirc Under \bigcirc N/A	(2.240)
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

Re-allocation of funds within the portfolio has been managed by Resource Planning to meet jurisdictional

budgetary, statutory, and regulatory requirements.

Cost Summary Ta	able							
Transmission								
Project C070108 Number	Project Title	ST NEP P	rotection Ci	ircuit Migrati	ion	Project Estimate Level	+/-25	
		FY	FY	FY	FY	FY	FY	Total
Spend		2021	2022	2023	2024	2025	2026	TOLA
Capex	0.469	0.415	0.228	0.228	0.000	0.000	0.000	1.340
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.003	0.002	0.002	0.000	0.000	0.000	0.007
Total	0.469	0.418	0.230	0.230	0.000	0.000	0.000	1.347
Project Number	Project Title	ST NEC P	rotection C	ircuit Migrati	ion	Project Estimate Level	+/-25	
Spand	Drior Vro	FY	FY	FY	FY	FY	FY	Total
Spend		2021	2022	2023	2024	2025	2026	TOLA
Capex	0.000	0.206	0.307	0.307	0.000	0.000	0.000	0.820
Opex	0.000	0.002	0.003	0.003	0.000	0.000	0.000	0.008
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.208	0.310	0.310	0.000	0.000	0.000	0.828
Distribution	Proiect					Project	/	
Number C086391	Title	Verizon Co	izon Copper to Fiber Conversions			Estimate +/-25 Level		
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.192	0.800	0.800	0.000	0.000	0.000	1.792
Opex	0.000	0.036	0.150	0.150	0.000	0.000	0.000	0.336
Removal	0.000	0.012	0.050	0.050	0.000	0.000	0.000	0.112
Total	0.000	0.240	1.000	1.000	0.000	0.000	0.000	2.240
Total Project Sanction								
Capex	0.469	0.813	1.335	1.335	0.000	0.000	0.000	3.952
Opex	0.000	0.038	0.153	0.153	0.000	0.000	0.000	0.344
Removal	0.000	0.015	0.052	0.052	0.000	0.000	0.000	0.119
Total	0.469	0.866	1.540	1.540	0.000	0.000	0.000	4.415
Project Costs per	Busines	s Plan						
Transmission								
\$M		FY	FY	FY	FY	FY	FY	

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								Attaching
	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.469	0.475	1.426	0.000	0.000	0.000	0.000	2.370
Opex	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.009
Removal	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.007
Total Cost in Bus. Plan	0.469	0.491	1.426	0.000	0.000	0.000	0.000	2.386
Variance								
	D · V	FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	(0.146)	0.891	(0.535)	0.000	0.000	0.000	0.210
Opex	0.000	0.007	(0.003)	(0.003)	0.000	0.000	0.000	0.001
Removal	0.000	0.004	(0.002)	(0.002)	0.000	0.000	0.000	0.000
Total Variance	0.000	(0.135)	0.886	(0.540)	0.000	0.000	0.000	0.211
Project Costs p	er Busines	s Plan						
Distribution								
\$M	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	10101
Capex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Variance								
-		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotal
Capex	0.000	(0.192)	(0.800)	(0.800)	0.000	0.000	0.000	(1.792)
Opex	0.000	(0.036)	(0.150)	(0.150)	0.000	0.000	0.000	(0.336)
Removal	0.000	(0.012)	(0.050)	(0.050)	0.000	0.000	0.000	(0.112)
Total Variance	0.000	(0.240)	(1.000)	(1.000)	0.000	0.000	0.000	(2.240)

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen; McColgan, Karen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.; Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design		Endorses scope, design,
REDACTED

	Altenburger, Peter F.; Swanson, Leonard G.	conformance with design standards	
Project Estimation	Lutz, Sara	Endorses cost estimate	
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule	-
Deviewer			

Reviewers	
Function	Individual
Finance	Harju, Andrew; Bÿltes pi ≙ n b/tie/w ael
Regulatory	Azarcon, Carolyn; Long, James ; Artuso, Michael V.
Jurisdictional Delegate(s)	Easterly, Patricia; Hill, Terron P.
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

REDACTED

Decisions

I: (a) APPROVE the investment of \$4.415M and a tolerance of +/-10% for implementation of the FY21, FY22 and FY23 scope.

(b) NOTED that Alexander, Thomas has the approved financial delegation

(DocuSigned by:
Signature	Mike Gillespie
12/23/	2020
Date	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

REDACTED

Appendix

TABLE 1. FY21 WORK PLAN - VERIZON WAVES 1 - 7

Funding Project	Site
C070108 - New England Power Company	Ipswich Municipal 81
	Litchfield
	North Chelmsford #2
	South Randolph
	Union Street
	Water Street
	West Andover
C070109 – Narragansett Electric Transmission	Admiral Street
	Clarkson #13
	Peacedale #51
	Wakefield #17
	West Kingston #62
C086391 – Narragansett Electric Company	Chopmist #34
	Harris Avenue #12
	Lippit Ave #79
	Manton Ave #69
	Olneyville #6

TABLE 2. FY22-FY23 WORKPLAN – VERIZON WAVES [UNKNOWN]

Funding Project	Sites	FY22	FY23
C070108 - New England Power Company	12	6	6
C070109 – Narragansett Electric Transmission	14	7	7
C086391 – Narragansett Electric Company	22	11	11

Title:	Franklin Square Circuit Breaker Replacement	Sanction Paper #:	USSC-18-331
Project #:	C081006	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Co.	Date of Request:	11/27/2018
Author:	Robert Pendrake	Sponsor:	Carol A. Sedewitz, VP Distribution Asset Management & Planning
Utility Service:	Electricity T&D	Project Manager:	Banafsheh Tofigh

1 <u>Executive Summary</u>

1.1 Sanctioning Summary

This paper requests sanction of C081006 in the amount of \$4.550M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$4.550M broken down into:

\$4.316M Capex \$0.000M Opex \$0.234M Removal

This project has undergone a Capital Efficiency Review with the following determination:

This project reflects mature designs and efficiencies that are now accepted as a standard. The sanction amount reflects these efficiency savings; however, there are no further incremental savings relative to the sanction amount.

1.2 Project Summary

The project will replace twenty-six (26) circuit breakers at the Franklin Square #11 substation in Providence due to asset condition. The breakers are obsolete (1938 vintage), lack spare parts, are slow to operate and are unreliable. Aditionally, replacement of these breakers is necessary to support ongoing expansion and system improvement work in the area.

2 Project Detail

2.1 Background

The twenty-six (26) 11 kV circuit breakers at the Franklin Square #11 Substation are comprised of General Electric (GE) Type FH oil-filled circuit breakers and GE Type ARA air-blast units. The GE Type FH breakers are obsolete and slow to operate at 180 ms compared to a modern 5-cycle breaker at approximately 80 ms. They have deteriorated and aged insulation and parts. They were manufactured in 1938 (80 yrs old). This breaker family is being targeted for replacement under the approved Circuit Breaker and Recloser Asset Replacement Program (ARP). Seventeen (17) have been replaced since 2017.

The GE Type ARA breakers are of an obsolete design. In addition, two of these units recently failed and were replaced as a damage/failure project. The breaker failed to operate and further investigation indicated structural cracks in the mechanism. Two similar units other positions displayed the same issue and both were immediately replaced under damage/failure.

2.2 Drivers

Asset condition is the primary driver for this project and non wires is not an alternative. The breakers are obsolete, unreliable and have a high probability of failure. As system improvements and customer expansions are underway, this project is in-line with the company goals in this area.

2.3 Project Description

The project will replace twenty-six (26) circuit breakers at Franklin Square #11 substation in Providence, RI that are comprised of GE Type ARA air-blast and GE FH oil-filled design.

2.4 Benefits

Replacement of these breakers will assist with providing reliable service to the Companie's customers in the area. It will also enhance the expansion and system improvement projects that are ongoing in the area as Franklin Square Substation provides the 11 kV supply to South Street Substation, Fields Point LNG expansion project, the Rhode Island Hospital, and the Dominion Generation facility.

2.5 Business & Customer Issues

Since these investments are designed for system improvements, they do not require a CIAC. There are no business or customer issues other than those already stated in this paper.

2.6 Alternatives

Alternative 1: Deferment

Deferment or do nothing is not recommended as the breakers have a high probability of failure, are obsolete, lack spare parts and manufacture support, are deteriorate and aged, and are slow to operate. Deferment or do nothing may result in interrupted service to a large amount of critical customers which would adversely affect the Company's reputation.

2.7 Investment Recovery

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 \$0.798M.

3 Related Projects, Scoring, Budgets

3.1 Summary of Projects

Project Number	Project Type (Elec only)	Project Title		Estimate Amount (\$M)
C081006	D-Sub	Franklin Sq Breakers Fy19-FY23		4.550
			Total	4.550

3.2 Associated Projects

N/A

3.3 Prior Sanctioning History

N/A

3.4 Category

Category	Reference to Mandate, Policy, NPV, or Other	
O Mandatory		
Olicy-Driven	Substation Circuit Breaker & Recloser Strategy, 2009	
O Justified NPV		
O Other		:

3.5 Asset Management Risk Score

Asset Management Risk Score: _39_

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability O Environment O Health & Safety O Not Policy Driven

3.6 Complexity Level

○ High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Complexity Score: __15___

3.7 Next Planned Sanction Review

4 <u>Financial</u>

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 (\$)	
NE Distribution Electric Capital Plan FY19 – FY23	O Yes ⊙ No	⊙ Over O Under O NA	4.550M	

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

Re-allocation of funds from the Breaker Replacement Program within the portfolio has been managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

4.2 CIAC / Reimbursement

N/A

4.3 Cost Summary Table

					Current Planning Horizon (\$M)						
14.2 20	The second se	Project	1.0	"Strat	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	21 TO 153
Project Number	Project Title	Estimate Level (%)	Spend	Prior Yrs	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
			CapEx	-	1,159	1.159	1.159	0.828	•	-	4.305
C081006	Franklin Sq Breakers Fy19-	Est Lvi (e.g.	OpEx	-	-	-	-	•	•	-	•
0001000	FY23	+/- 10%)	Removal	-	0.066	0.066	0.066	0.047	-	-	0.245
<u> </u>			Total	-	1.225	1.225	1.225	0.875	-	•	4.550
							_				
			CapEx	-	1.159	1,159	1.159	0.828	-	-	4.305
Total Project Sanction		OpEx	-	-	220	-	-	-	-	•	
		Removal	-	0.066	0.066	0.066	0.047	•	· ·	0.245	
			Total	-	1.225	1.225	1.225	0.875	-		4.550

4.4 Project Budget Summary Table

Project Costs per Business Plan

		Current Planning Horizon (\$M)						
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	5405-083
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	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 Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variance (Business Plan-Project Estimate)

		Current Planning Horizon (\$M)							
	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
\$M	(Actual)	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total	
CapEx	0.000	(1.159)	(1.159)	(1.159)	(0.828)	0.000	0.000	(4.305)	
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Removal	0.000	(0.066)	(0.066)	(0.066)	(0.047)	0.000	0.000	(0.245)	
Total Cost in Bus. Plan	0.000	(1.225)	(1.225)	(1.225)	(0.875)	0.000	0.000	(4.550)	

5 Key Milestones

Milestone	Target Date: (Month/Year)
Project Sanction	November 2018
Project Kick-off	November 2018
Procurement	November 2018
Construction Start	February 2019
Construction Complete - CC	January 2022
Project Closure Sanction	March 2022

6 <u>Climate Change</u>

Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	O Negative
Impact on adaptability of network for future climate change:	Neutral	O Positive	O Negative

7 Statements of Support

7.1.1 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 D-Sub	Mark Phillips	Endorses resources, cost, schedule
Distribution Planning	Al Labarre	Endorses scope, design, design standard
Engineering and Design	Mark Larrabee	Endorses scope, design, design standard
Engineering and Design	Leonard Swanson	Endorses scope, design, design standard

7.1.2 Reviewers

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

Function	Individual
Finance	Felicia Midkiff
Regulatory	Ed Turieo
Juristictional	Patricia Easterly
Procurement	Diego Chevere
Control Center	Michael Gallagher

7.1.3 List References

N/A

	The Narra	gansett Electric Company
		d/b/a National Grid
		RIPUC Docket No. 5209
national		Attachment DIV 3-2-16
	9	Page 8 of 9

8 Decisions

1.000	
(a)	APPROVE this paper and the investment of \$4.550M and a tolerance of +/-10%
(b)	NOTE that Banafsheh Tofigh is the Project Manager and has the approved financial delegation.
Sign	ature DlH. Chel Date 11/29/18
	David H. Campbell, Vice President ServCo Business Partnering, USSC Chair

9 Other Appendices

9.1 Breaker Positions

1112, 1121,1123, 1125, 1126, 1130 1141, 1149, 1153, 1160, 1164, 11GT3 2T11, 2T62, 3T11, 1B10G, 2B10G, 2207, 2521, 0764-30, 2326, 4239, 0766

This document has been reviewed and does not contain Critical Energy/ Electric Infrastructure Information (CEII). 03/02/2020

d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-17 Page 1 of 15

			national grid
Long: US S	Sanction Paper		
Title:	Wickford Junction Substation: Dry Bridge & Exeter Projects	Sanction Paper #	: USSC-18-334 v2
Project #:	C080592, C080588, C081880, C081665, C081881, C080591, C080594, C082822, C084775, C084781	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	1/27/2020
Author:	Gisiger, Urs	Sponsor(s):	Sedewitz, Carol A.
	Salehian, Afshin		VP Electric Asset Mgmt & Planning
			Gemmell, Brian
			VP Trnsmsn Asset Mgmt Plan & Del
Utility Service:	Electricity T&D	Project Manager:	Martinez, Orlando

Executive Summary

This paper requests Sanction of C080592, C080588, C081880, C081665, C081881, C080591, C080594, C082822, C084775, C084781 in the amount of \$34.297M with a tolerance of +/-10% for the purposes of final design and full implementation; indicating that the baseline costs, scope and schedule as described herein has been approved through the Network Development Process.

This sanction amount is \$34.297M broken down into: \$33.491M Capex \$0.449M Opex \$0.357M Removal

With a CIAC/Reimbursement of \$34.297M With a Salvage Value of \$0.000M

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

Wickford Junction Substation Scope of Work (SOW) consists of a new 115kV four (4) breaker ring bus switchyard feeding a new 115/34.5kV substation with one 34.5kV breaker-and-a-half bay, and associated equipment. The station will be constructed on a greenfield site already owned by National Grid. The new station is required for the installation of two (2) 34.5kV feeders for distribution generation (solar) interconnection of EDP Dry Bridge(40 MW); EDP Exeter Renewables (10 MW); and Green Development Exeter (55.5 MW).

Background

The customers, Energy Development Partners (EDP) and Green Development (GD), requested to interconnect 105.5 MW of ground mount solar projects to the distribution system in Rhode Island as follows:

- Four projects with aggregate capacity of 40 MW in North Kingstown, RI (EDP Dry Bridge Solar)
- One 10 MW project at 89 Ten Rod Road, Exeter, RI (EDP Exeter Renewables)
- Nine projects with aggregate capacity of 55.5 MW in the vicinity of Ten Rod Road and South County Trail in Exeter, RI (Green Development Exeter)

To meet the minimum interconnection requirements, a new 115/34.5kV substation (Wickford Junction) with a small T-Line loop and associated distribution infrastructure must be developed.

Project Description

To meet the customer interconnection request, the following project scope meets the minimum interconnection standard requirements and maintain system reliability:

Substation:

- Build a new 34.5 kV to 115 V substation with 4-breaker ring bus
- Install two 115/34.5kV transformers
- Associated remote site work at designated substations

T-Line Loop:

• Tap into L-190 115 KV T-Line

D-Line:

Circuit #1:

- Construction of 3 distributed generation interconnection points
- Installation of approx. 1.5 miles of a new 35kV overhead D-Line to Dry Bridge POI
- Installation of approximately 1,500 circuit feet of 2 sets of 3-1/C-1000kcmil CU 35kV EPR Cable
- Installation of approximately 9,000 circuit feet of 1 set of 3-1/C-1000kcmil CU 35kV EPR Cable.

Circuit #2:

- Construction of 9 distributed generation interconnection points
- Installation of approx. 5.72 miles of overhead D-Line to connect the various Green Development projects
- Installation of approximately 11,500 circuit feet of 1 set of 3-1/C-1000kcmil CU 35kV EPR Cable

Customer to design and install conduit and manhole system from the getaway of the substation to the intersection of South County Trail and from South County Trail to POI.

Summary of Benefits

The infrastructure enables interconnection of approximately 105.5 MW of clean renewable resources to meet the policy requirements of state and local authorities while supporting reduction of greenhouse gas emission.

Business and Customer Issues

There are 14 distributed generation projects among EDP and GD, clustered in three areas. The infrastructure cost has to be shared across these 14 projects and allocated to the two customers per the respective Interconnection Service Agreements (ISA).

EDP signed a conditional ISA in November 2019 agreeing to pay for the full station build-out including the T-Line loop as well as the D-Line required to interconnect EDP Dry Bridge and EDP Exeter Renewables. GD will decide whether to move forward with its projects after the transmission study results are known, expected in March 2020.

If GD moves forward an ISA will be issued in the amount GD is responsible for, with respect to the substation and T-Line loop as well as the D-Line required to interconnect the GD projects, the amount collected from GD with respect to the substation and T-Line, will be passed on to EDP to reimburse EDP for the portion of the substation and T-Line that benefits GD.

Drivers:

This is a customer-driven project.

The new transmission and distribution infrastructure enables the interconnection of approximately 105.5 MW of clean renewable power to the transmission system. Development of all these transmission and distribution infrastructure ensures reliable access to clean renewable resources and helps state and local authorities to reach their target for addition of renewable generation resources.

New infrastructure provides continued compliance with all applicable federal and regional reliability standards and criteria and maintains reliable electric service to generator interconnection customers as well as load customers in the area.

Alterna	lives
Number	Title
1	Re-route and upgrade of existing 34.5kV sub-transmission circuit (84T3): Install approximately 5.5 miles of 795 aluminum spacer and approximately 3 miles of UG extension to customer's site location. The proposed 795 aluminum spacer cable has a thermal limit of approximately 43 MVA. This option was somewhat less expensive for the 1st customer and was under consideration when the initial customer connection was only 40 MW. However, even though it met the initial 40 MW requirement, this option was on the verge of being dismissed by the 1st customer due to a number of feasibility concerns. Subsequently a 2nd 58 MW customer joined the proposal as well as the first customer chose to add another 10 MW to the project. These new developments made this 43MW solution not viable for either customer's total capacity so it was not selected. Additionally the immediate cost sharing aspect of the chosen alternative made it the least costly alternative in the end.
2	Do Nothing: Without a new substation only a small fraction of the DG projects (10 MW) could reliably interconnect to the distribution system. This alternative is not acceptable because both customers are relying on the full capacity of their projects in order to finance the projects.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title Estima Amount	
C080588	D-Line	D-Line EDP Dry Bridge	2.782
C081880	D-Line	D-Line EDP Exeter Renewables	1.708
C081665	D-Line	D-Line GD Exeter	9.047
C080591	D-Sub	D-Sub EDP Dry Bridge	2.342
C081881	D-Sub	D-Sub Exeter	0.586
		Total	16.465
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C080592	T-Line	T-Line Loop	1.820
C080594	T-Sub	T-Sub EDP	15.032
C082822	T-Sub	T-Sub GD	0.000

C084781	T-Sub	Remote Substation Kent County		0.490
C084775	T-Sub	Remote Substation West Kingston		0.490
			Total:	17.832

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C081675	New Lafayette Substation - civil engineering/site work only	1.000
		1.000

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
1/28/2019	USSC	9.180	36.720	Partial	USSC-18-334	+200%/-50%

Cost reduction is mainly attributed to more advanced substation design & engineering providing for a more accurate cost estimate

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	January, 2019
Down Payment	November, 2019
Gate C - Approval to Begin Engineering & Design	December, 2019
Sanction	January, 2020
Engineering Design Complete - EDC	December, 2020
Gate C1 - Approval to Progress to Field Execution	December, 2020
Construction Start	January, 2021
Construction Complete / Ready for Load / Use	December, 2021
Construction Complete - CC	February, 2022
Gate D - Approval to Progress to Closeout	February, 2022
Project Closure Sanction	May, 2022

Site Preparation - Clearing & Grading: OCT 2020

Next Planned Sanction

Date (Month/Year) May, 2022 Purpose of Sanction Review Closure

Category	
Category	Reference to Mandate, Policy, or NPV
Mandatory Policy-Driven Justified NPV	Projects are requested by customers and will be fully funded by them. National Grid has to facilitate interconnection of the new generation facilities with a fully executed interconnection. Service Agreement
	fully executed Interconnection Service Agreement.

Asset Management Risk Score: 49

PRIMARY RISK SCORE DRIVER

○ Reliability ○ Environment ○ Health & Safety ● Not Policy Driven

Complexity Level: 29

● High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Process Hazard Assessment

Current Planning Horizon

Distribution

	Current Planning Horizon									
		FY	FY	FY	FY	FY	FY	Total		
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026			
CapEx	0.453	4.451	10.762	0.036	0.000	0.000	0.000	15.702		
OpEx	0.006	0.080	0.353	0.001	0.000	0.000	0.000	0.440		
Removal	0.004	0.059	0.260	0.000	0.000	0.000	0.000	0.323		
Total	0.463	4.590	11.375	0.037	0.000	0.000	0.000	16.465		

Transmission

	Current Planning Horizon									
		FY	FY	FY	FY	FY	FY	Total		
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026			
CapEx	0.679	8.646	8.323	0.141	0.000	0.000	0.000	17.789		
OpEx	0.001	0.006	0.002	0.000	0.000	0.000	0.000	0.009		
Removal	0.004	0.024	0.006	0.000	0.000	0.000	0.000	0.034		
Total	0.684	8.676	8.331	0.141	0.000	0.000	0.000	17.832		
Сарех	1.132	13.097	19.085	0.177	0.000	0.000	0.000	33.491		
Орех	0.007	0.086	0.355	0.001	0.000	0.000	0.000	0.449		
Removal	0.008	0.083	0.266	0.000	0.000	0.000	0.000	0.357		
Total	1.147	13.266	19.706	0.178	0.000	0.000	0.000	34.297		

Resources, Operations, & Procurement

RESOURCE SOURCING

Engineering & design Resources to be provided	✓ Internal ✓ Contr		Contractor	
Construction/Implementation Resources to be provided	✓ Internal	al Contractor		
	RESOURCE DELIV	ERY		
Availability of internal resources to delivery project:	⊖ Red	O Amber	Green	
Availability of external resources to delivery project:	⊖ Red	O Amber	Green	
	OPERATIONAL IMP	ACT		

				RIPU	d/b/a National Grid C Docket No. 5209
				Attac	Page 6 of 15
OL	utage impact on network system	⊖ Red		• Green	1 420 0 01 13
		PROCUREMENT I	MPACT		
F	Procurement impact on network system:	○ Red	O Amber	Green	
Key l	ssues				
1	Green Development (2nd currequirements to maintain its the overall project schedule for a full build-out of the sub- cost exposure to National Green	istomer) has not yet ma queue position. In case is not impacted while at station and T-Line loop rid.	de any CIAC payments b Green Development terr the same time EDP (1st (secured by Letter of Cre	ut meets all ninates its project, customer) is paying dit) eliminating any	_
2	Abutter opposition could lead buffer restrictions, constructi associated cost increases w process (capped at 25%).	d to a delay and/or poss on of privacy wall and p hich would be passed o	sible purchase of land to r lanting of additional vege on to customer during the	neet town specific tation all with reconciliation	-
3	Customer has not yet delive delay the interconnection of Line design. In case Nationa addendum to the ISA would change.	red complete plans for t all solar farms and is ho Il Grid is requested to st be issued making the c	he underground D-Line s olding up the completion of rep-in to build the undergr ustomer responsible to pa	ection which may of National Grid's D- ound duct bank, an ay for such scope	
4	Transmission study results e forward with projects. Howev what will be spent by the tim the customer Letter of Credit not yet paid for by customer	expected in Q1 2020 ma ver, National Grid will ha e customer will have to t protects National Grid (if any).	ay impact customer's deci ave collected customer pa make a final decision wh further for possible decor	sion to move ayments in excess of ile at the same time nmissioning costs	-
5	There is a high likelihood the upgrades for EDP Exeter Re by the customer.	e results of the transmis newables project that w	sion study will trigger add vill have to be designed a	itional transmission nd ultimately paid for	-
6	Customer required RFL date a compressed project sched delays.	based on off-taker pow ule to meet promised R	ver purchase agreement s FL date, leaving limited b	sunset date results in uffers for schedule	-
Net Z	'ero				
				قساسير بنيل بكورجي	

The Narragansett Electric Company

Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	Positive	○ Negative
Impact on adaptability of network for future climate change:	⊖ Neutral	Positive	○ Negative
Qualifies for Green Financing:	⊖ Yes	No	○ N/A

List References

1 Estimating Document: E19-0090-L190 Loop to Wickford Junction Sub-4.3

2 Estimating Document: E19-0119-EDP Dry Exeter Projects-Distribution Work-4.3

3 Estimating Document: E19-0120-EDP Dry Bridge Projects-Distribution Work-4.3

- 4 Estimating Document: E19-0121-Green Development Exeter Projects-Distribution Work-4.3
- 5 Estimating Document: E19-0145-Wickford Junction No. 8098-Install New 115-34.5kV Substation-Distribution Station Scope-Version 2-4.3
- 6 Estimating Document: E19-0146-Wickford Junction No. 8098-Install New 115-34.5kV Substation-Transmission Station Scope-Version 2-4.3
- 7 Feasibility Study GD Exeter: National Grid Doc. RI-26003838 (Feasibility Study for Distributed Generation Interconnection to National Grid's System)
- 8 Distribution Planning Document Interconnection Study Dry Bridge Solar LLC (Draft): National Grid Doc. RI24926794_6796_6798_6805
- 9 Distribution Planning Document Interconnection Study Exeter Renewables 1 LLC (Draft): Doc. RI-26012283

Safety, Environmental and Project Planning Issues

Safety All work is expected to be performed in accordance with federal, state, local and National Grid policies and procedures as it relates to safety.

Permitting **Permit Name** Probability Duration to Status Estimated Required Acquire Permit **Completion Date Special Use Permit** Certain 1-2 months In Progress February, 2020 **Dimensional Setback** Certain 1-2 months In Progress February, 2020 & Structure Height Variance **Development Plan** Certain 1-2 months In Progress February, 2020 Review **Building Permit** Certain 2-3 weeks Not Applied For February, 2020 **RI EFSB** Certain 2 months Not Applied For February, 2020 **RIDEM RIPDES** 2 months Certain Complete November, 2019 RIDOT 3 months Certain Complete December, 2019 Soil Erosion Certain 2 months Complete September, 2019 & Sediment Control RIHPHC Certain 3 months Complete August, 2019

Investment Recovery and Customer Impact

Investment Recovery

Customers' Contribution in Aid of Construction (CIAC) payments are collected to prefund all forecasted project expenditures. Outstanding CIAC payments are secured with a customer letter of credit.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0M.

Execution Risk Appraisal										
Risk Breakdown	Qu	Qualitative Assessment / Risk Response Strategy								
Structure Category	Risk ID + Title	IF Statemen	THEN Statement	Risk R	Response Strategy					
1. Project Requirements	R18 - Legal risks with customer	IF project is not delivered on time	THEN customer could choose to seek payment for liquidated damages	Accept	Carful project management	12				
3. Engineering	R15 - Transmission Interconnection studies drive additional upgrade costs to transmission network	IF TSIS triggers additional upgrade costs to transmission network	THEN customer would be responsible to pay for such upgrades	Transfer	Amendment to conditional ISA	12				
2. Public Local Government	R16 - Issues with Abutters	IF there are abutters who have issues with the project	THEN the project could be delayed	Transfer	Land purchase may be required to meet town specific buffer restrictions and/or construction of privacy wall with planting of additional vegetation. Associated cost increases to be passed on to customer during the reconciliation process (capped at 25%).	12				
3. Engineering	R17 - customer minor changes to points of interconnection	IF customer moves POI	THEN a possible design adjustment may be required	Transfer	Cost increases due to customer action are transferred to customer per ISA	8				
14. Weather	R2 - Major weather events	IF major weather event occurs	THEN this could cause additional cost to project to keep contractor on site	Accept	Careful construction planning	6				

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY20-24 NE Distribution Electric Capital Plan	🔿 Yes 🖲 No	● Over ◯ Under ◯ N/A	(16.002)
FY20-24 NE Transmission Electric Capital Plan	🔿 Yes 🖲 No	● Over ○ Under ○ N/A	(17.148)

If Cost > Approved

if costs > 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.

Customer CIAC payments pay for the entire project.

CIAC Reimburser	nent			_				
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	F) 2025	Y FY	Total
CIAC/Reimbursement	1.189	5.458	27.650	0.000	0.000	0.000	0.000	34.297
Cost Summary Ta	able							
Distribution								
Project Number C080588	Project Title	D-Line ED	P Dry Bridge	1	F E L	Project Estimate evel	+/-10%	
Spond	Prior Vro	FY	FY	FY	FY	FY	FY	T-4-1
	FIIOT TIS	2021	2022	2023	2024	2025	2026	lotal
Capex	0.142	0.766	1.728	0.005	0.000	0.000	0.000	2.641
Opex	0.004	0.024	0.055	0.000	0.000	0.000	0.000	0.083
Removal	0.003	0.017	0.038	0.000	0.000	0.000	0.000	0.058
Total	0.149	0.807	1.821	0.005	0.000	0.000	0.000	2.782
Project Number C081880	Project Title	D-Line EDI	D-Line EDP Exeter Renewables			roject stimate evel	+/-10%	
Spend		FY	FY	FY	FY	FY	FY	 Totol
		2021	2022	2023	2024	2025	2026	TOTAL
Capex	0.062	1.065	0.575	0.006	0.000	0.000	0.000	1.708
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	0.062	1.065	0.575	0.006	0.000	0.000	0.000	1.708
Project Number	Project Title	D-Line GD	Exeter		P E	roject stimate evel	+/-10%	
Spend	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total

Capex

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	0.045	1.336	7.029	0.015	0.000	0.000	0.000	8.425
Opex	0.002	0.056	0.298	0.001	0.000	0.000	0.000	0.357
Removal	0.001	0.042	0.222	0.000	0.000	0.000	0.000	0.265
Total	0.048	1.434	7.549	0.016	0.000	0.000	0.000	9.047
Project Number C080591	Project Title	D-Sub EDP	Dry Bridge	,	P E	roject stimate evel	+/-10%	
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	 Totol
		2021	2022	2023	2024	2025	2026	
Сарех	0.155	1.043	1.140	0.004	0.000	0.000	0.000	2.342
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	0.155	1.043	1.140	0.004	0.000	0.000	0.000	2.342
Project Number	Project Title	D-Sub Exete	r		P E Lo	roject stimate - evel	+/-10%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	
	Prior trs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.049	0.241	0.290	0.006	0.000	0.000	0.000	0.586
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	0.049	0.241	0.290	0.006	0.000	0.000	0.000	0.586
Transmission Project Number C080592	Project . Title	T-Line Loop			Pi Es	roject stimate +	+/-10%	
	D :	FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Сарех	0.186	1.276	0.312	0.003	0.000	0.000	0.000	1.777
Opex	0.001	0.006	0.002	0.000	0.000	0.000	0.000	0.009
Removal	0.004	0.024	0.006	0.000	0.000	0.000	0.000	0.034
Total	0.191	1.306	0.320	0.003	0.000	0.000	0.000	1.820
Project Number C080594	Project . Title	ſ-Sub EDP			Pr Es Le	oject stimate + evel	·/-10%	
Spend	Drior Vro	FY	FY	FY	FY	FY	FY	T _1_1
		2021	2022	2023	2024	2025	2026	Iotal
Capex	0.493	7.020	7.471	0.048	0.000	0.000	0.000	15.032
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	0.493	7.020	7.471	0.048	0.000	0.000	0.000	15.032

Project

Project Number C082822	Project Title	T-Sub GD				Estimate Level	+/-10%	
Spood		FY	FY	FY	FY	FY	FY	
Spena	Prior trs	2021	2022	2023	2024	2025	2026	Iotal
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
Project Number C084781	Project Title	Remote Su	bstation Ke	ent County		Project Estimate _evel	+/-10%	
Spend	Prior Vre	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.175	0.270	0.045	0.000	0.000	0.000	0.490
Орех	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	0.175	0.270	0.045	0.000	0.000	0.000	0.490
Project Number C084775	Project Title	Remote Su	bstation W	est Kingsto	n E	Project Estimate ∟evel	+/-10%	
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.175	0.270	0.045	0.000	0.000	0.000	0.490
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	0.175	0.270	0.045	0.000	0.000	0.000	0.490
Total Project Sanction	ו							
Capex	1.132	13.097	19.085	0.177	0.000	0.000	0.000	33.491
Opex	0.007	0.086	0.355	0.001	0.000	0.000	0.000	0.449
Removal	0.008	0.083	0.266	0.000	0.000	0.000	0.000	0.357
lotal	1.147	13.266	19.706	0.178	0.000	0.000	0.000	34.297
Project Costs pe	r Business	Plan						
Distribution								
\$M	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
Canav		2021	2022	2023	2024	2025	2026	
	0.453	0.000	0.000	0.000	0.000	0.000	0.000	0.453
	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.006
Kemoval	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
i otal Cost in Bus. Plan	0.463	0.000	0.000	0.000	0.000	0.000	0.000	0.463

Variance

	-							
		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	(4.451)	(10.762)	(0.036)	0.000	0.000	0.000	(15.249)
Opex	0.000	(0.080)	(0.353)	(0.001)	0.000	0.000	0.000	(0.434)
Removal	0.000	(0.059)	(0.260)	0.000	0.000	0.000	0.000	(0.319)
Total Variance	0.000	(4.590)	(11.375)	(0.037)	0.000	0.000	0.000	(16.002)

Project Costs per Business Plan

Transmission								
\$M		FY	FY	FY	FY	FY	FY	
	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.679	0.000	0.000	0.000	0.000	0.000	0.000	0.679
Орех	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Removal	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
Total Cost in Bus. Plan	0.684	0.000	0.000	0.000	0.000	0.000	0.000	0.684
Variance								
		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	(8.646)	(8.323)	(0.141)	0.000	0.000	0.000	(17.110)
Opex	0.000	(0.006)	(0.002)	0.000	0.000	0.000	0.000	(0.008)
Removal	0.000	(0.024)	(0.006)	0.000	0.000	0.000	0.000	(0.030)
Total Variance	0.000	(8.676)	(8.331)	(0.141)	0.000	0.000	0.000	(17.148)

Cost Assumptions

Project level cost estimates were generate in 2019 with inflation added where appropriate. Cost estimates for two transformers is based on mini bid in 2019.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

N/A

Additional Impacts

This is a customer driven project. All project costs are fully recovered through customer CIAC payments. No financial impacts are expected.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	McColgan, Karen; DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark; Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Ahern, Barry; Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Maglione, Nicole; Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers					
Function	Individual				
Finance	Bostic, Christina; Byrne, Andrew				
Regulatory	Azarcon, Carolyn; Artuso, Michael V.				
Jurisdictional Delegate(s)	Easterly, Patricia; Hill, Terron P.				
Procurement	Chevere, Diego				
Control Centers (CC)	Gallagher, Michael W.; Lavallee, Phillip H.				
·					

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Decisions

The Senior Executive Sanctioning Committee (SESC) approved this paper at a meeting held on 01/27/2020: (a) APPROVE the investment of \$34.297M and a tolerance of +/-10% for final design and full implementation; indicating that the baseline costs, scope and schedule as described herein has been approved through the Network Development Process.

(b) NOTED that Martinez, Orlando has the approved financial delegation

Signature Date

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

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Appendix

N/A

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national**grid**

Short: US Sanction Paper								
Title:	IRURD Woodland Drive Estates	Sanction Paper #: USSC-18-345 V2						
Project #:	C081341	Sanction Type:	Sanction					
Operating Company:	The Narragansett Electric Company	Date of Request:	1/12/2021					
Author:	Sullivan, Patrick	Sponsor(s):	Sedewitz, Carol A.					
			VP Electric Asset Mgmt & Planning					
Utility Service:	Electricity T&D	Project Manager:	Sullivan, Patrick					
Executive Summary								
This paper requests Sanction of C081341 in the amount of \$1.500M with a tolerance of +/-10% for the purposes of full implementation.								

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

\$1.275M Capex \$0.075M Opex \$0.150M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

The project is the rehabilitation of the Woodland Drive Estates Underground Residential Development (URD) in Coventry, RI. The scope encompasses the replacement of 5.500 feet of three-phase direct-buried URD cable all supplying three phase loads. The development is supplied off of poles 99-2 and 88-1 on Nooseneck Hill Road.

Background

Woodland Drive Estates URD is electrically serviced with a 15kV class XLPE direct- buried cable circuit installed in the 1970s. During the past three years this residential development has experienced six cable failures that are attributed to the degeneration of the direct-buried cable.

Project Description

The project is the rehabilitation of the Woodland Drive Estates in Coventry, RI. The direct scope of the project encompasses the replacement of 5,500 feet of three-phase direct-buried URD cable all supplying three phase loads. The installation of a heavy duty hand-hole duct system with #2 AL EPR cable.

Replacement of transformers and other equipment will be assessed at the end of the design stage.

Summary of Benefits

All customer in this URD will benefit from this work. Work is expected to reduce the chronic number of outages on this URD and provide the electric reliability to the customers in this area.

Business and Customer Issues

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

Drivers:

The driver for this project is reliability. The existing type of URD is inadequate for today's standards, and it is known to exhibit the type of failures seen in during the reported cable incidents when it has reached its lifetime. This URD, during the past five years, experienced 12 outages attributed to cable failures, affecting most of the residents on each incident. These outages resulted in 294,300 customer minutes interrupted during the last five years.

Alternatives

Number	Title
1	Cable injection was considered but given the frequency and the location of the failures, it is not recommended per our current URD State guidelines.
2	Do nothing is not recommended because recently interruption events indicate the cable is near the end of its useful life.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C081341	D-Line	IRURD Woodland Drive Estates	1.500
		Total:	1.500

Associated Projects - N/A

Project Number	Project Title	Estimate Amount (\$M)
		0.000

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
1/1/2019	USSC	0.250	1.300	Partial	USSC-18-345	10%

Key Milestones

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-18 r) Page 3 of 7

Milestone	Date (Month / Year)
Partial Sanction	January, 2019
Begin Requirements and Design	January, 2019
Engineering Design Complete - EDC	May, 2019
Construction Start	May, 2020
Sanction	January, 2021
Construction Complete - CC	July, 2021
Project Closure Sanction	November, 2021

Next Planned Sanction	
Date (Month/Year)	Purpose of Sanction Review
November, 2021	Closure
Category	
Category	Reference to Mandate, Policy, or NPV
◯ Mandatory	URD/UCD Cable Strategy
Policy-Driven	
\bigcirc Justified NPV	
Asset Management Risk Scor	re:24
PRIMARY RISK SCORE DRIVER	2
\odot Reliability \bigcirc Environment \bigcirc He	ealth & Safety \bigcirc Not Policy Driven
Complexity Level: 16	

 \bigcirc High Complexity \bigcirc Medium Complexity O Low Complexity \bigcirc N/A

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	 Neutral 	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	Neutral	○ Positive	○ Negative
Qualifies for Green Financing:	• Yes	\bigcirc No	○ N/A

Investment Recovery and Customer Impact

Investment Recovery

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

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service

equal to approximately \$0.236M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-25 NE Distribution Plan	● Yes ○ No	⊖ Over ⊖ Under ● N/A	0.000

If Cost > Approved

if costs > approved Business Plan how will this be funded?

N/A

Cost Summary Table

Distribution								
Project Number ^{C081341}	Project Title	IRURD Wo	odland Driv	ve Estates	F E L	Project Estimate + .evel	-/-10%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	Total
Capex	0.030	0.905	0.340	0.000	0.000	0.000	0.000	1.275
Opex	0.002	0.053	0.020	0.000	0.000	0.000	0.000	0.075
Removal	0.002	0.108	0.040	0.000	0.000	0.000	0.000	0.150
Total	0.034	1.066	0.400	0.000	0.000	0.000	0.000	1.500
Total Project Sanctio	n							
Capex	0.030	0.905	0.340	0.000	0.000	0.000	0.000	1.275
Opex	0.002	0.053	0.020	0.000	0.000	0.000	0.000	0.075
Removal	0.002	0.108	0.040	0.000	0.000	0.000	0.000	0.150
Total	0.034	1.066	0.400	0.000	0.000	0.000	0.000	1.500
Project Costs pe	er Busines	s Plan						
Distribution								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Capex	0.030	0.905	0.340	0.000	0.000	0.000	0.000	1.275
Орех	0.002	0.053	0.020	0.000	0.000	0.000	0.000	0.075
Removal	0.002	0.108	0.040	0.000	0.000	0.000	0.000	0.150
Total Cost in Bus. Plan	0.034	1.066	0.400	0.000	0.000	0.000	0.000	1.500
Variance								_
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total

Capex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Page 5 of 7
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 Variance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers						
Function	Individual					
Finance	Harju, Andrew					
Regulatory	Azarcon, Carolyn; Long, James					
Jurisdictional Delegate(s)	Easterly, Patricia					
Procurement	Chevere, Diego					
Control Centers (CC)	Gallagher, Michael W.					

Decisions

I:

(a) APPROVE the investment of \$1.500M and a tolerance of +/-10% for full implementation.

(b) NOTED that Sullivan, Patrick has the approved financial delegation

	DocuSigned by:
Signature	Mike Gillespie
	09F4T1044CFF47A
1/28/ Date	2021

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

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Appendix

N/A

Resanction	: US Sanction Paper		national grid
Title:	DG - Res America @ 700 Hope Road, Hope	Sanction Paper #	USSC-19-278
Project #:	C078543	Sanction Type:	Re-sanction
Operating Company:	The Narragansett Electric and Gas Co.	Date of Request:	6/4/2019
Author:	Thomas, Ashley	Sponsor:	Sedewitz, Carol A. VP Electric Asset Momt & Planning
Utility Service:	Electricity T&D	Project Manager:	Thomas, Ashley

Executive Summary

This paper requests Re-sanction of C078543 in the amount of \$1.200M with a tolerance of +/-10% for the purposes of full implementation including construction.

This sanction amount is \$1.200M broken down into:

\$1.140M Capex \$0.012M Opex \$0.048M Removal

With a CIAC/Reimbursement of \$1.071M

Note the originally requested sanction amount of \$0.662M.

Project Summary

The Interconnection Facilities shall consist of a new service to their site, approximately 3 poles, 150 feet of 477 ACSR conductor, a load break switch, recloser, and primary meter on the pole line entering the Customers site. The installation of 2,300 feet of 477 ACSR conductor and new poles from the 23kV 2228 circuit at Pole # 9284 along the west edge of the nearby New England Power Company (NEPCO) right-of-way and along the south side of Hope Road, a load break switch, and recloser on the first poles of the proposed taps, are also needed.

Related Projects, Scoring and Budget

Summary of Projects							
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)				
C078543	D-Line	DG - Res America @ 700 Hope Road, Hope	1.200				

Prior San	ctioning Histor	ry					
Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance	
6/23/2017	Electronic DoA	0.662	N/A	Sanction	N/A	10%	
Over / Un	der Expenditu	ire Analysis					
Summary An	alysis	Capex		Opex	Removal	Tota	
Resanction A	Amount	1.140		0.012	0.048	1.200	
_atest Appro	val	0.645		0.013	0.004	0.662	
Change		0.495	()	0.001)	0.044	0.538	
Key Miles	stones						
医 马克治疗	Milesto	ne		Da	te (Month / Year)		
Engineering	Design Complet	e - EDC		June, 2017			
Project Sanction					June, 2017		
Construction Start					May, 2019		
Re-sanction					June, 2019		
Construction	Construction Complete - CC				June, 2019		
Project Clos	ct Closure Sanction			October, 2019			
Next Plan	ned Sanction						
Date (Month/Year)				Purpose of Sanction Review			
October, 2019				Closure			

Business Plan			
Business Plan Name & Period	Project Included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY20-24 NE Distribution Capital Plan		● Over ⊂ Under ⊂ N/A	(0.561)
If Cost > Approved			

if costs > 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.
Drivers

This customer has requested Distributed Generation services under the Company's Standards for Connecting Distributed Tariff, RIPUC No. 2163.

Detailed Analysis Table

Detail Analysis	Over/Under Expenditure?	Amount (M's)
Scope Change	Over O Under	0.338
Resource Change	Over Ounder	0.200

Explanation of Key Variations

There were two amendments to the original Interconnection Service Agreement (dated March 5, 2017) which added some costs and changed the scope of work. This project (Hope Farm Road) was put out to bid with the Southern Sky – Lippitt Avenue projects based on the proximity and scope of work which caused cost sharing to occur. The original straight route design was not feasible so a different route had to be created and cost sharing had to be added in the amendment to accommodate it. The new route benefited two different DG customers in both time and money. On the customer's property, there was an increase of 100 circuit feet of 3-477 AI. On the company's distribution system, there was an increase of 1,600 circuit feet of new 3-477 AAC Spacer. There was a time restraint by all customers involved which meant that the project had to be put out to bid and worked overtime. The project was initially sanctioned using the cost estimate in the Impact Study and that estimate did not include the additional scope of work and the outsourcing of the work.

Cost Summary Table

Distribution								
Project Number C078543	Project Title D)G - Res An	nerica @ 70	00 Hope R	oad, Hope	Pi E: Le	roject stimate evel	10%
Our and	Dian	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.607	0.533	0.000	0.000	0.000	0.000	0.000	1.140
Opex	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.012
Removal	0.026	0.022	0.000	0.000	0.000	0.000	0.000	0.048
Total	0.639	0.561	0.000	0.000	0.000	0.000	0.000	1.200

Total Project Sanction								
Capex	0.607	0.533	0.000	0.000	0.000	0.000	0.000	1.140
Opex	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.012
Removal	0.026	0.022	0.000	0.000	0.000	0.000	0.000	0.048
Total	0.639	0.561	0.000	0.000	0.000	0.000	0.000	1.200

Project Costs per Business Plan

Distribution								
\$M	DiaN	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	-
	Prior Yrs	2020	2021	2022	2023	2024	2025	Iotal
Capex	0.607	0.000	0.000	0.000	0.000	0.000	0.000	0.607

Opex	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.006
Removal	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.026
Total Cost in Bus. Plan	0.639	0.000	0.000	0.000	0.000	0.000	0.000	0.639
Variance								
	Duine Ver	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.000	(0.533)	0.000	0.000	0.000	0.000	0.000	(0.533)
Opex	0.000	(0.006)	0.000	0.000	0.000	0.000	0.000	(0.006)
Removal	0.000	(0.022)	0.000	0.000	0.000	0.000	0.000	(0.022)
Total Variance	0.000	(0.561)	0.000	0.000	0.000	0.000	0.000	(0.561)

Statement of Support		
Department	Individual	Responsibilities
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule and portfolio alignment
Investment Planning	Diconza, Glen L.	Endorses relative to 5-year business plan or emergent work
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Bostic, Christina
Regulatory	Turieo, Edward
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-19 Page 5 of 6

Decisions

1:

(a) APPROVE the investment of \$1.200M and a tolerance of +/-10% for full implementation including construction.

(b) NOTED that Thomas, Ashley has the approved financial delegation

Signature q Date

David H. Campbell, Vice President US Treasury, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-19 Page 6 of 6

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N/A

nationalgrid

Short: US	Sanction Paper					
Title:	Aquidneck Island - Improvement and Retirement Projects	Sanction Paper #: USSC-19-373				
Project #:	C054052, C058310, C058401, C058404, C058407, CD00651, CD00652	Sanction Type:	Partial Sanction			
Operating Company:	The Narragansett Electric Company	Date of Request:	7/14/2020			
Author:	Hughes, Michael	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning			
Utility Service:	Electricity T&D	Project Manager:	Hughes, Michael			

Executive Summary

This paper requests Partial Sanction of C054052, C058310, C058401, C058404, C058407, CD00651, CD00652 in the amount of \$3.700M with a tolerance of +/-10% for the purposes of Engineering, Materials and initial construction start.

This sanction amount is \$3.700M broken down into:

\$1.333M Capex \$0.267M Opex \$2.100M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project is in final design and/or has secured the necessary agency approvals to proceed and is ready to be released for construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project will be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

NOTE the potential investment of \$4,000M with a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of Engineering, Materials and initial construction start.

Project Summary

This paper encompasses work for minor improvements at Harrison, Menton, and Kingston substations and the retirements of North Aguidneck. South Aguidneck, Bailey Brook, and Vernon substations. All work at these substations are part of the overall Aquidneck Island Reliability project.

Background

The Newport Study Area encompasses the City of Newport and the towns of Middletown, Jamestown and Portsmouth (including Prudence Island). The area has approximately 34,000 customers with a peak load of 146MW. Aquidneck Island has most of the load and peaks at 135MW, Jamestown peaks at 10MW and

Prudence Island at 1MW.

The area is supplied by two (2) 115kV lines (L14 & M13) which terminate on the northern half of Aquidneck Island at Dexter substation. From Dexter substation, two (2) 69 kV lines (Lines 61 & 62) continue south to supply Jepson substation. From Jepson substation, a single 69kV line (Line 63) continues south to supply the US Naval Base (Navy 1 substation) and Gate 2 Substation.

A single 115/13.8kV transformer at Dexter substation supplies the distribution load on the northern section of Aquidneck Island and a single 69/13.8kV transformer at Jepson supplies the middle section of Aquidneck Island. The remainder of the load is supplied by five (5) 23kV lines sourced from Jepson and Gate 2 substations which supply a 4.16kV distribution system with approximately 70MW of load. Twelve 23/4.16kV substations, ten located in the southern half of Aquidneck Island and two in Jamestown, supply this 4.16kV system.

Interruptions to the Newport electrical system resulting in significant customer outages occurred in the past. One of the action items proposed by the Company to the Rhode Island Public Utilities Commission (RI PUC) was to conduct a planning study to identify and resolve electrical related issues in the area.

All of the above are split into three sanction papers. This paper is for the minor improvements and retirements after the other two major sanction paper projects are substantially complete.

Project Description

These projects are a combination of minor improvements to the Harrison, Menton, Kingston, substations and the retirements of North Aquidneck, South Aquidneck, Bailey Brook, and Vernon substations. All part of the overall Aquidneck Island Reliability project.

Summary of Benefits

The recommended plan is in-line with commitments made by the Company to state regulators. The plan is part of a comprehensive solution for Aquidneck Island and addresses all asset condition, safety, environmental, thermal, and reliability concerns at the least cost.

The plan introduces new 13.8kV capacity in the heart of the existing Newport 4.16kV system sourced from the 69kV supply system. No load will be left un-served for loss of a transformer or supply line resulting in a very reliable supply to the City of Newport and southern Middletown.

The plan provides capacity to supply load growth on Aquidneck Island well beyond the study horizon period at relatively low cost. Spare capacity will exist at Dexter, Jepson and Newport substations to supply future load growth.

The plan eliminates substation equipment in need of replacement or upgrades; eliminates the need to upgrade manhole and ductline infrastructure to reinforce the 23kV supply system; and eliminates the need for a second 69kV line into Newport.

Business and Customer Issues

The project follows up on action items proposed by the Company to the RIPUC to identify and resolve electrical related issues in the area as a result of interruptions to the Newport electrical system that resulted in significant customer outages in the summer of 2003. Failure to execute this project may impact commitment made by the Company to state regulators.

Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Drivers:

The primary driver of this project is reliability. Aquidneck Island is supplied by a highly utilized supply and distribution system. It is increasingly challenging to supply load in southern Middletown and in the City of Newport. The Jepson 13.8kV system has been utilized to provide relief to the 23kV supply system and the 4.16kV distribution system. However, this 13.8kV system has been extended to its limits. The 23kV supply system is a mixture of overhead and underground construction in Middletown and predominantly underground construction in Newport. The underground system consists mostly of paper and lead cable installed in 3-inch ducts. The 3-inch ducts are not suitable to house required solid dielectric cables, making upgrades to the 23kV supply system challenging and costly.

For loss of the Dexter 115/13.8kV transformer on peak approximately 22MW of load on Aquidneck Island would remain un-served until the transformer is replaced or a mobile is installed resulting in an estimated exposure of 540MWh.

For loss of the Jepson 69/13.8kV transformer on peak approximately 22MW of load on Aquidneck Island would remain un-served until the transformer is replaced or a mobile is installed resulting in an estimated exposure of 550MWh.

For loss of the 69kV line section between Jepson and the Navy substation on peak approximately 21MW of load on Aquidneck Island would remain un-served resulting in an estimated exposure of 500MWh. A number of 23/4.16kV stations in the area have asset condition, safety, environmental, and thermal concerns that need to be addressed. The recommendation is to retire these stations. This recommendation is part of a comprehensive solution developed for Aquidneck Island to address all concerns at least cost.

Alternatives Number

1

Title

Construct a new 69/13.8kV substation in Newport on a parcel of land acquired for this purpose. The station would consist of two (2) transformers supplying a metal-clad switchgear with (8) 13.8kV feeder positions with five feeders being initially installed. The 115/23kV station would consist of two (2) transformers supplying a metal-clad switchgear with (3) 23kV supply lines.

This alternative would retire North Aquidneck, South Aquidneck, Bailey Brook, and Vernon substations to relieve the highly loaded 23kV supply system and is part of a comprehensive solution to address asset condition, environmental, thermal, and reliability concerns at least cost. However upgrading the 23kV supply system is not an economical approach because most of the infrastructure consists of small paper and lead cable installed in 3-inch ductline. The small ductline is not suitable to house the required larger solid dielectric cables. Thus, upgrading this infrastructure is not recommended due to the significant cost impact.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C054052	D-Sub	N Aquidneck Retirement	0.500
C058310	D-Sub	Harrison Sub Improvement	0.500
C058401	D-Sub	Merton Sub Improvement	0.650
C058404	D-Sub	Kingston Sub Improvement	0.750
C058407	D-Sub	S Aquidneck Retirement	0.500
CD00651	D-Sub	Bailey Brook Retirement	0.600

0.500

4.000

Total:

CD00652 D-Sub

Vernon Retirement

ent

Associated Projects

Project Number		Project Title	Estimate Amount (\$M)
C015158	Newport Sub		15.058
C024159	Newport 69kV Line 63		1.761
C028628	Newport Sub Tran & Dist		29.038
C054054	Jepson D-Sub		7.154
CD00649	Gate 2 Substation		2.466
C041183	Jepson 115kV Substation		19.520
C041184	Line 61 / 62 Conversion		33.947
C041185	Dexter Sub		5.444
CD00656	Jepson Substation		21.948
			136.336

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
11/26/2018	USSC	31.174M	49.361M	Sanction	USSC-14- 262 v3	+/-25%
2/10/2016	USSC	13.937M	55.827M	Partial	USSC-14- 262 v2	-25% / +50%
12/10/2014	USSC	10.000M	53.586M	Partial	USSC-14-262	+/-25%
11/9/2011	USSC	15.000M	42.000M	Partial	USSC-14-262	-25% / +50%
12/3/2008		15.500M	15.500M		N/A	+/- 25%
4/2/2008		3.500M	12.300M		N/A	+/- 25%
10/11/2005	Electronic DoA	1.000M	N/A		N/A	10%

This is a new sanction paper which covers the final portion of the overall AIRP (Aquidneck Island Reliability Project). The Project has been split into three sanction papers. The first paper, (USSC-14-262), is the majority of the distribution circuits for the AIRP and includes five funding project numbers C015158, C024159, C028628, C054054, CD00649. The second Sanction paper (USSC-14-261) was created in 2014 and contains the Jepson and Dexter Substation projects which have a total of four funding numbers (C041183, C041184, C041185, CD00656). This third and final sanction paper (USSC-19-373) is being created for the minor Improvements and Retirements of substations associated with the AIRP study. These include the Harrison, Merton, and Kingston Substation Improvements and North Aquidneck, South Aquidneck, Bailey Brook, and Vernon Retirements. The associated funding numbers are C058310, C058401, C058404, C054052, C058407, CD00651, and CD00652. These projects were broken out into a separate paper because the execution of the minor substation Improvement and Retirement work, which is reliant on the completed work at Jepson and Dexter Substations, lags significantly beyond the timelines included in the first two papers. Breaking the papers into three components allows for the timely advancement of the closeout activities on the first two papers while construction work is still in progress for the improvements and retirement scope.

Key Milestones

Milestone	Date (Month / Year)
Partial Sanction	September, 2019
Construction Start	January, 2021
Preliminary Engineering Complete	January, 2022
Sanction	April, 2022
Award for Procurement	January, 2022
Construction Complete - CC	December, 2022
Gate D - Approval to Progress to Closeout	February, 2023
Project Closure Sanction	May, 2023

Next Planned Sanction		
Date (Month/Year)	Purpose of Sanction Review	
May, 2022	Sanction	
Category		
atagany	Potoropoo to Mandata Policy, or NDV	

Category

O Mandatory

Policy-Driven
 Justified NPV

Reference to Mandate, Policy, or NPV National Grid USA Internal Strategy Document Distribution Planning Criteria Strategy Issue 1 – February 2011

Asset Management Risk Score: 41

PRIMARY RISK SCORE DRIVER

● Reliability ○ Environment ○ Health & Safety ○ Not Policy Driven

Complexity Level: 33

 \odot High Complexity \bigcirc Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Net Zero				
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative	
Impact on adaptability of network for future climate change:	○ Neutral	 Positive 	○ Negative	
Qualifies for Green Financing:	⊖ Yes	No	○ N/A	

Investment Recovery and Customer Impact

Investment Recovery

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

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.246M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-FY25 NE Distribution Electric Capital Plan	● Yes ○ No	● Over ○ Under ○ N/A	(1.962)
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

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

Cost Summary T	able							
Distribution								
Project Number	Project Title	N Aquidnec	k Retireme	nt	P E L	roject stimate evel	+/-25%	
Creard		FY	FY	FY	FY	FY	FY	Tatal
Spena	2021 2021	2021	2022	2023	2024	2025	2026	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	0.040	0.180	0.280	0.000	0.000	0.000	0.500
Total	0.000	0.040	0.180	0.280	0.000	0.000	0.000	0.500
Project Number	Project Title	Harrison Su	ıb Improver	nent	P E	roject stimate evel	+/-25%	
Grand	Drior Vro	FY	FY	FY	FY	FY	FY	Total
Spend	PHOLITS	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	0.191	0.207	0.050	0.000	0.000	0.000	0.448
Opex	0.000	0.029	0.023	0.000	0.000	0.000	0.000	0.052
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.220	0.230	0.050	0.000	0.000	0.000	0.500
Project Number	Project Title	Verton Sub	Improvem	ent	P E L	roject stimate evel	+/-25%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
	PHOLITS	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	0.203	0.187	0.200	0.000	0.000	0.000	0.590
Opex	0.000	0.030	0.030	0.000	0.000	0.000	0.000	0.060
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.233	0.217	0.200	0.000	0.000	0.000	0.650

Project Number C058404	Project Title	Kingston S	ub Improve	ment	P E Le	roject stimate + evel	-/-25%	
Spend	Prior Yrs	FY	FY	FY 2023	FY	FY 2025	FY 2026	Total
Capex	0.000	0.217	0.328	0.050	0.000	0.000	0.000	0 595
	0.000	0.217	0.020	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.100
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.275	0.425	0.050	0.000	0.000	0.000	0.750
Project Number ^{C058407}	Project Title	S Aquidneo	ck Retireme	nt	P E Le	roject stimate + evel	-/-25%	
Cread		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	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	0.020	0.140	0.340	0.000	0.000	0.000	0.500
Total	0.000	0.020	0.140	0.340	0.000	0.000	0.000	0.500
Project Number	Project Title	Bailey Broo	ok Retireme	nt	P E Lo	roject stimate + evel	-/-25%	
Spend	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	Total
Сарех	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	0.230	0.370	0.000	0.000	0.000	0.000	0.600
Total	0.000	0.230	0.370	0.000	0.000	0.000	0.000	0.600
Project Number	Project Title	Vernon Re	tirement		P E Le	roject stimate + evel	-/-25%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	Total
Сарех	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	0.020	0.110	0.370	0.000	0.000	0.000	0.500
Total	0.000	0.020	0.110	0.370	0.000	0.000	0.000	0.500
Total Project Sanction								
Capex	0.000	0.611	0.722	0.300	0.000	0.000	0.000	1.633
Opex	0.000	0.117	0.150	0.000	0.000	0.000	0.000	0.267
Removal	0.000	0.310	0.800	0.990	0.000	0.000	0.000	2.100
Iotal	0.000	1.038	1.672	1.290	0.000	0.000	0.000	4.000

Project Costs per Business Plan

Distribution								
\$M		FY	FY	FY	FY	FY	FY	Tatal
	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	0.000	0.450	0.000	0.000	0.000	0.000	0.450
Opex	0.000	0.114	0.096	0.000	0.000	0.000	0.000	0.210
Removal	0.000	0.290	0.548	0.540	0.000	0.000	0.000	1.378
Total Cost in Bus. Plan	0.000	0.404	1.094	0.540	0.000	0.000	0.000	2.038
Variance								
		FY	FY	FY	FY	FY	FY	T . ()
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.000	(0.611)	(0.272)	(0.300)	0.000	0.000	0.000	(1.183)
Opex	0.000	(0.003)	(0.054)	0.000	0.000	0.000	0.000	(0.057)
Removal	0.000	(0.020)	(0.252)	(0.450)	0.000	0.000	0.000	(0.722)
Total Variance	0.000	(0.634)	(0.578)	(0.750)	0.000	0.000	0.000	(1.962)

Sanction Request Breakdown by Project							
Project Number	Capex	Opex	Removal	Total			
C054052	0.000	0.000	0.500	0.500			
C058310	0.398	0.052	0.000	0.450			
C058401	0.390	0.060	0.000	0.450			
C058404	0.545	0.155	0.000	0.700			
C058407	0.000	0.000	0.500	0.500			
CD00651	0.000	0.000	0.600	0.600			
CD00652	0.000	0.000	0.500	0.500			
Total	1.333	0.267	2.100	3.700			

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.; Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Altenburger, Peter F.; Swanson, Leonard G.	Endorses scope, design, conformance with design standards

Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Long, James
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

1:

(a) APPROVE the investment of \$3.700M and a tolerance of +/-10% for Engineering, Materials and initial construction start.

(b) NOTED the potential investment of \$4.000M and a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that Hughes, Michael has the approved financial delegation to undertake the activities stated in (a).

	DocuSigned by:	
Signatu	re	
Date	10/28/2020	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

N/A

Long: US	Sanction Paper		national grid
Title:	Phase 1A - Providence Area Study Project	Sanction Paper #	USSC-19-434
Project #:	C078734, C078800	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	1/8/2020
Author:	Windhol, Matthew	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Healey, Daniel

Executive Summary

This paper requests Sanction of C078734, C078800 in the amount of \$11.432M with a tolerance of +/-10% for the purposes of final design and full execution; indicating that the baseline cost, scope and schedule as described herein has been approved through the Network Development Process.

This sanction amount is \$11.432M broken down into:

\$10.010M Capex \$0.448M Opex \$0.974M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

This project will convert 4.16 kV and 11.5 kV Admiral St Feeders to 12.47 kV and modify the Clarkson and Lippitt Hill Feeders in order to transfer load from Admiral St feeders to Clarkson and Lippitt Hill feeders.

Background

The Providence Area Long Term Supply and Distribution Study recommended the expansion of the 12.47 kV distribution system, conversion of the majority of 11.5 kV and 4.16 kV load to 12.47 kV and elimination of several 4.16 kV and 11.5 kV indoor and outdoor stations. The majority of the new 12.47 kV capacity in the recommended plan would be provided by new 115/12.47 kV stations at Admiral Street and Knightsville.

The first step of the recommended plan is Phase 1A, which will convert 4.16 kV and 11.5 kV Admiral St Feeders to 12.47 kV, and transfer their load to existing 12.47 Clarkson and Lippitt Hill feeders.

Project Description

-Rebuild the Admiral Street 4.16 kV and 11.5 kV feeders for 12.47 kV operation

-Rebuild portions of the Clarkson Street 13F2, and the Lippitt Hill 79F1 and 79F2 feeders to allow for reconfiguration of the 12.47 kV distribution system

-Install new manholes and duct system on Charles Street to extend the Clarkson Street 13F2 feeder to the Post Office and convert the Post Office to 12.47 kV

-Install a new riser on Chad Brown St from the Lippitt Hill 79F2 feeder to increase the capacity of the feeder -Install new 15 kV class cable on North & South Main Streets and reconfigure the 1171 circuit to retain an alternate supply to customers supplied by the feeder

-Reroute the Clarkson Street 13F3 feeder to Corliss Street

-Convert the customers supplied by the 11 kV and 4.16 kV feeders at Admiral Street to 12.47 kV and supply load from Clarkson Street and Lippitt Hill feeders

Summary of Benefits

The Providence Study developed a comprehensive plan to address the asset condition issues through the expansion of the 12.47 kV distribution system, conversion of the majority of 11.5 kV and 4.16 kV load to 12.47 kV. This project is a pre-requisite for remaining work of the recommended Providence Study solution.

Business and Customer Issues

There are no significant business or customer issues, however, there are a number of primary metered customers who will be impacted by the conversions. Minimizing disruptions and effectively coordinating with the customers will promote low risk to the project.

Drivers:

Providence is an urban area with concentrated load. The electrical distribution facilities consist of a mix of older 11 kV and 4.16 kV distribution systems and a newer 12.47 kV distribution system. The Providence Study identified the main issue to be asset condition related to indoor substations installed between 1924 and 1939. Completing this project enables the retirement of the 4.16 kV and 11.5 kV Admiral St. indoor substation.

Alternatives Number Title

Optio... One-to-one replacement of the 11.5 kV and 4.16 kV indoor and outdoor stations. This alternative option was not selected because it was a higher cost option and does not provide adequate capacity for future growth.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	E Ar	:stimate nount(\$M)
C078734	D-Line	PROV STUDY ADMIRAL ST 4&11KV CONVERT		7.972
C078800	D-Line	PROV STUDY CLARKSON-LIPPIT12KV DLINE		3.460
		Т	otal:	11.432

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C078797	PHASE 1B.1 - PROV STUDY ADMIRAL ST-ROCHAMB D-SUB	2.420
C078796	PHASE 1B.1 - PROV STUDY ADMIRAL ST-ROCHAMB D-LINE	0.455

C078801	PHASE 1B.2 - PROV STUDY ADMIRAL ST DEMOLITION	3.227
C078802	PHASE 1B.2 - PROV STUDY OLNEYVILLE 4KV D LINE	4.097
C078803	PHASE 1B.2 - PROV STUDY ADMIRAL ST 12KV MH&DUCT	4.521
C078804	PHASE 1B.2 - PROV STUDY ADMIRAL ST 12KV CABLES	3.334
C078735	PHASE 1B.2 - PROV STUDY NEW ADMIRAL ST 12KV D-SUB	12.170
C078951	PHASE 1B.2 - PROV STUDY ADMIRAL ST CKT SW T-SUB	0.659
C078857	PHASE 2 - PROV STUDY HARRIS AVE 4&11KV RETIRE	10.359
C078810	PHASE 2 - PROV STUDY HARRISAVE 11KV	2.505
C078811	PHASE 2 - PROV STUDY GENEVA, OLNEYVILLE, ROCHAMB 4KV	19.797
C078847	PHASE 3 - PROV STUDY GENEVA 4KV SUB REMOVAL	0.265
C078849	PHASE 3 - PROV STUDY HARRIS AVE SUB REMOVAL	0.975
C078850	PHASE 3 - PROV STUDY OLNEYVILLE 4KV SUB REMOVAL	0.775
C078851	PHASE 3 - PROV STUDY ROCHAMBEAU4KV SUB REMOVAL	0.465
C079317	PHASE 3 - PROV STUDY HARRISAV, OLNEYVILLE SUPPLY	1.406
C079318	PHASE 3 - PROV STUDY REMOVE ROCHAMBEAU SUPPLY	0.663
C078805	PHASE 4 - PROV STUDY KNIGHTSVILLE 4KV CONVERT	8.420
C078806	PHASE 4 - PROV STUDY KNIGHTSVILLE 4KV D-SUB	1.708
		78.221

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
3/26/2019	USSC	1.392	N/A*	Sanction	USSC-19-198	+10/-10%

*This project was developed under the FY20 Annual Project Development Sanction

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	March, 2019
Gate C - Approval to Begin Engineering & Design	December, 2019
Sanction	January, 2020
Gate C1 - Approval to Progress to Field Execution	August, 2020
Construction Start	October, 2020
Construction Complete - CC	September, 2022
Gate D - Approval to Progress to Closeout	October, 2022
Project Closure Sanction	December, 2022

Next Planned Sanction

Date (Month/Year) December, 2022 Purpose of Sanction Review Closure

Category

Category

O Mandatory

Policy-Driven

⊖Justified NPV

Asset Management Risk Score:

PRIMARY RISK SCORE DRIVER

Reliability
 Environment
 Health & Safety
 Not Policy Driven

Complexity Level: 25

High Complexity
 Medium Complexity
 Low Complexity
 N/A

Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project:
 Yes
 No

Current Planning Horizon

Distribution

		Current Planning Horizon									
			FY	FY	FY	FY	FY	FY	Total		
\$M		Prior Yrs	2020	2021	2022	2023	2024	2025			
CapEx		0.000	0.460	3.690	2.772	3.088	0.000	0.000	10.010		
OpEx		0.000	0.000	0.175	0.129	0.144	0.000	0.000	0.448		
Removal	- 3	0.000	0.000	0.380	0.282	0.312	0.000	0.000	0.974		
Total		0.000	0.460	4.245	3.183	3.544	0.000	0.000	11.432		
Capex		0.000	0.460	3.690	2.772	3.088	0.000	0.000	10.010		
Opex		0.000	0.000	0.175	0.129	0.144	0.000	0.000	0.448		
Removal		0.000	0.000	0.380	0.282	0.312	0.000	0.000	0.974		
Total		0.000	0.460	4.245	3.183	3.544	0.000	0.000	11.432		

Reference to Mandate, Policy, or NPV

Distribution Area Studies)

Distribution Planning Guide Policy (DAM-010-

Resources, Operations, & Procurement

RESOURCE SOUR	RCING		
Internal		Contractor	
 Internal 	Contractor		
RESOURCE DELI	VERY		
⊖ Red		 Green 	
⊖ Red		Green	
OPERATIONAL IN	IPACT		
⊖ Red	⊖ Amber	 Green 	
	RESOURCE SOUR Internal RESOURCE DELL Red Red OPERATIONAL IN Red	RESOURCE SOURCING □ Internal ✓ Internal RESOURCE DELIVERY ○ Red ○ Red ○ Red ○ Amber OPERATIONAL IMPACT ○ Red ○ Red ○ Amber	

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-21 Page 5 of 10

PROCUREMENT IMPACT

	TROOOREMEN		
Procurement impact on network system:	⊖ Red	O Amber	Green
Key Issues			
N/A			
Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative
Qualifies for Green Financing:			○ N/A

N/A

Safety, Environmental and Project Planning Issues Project A health and safety plan will be developed and all National Grid safety and environmental rules will be followed. Planning Permitting Permit Name Probability Duration to Status Estimated Required **Acquire Permit Completion Date Road Opening** Certain 30 days Not Applied For October, 2020 **RIDOT Utility** Certain 30 days Not Applied For October, 2020

Investment Recovery and Customer Impact

Investment Recovery

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

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.85M.

Execution Risk Appraisal

Qualitative Assessment / Risk Response Strategy

Risk Breakdown Structure Category	Risk ID + Title	IF Statement	THEN Statement	Risk Resp	oonse Strategy	Risk Score
1. Project Requirements	R1 - Customer Conversion	If equipment is not compatable	Then this could impact schedule and cost	Reduce	Design Implementati on	9
10. Line Outages	R2 - Length of Outage	If length of outage is longer than intermitent	Then this could delay the project and add to the project cost	Reduce	Design Implementati on	6
1. Project Requirements	R3 - Stakeholder Outreach	If there are issues with stakeholder outreach	Then this could delay the project and add to the project cost	Reduce	Customer Engagement	6
18. Specific Risk	R4 - Sub Surface Conditions	If unanticipated subsurface conditions are encountered	Then this will delay project and add to project cost.	Accept	Anticipate worst case scenario	6
5. Environmental	R5 - Hazardous Material	If oil in Manholes	Then this will delay project and add to project cost.	Accept	Anticipate worst case scenario	4

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Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY20-24 NE Distribution Capital Plan	● Yes 〇 No	● Over ◯ Under ◯ N/A	(1.884)
If Cost > Approved			

if costs > 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.

Cost Summary Table

Distribution								
Project Number C078734	Project Title	PROV STU CONVERT	dy admir	RAL ST 4&1	1KV 	Project Estimate Level	+/- 10%	
Canad	Delea Vec	FY	FY	FY	FY	FY	FY	
Spena	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.000	0.325	2.523	1.856	2.045	0.000	0.000	6.749
Opex	0.000	0.000	0.150	0.110	0.122	0.000	0.000	0.382
Removal	0.000	0.000	0.330	0.243	0.268	0.000	0.000	0.841
Total	0.000	0.325	3.003	2.209	2.435	0.000	0.000	7.972

Project

Project

Project Estimate

Number C078800	Title	PROV STI	UDY CLAR	KSON-LIP	PIT12KV L	.evel +	-/- 10%	
Second	Dries Ver	FY	FY	FY	FY	FY	FY	
	PHOLITIS	2020	2021	2022	2023	2024	2025	lotal
Capex	0.000	0.135	1.167	0.916	1.043	0.000	0.000	3.261
Opex	0.000	0.000	0.025	0.019	0.022	0.000	0.000	0.066
Removal	0.000	0.000	0.050	0.039	0.044	0.000	0.000	0.133
Total	0.000	0.135	1.242	0.974	1.109	0.000	0.000	3.460
Total Project Sanction								
Capex	0.000	0.460	3.690	2.772	3.088	0.000	0.000	10.010
Opex	0.000	0.000	0.175	0.129	0.144	0.000	0.000	0.448
Removal	0.000	0.000	0.380	0.282	0.312	0.000	0.000	0.974
Total	0.000	0.460	4.245	3.183	3.544	0.000	0.000	11.432
Project Costs per	Business	Plan						
Distribution								
\$M	Prior Vrs	FY	FY	FY	FY	FY	FY	Tatal
		2020	2021	2022	2023	2024	2025	Totai
Capex	0.000	2.210	2.695	2.695	0.000	0.000	0.000	7.600
Opex	0.000	0.000	0.223	0.223	0.000	0.000	0.000	0.446
Removal	0.000	0.000	0.751	0.751	0.000	0.000	0.000	1.502
Total Cost in Bus. Plan	0.000	2.210	3.669	3.669	0.000	0.000	0.000	9.548
Variance								
	D : 1/	FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2020	2021	2022	2023	2024	2025	Total
Capex	0.000	1.750	(0.995)	(0.077)	(3.088)	0.000	0.000	(2.410)
Opex	0.000	0.000	0.048	0.094	(0.144)	0.000	0.000	(0.002)
Removal	0.000	0.000	0.371	0.469	(0.312)	0.000	0.000	0.528
Total Variance	0.000	1.750	(0.576)	0.486	(3.544)	0.000	0.000	(1.884)

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Cost Assumptions

The cost estimates in this paper are based on historical costs incurred to perform similar work on recently completed projects using internal estimating tools.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

Additional Impacts

N/A

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

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Reviewers	
Function	Individual
Finance	Bostic, Christina
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 01/08/2020:

- (a) APPROVE the investment of \$11.432M and a tolerance of +/-10% for final design and full execution; ir
- (b) NOTED that Healey, Daniel has the approved financial delegation

cluu Signature Date

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

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The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-21 Page 10 of 10

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Appendix

			national grid		
Short: US					
Title:	TPE, Old Oxford Rd, N. Smithfield, RI_6.22MW PV DG	Sanction Paper #:	USSC-20-012		
Project #:	C084391	Sanction Type:	Sanction		
Operating Company:	The Narragansett Electric Company	Date of Request:	12/31/2019		
Author:	Utah, Itayi	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning		
Utility Service:	Electricity T&D	Project Manager:	Thomas, Ashley		
Executive Summary					
This paper requests Sanction of C084391 in the amount of \$1.152M with a tolerance of +/-10% for the purposes of Full implementation including design and construction.					

This sanction amount is \$1.152M broken down into:

\$1.001M Capex \$0.058M Opex \$0.093M Removal

With a CIAC/Reimbursement of \$1.152M With a Salvage Value of \$0.000M

Project Summary

This project is for a 6.22 megawatt (MW) photovoltaic (PV) distributed generation (DG) interconnection for Turning Point Energy (TPE), Old Oxford Road in North Smithfield, Rhode Island (RI). The DG will be interconnected onto the 26W7 feeder supplied from Woonsocket Substation.

Background

TPE applied for a 6.22MW PV DG interconnection onto the 26W7 feeder supplied from Woonsocket Substation. DG impact studies were carried out by Distribution Planning and Asset Management (DPAM) and Transmission Planning and asset Management (TPAM) and found the project to be feasible. The proposed in-service date for this DG interconnection is November 2021.

Project Description

The project will install a 6.22MW PV DG facility interconnected on the 26W7 feeder fed from Woonsocket Substation on Customer owned property by double circuiting feeder 26W7 with feeder 26W1 from pole 86-

50 to pole 116-1 and extending feeder 26W7 for approximately 360 circuit feet from pole 116-1 to the customer's PCC. Feeder and substation modifications required include capacitor replacements at pole 18 Industrial Drive, pole 3 Graham Drive and pole 26 Pound Hill Road; change transformer TR1 load tap changer settings; install new pole top reclosers at poles 59 and 121-50 Pound Hill Road and pole 0-50 Black Plain Road; install line regulators between pole 151 and pole 152 Pound Hill Road and change recloser relays settings at pole 56 Providence Pike, poles 121-2, 121-50 and pole 164-50-2 Pound Hill Road and pole 25-53 Tifft Road.

Summary of Benefits

The customer, TPE, has requested the PV DG service under the Company's Standards for Connecting Distributed Generation Tariff, Rhode Island Public Utilities Commission (RIPUC) No. 2180. This project will allow the customer to interconnect to the 26W7 feeder, while mitigating the identified potential impacts to other customers on this circuit and Woonsocket Substation.

Business and Customer Issues

This project is fully reimbursable by the customer, including any tax effects. Feeder 26W1 has other significant DG's interconnected and the impact of this project was reviewed and found to be acceptable.

Drivers:

This is a mandatory DG interconnection project. This customer has requested the PV DG services under the Company's Standards for Connecting Distributed Generation Tariff, RIPUC No. 2180. The 26W7 13.8kV feeder fed from Woonsocket substation and was found to be the most feasible course of action to provide the requested service.

Results from the impact study show that zero sequence over voltage protection (3V0) is required on the primary side of the 115/13.8kV transformer at Woonsocket substation. 3V0 is already installed at this substation.

Alternatives					
Number	Title				
1	Create a new 26W8 feeder from Woonsocket substation to the DG site. The cost of this option and construction lead time does not meet customer's expectations. This alternative is therefore not recommended.				
2	Interconnect the PV DG onto the 26W1 feeder which runs adjacent the DG proposed facility property. The area Electricity Power System (EPS) was evaluated and it was determined that although the Woonsocket, 26W1 runs adjacent the proposed facility property, the addition of this DG would exceed the thermal limit of the 26W1 feeder. This alternative is therefore not recommended.				

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title		Estimate Amount(\$M)
C084391	D-Line	TPE, Old Oxford Rd, N. Smithfield, RI_6.22MW PV DG		1.152
			Total:	1.152

Associated Projects - N/A

Project

Project Title

Number

0.000

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
11/22/2019	Electronic DoA	\$15k	N/A	Partial	C084391	10%

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	November, 2019
Sanction	January, 2020
Engineering Design Complete - EDC	June, 2020
Construction Start	August, 2020
Construction Complete - CC	December, 2020
Project Closure Sanction	April, 2021
Next Planned Sanction	

Date (Month/Year)

April, 2021

Purpose of Sanction Review Closure

Reference to Mandate, Policy, or NPV

Generation Tariff, RIPUC No. 2180.

Company's Standards for Connecting Distributed

Category

Category

Mandatory

○ Policy-Driven

 \bigcirc Justified NPV

Asset Management Risk Score: 49

PRIMARY RISK SCORE DRIVER

○ Reliability ○ Environment ○ Health & Safety ● Not Policy Driven

Complexity Level: 13

 \bigcirc High Complexity \bigcirc Medium Complexity O Low Complexity \bigcirc N/A

Net Zero				
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative	
Impact on adaptability of network for future climate change:	Neutral	\bigcirc Positive	○ Negative	

DocuSian Envelope ID: 40AE8418-DBFD-4AC5-8579-213	The Narragansett Electric Company			
		d/b/a National Grid		
			I	RIPUC Docket No. 5209
				Attachment DIV 3-2-22
Qualifies for Green Financing:	◯ Yes	○ No	• N/A	Page 4 of 8

Investment Recovery and Customer Impact

Investment Recovery

This project is subject to a contribution in aid of construction (CIAC) and will have no rate impact on customers.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY20-24 NE Distribution Electric Capital Plan	🔾 Yes 🖲 No	● Over ○ Under ○ N/A	(1.152)
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

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

CIAC Reimb	oursement							
\$M		FY FY	FY	FY	FY	FY	FY	Total
	Prior Yrs	2020	2021	2022	2023	2024	2025	
CIAC/Reimbursement		1.152	0.000	0.000	0.000	0.000	0.000	1.152

Cost Summary Table

Distribution

Project Number C084391	Project T Title F	rpe, old o RI_6.22MW	xford Rd, N ' PV DG	I. Smithfield,	F E L	Project Estimate +/ .evel	/-10%	
On and		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2020	2021	2022	2023	2024	2025	lotal
Capex	0.000	0.001	1.000	0.000	0.000	0.000	0.000	1.001
Opex	0.000	0.000	0.058	0.000	0.000	0.000	0.000	0.058
Removal	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.093
Total	0.000	0.001	1.151	0.000	0.000	0.000	0.000	1.152

Total Project Sanction								
Capex	0.000	0.001	1.000	0.000	0.000	0.000	0.000	1.001
Орех	0.000	0.000	0.058	0.000	0.000	0.000	0.000	0.058

RIPUC Docket No. 5209 Attachment DIV 3-2-22

0.093 Page
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Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers					
Function	Individual				
Finance	Bostic, Christina				
Regulatory	Azarcon, Carolyn				
Jurisdictional Delegate(s)	Easterly, Patricia				
Procurement	Chevere, Diego				

Control Centers (CC)

Gallagher, Michael W.

Decisions

I:

(a) APPROVE the investment of \$1.152M and a tolerance of +/-10% for Full implementation including design and construction.

(b) NOTED that Thomas, Ashley has the approved financial delegation

DocuSigned by: Christine Mcllure Signature 957B264AFE26466 4/30/2020 Date

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

Appendix

N/A

REDACTED

This document has been redacted for Critical Energy/Electric Infrastructure Information (CEII) and Confidential Information. 02/23/2020 nationalgrid Long: US Sanction Paper Title: Sanction Paper #: USSC-20-053 v2 Iron Mine Hill Road -Project #: Sanction Type: C084495; C084972; C084619; Sanction C084622; C086327; C084614 Operating The Narragansett Electric Company Date of Request: 2/10/2021 Company: Author: Sponsor(s): Place, Matthew Gemmell, Brian VP Trnsmsn Asset Mgmt Plan & Del Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Utility Service: Project Manager: Place, Matthew Electricity T&D **Executive Summary**

This paper requests Sanction of C084495; C084972; C084619; C084622; C086327; C084614 in the amount of \$19.881M with a tolerance of +/-10% for the purposes of final design and full execution; indicating that the baseline cost, scope and schedule as described herein has been approved through the Network Development Process.

This sanction amount is \$19.881M broken down into:

\$19.745M Capex \$0.093M Opex \$0.043M Removal

With a CIAC/Reimbursement of \$19.881M With a Salvage Value of \$0.000M

This project is in final design and/or has secured the necessary agency approvals to proceed and is ready to be released for construction. At this stage, re-evaluation of the project design would likely result in significant delays to the project schedule and an increase in cost. This project will be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

The scope of work consists of constructing a new 115/34.5kV substation, and new 115kV transmission line taps to the H-17 line to accommodate a customer driven 38.5 Megawatts of solar power located in North Smithfield, Rhode Island.

Background

The Customer (**1999**) has requested to interconnect six solar farms, aggregating up to a capacity of 38.5MW. To meet the minimum interconnection requirements, a new 115/34.5kV substation and transmission line loop to the existing H-17 line must be developed.

REDACTED

The project scope also covers associated distribution improvements and remote end protection updates at Riverside Substation and West Farnum Substation.

Project Description

To meet the customer interconnection request, the following project scope meets the minimum interconnection standards and maintains system requirements.

Iron Mine Hill Road Substation:

- Build a new 115/ 34.5kV substation with a three breaker ring bus.
- Install one 44MVA transformer and two 34.5kV circuit breakers.

T-L ine Loop / Transmission Interconnection:

- Tap into the H-17 115kV transmission line using a loop in and out arrangement.
- Install two communication paths using OPGW from West Farnum to Iron Mine Hill Road using the 315 line and the H-17 line.

Point of Common Coupling and D-Line Infrastructure:

 Install the D-Line equipment to allow for the Point of Common Coupling for six distributed generation sites.

West Farnum Substation:

 Upgrade the existing system protection to protect the H-17 line to the new Iron Mine Hill Road Substation.

Riverside Substation:

Upgrade the existing system protection to protect the H-17 line to the new Iron Mine Hill Road Substation.

Summary of Benefits

The infrastructure enables the interconnection of approximately 38.5MW of clean renewable resources to meet the policy requirements of the state and local authorities while supporting a reduction of greenhouse gas emission.

Business and Customer Issues

There are six distributed generation projects associated with this interconnection. The cost of the project will be covered by a single customer per the respective Interconnection Service Agreement.

Drivers:

This is a customer driven project.

Alternative	es - N/A					
Number		Title				
Related Projects, Scoring and Budget						
Summary	of Projects					
Project Number	Project Type (Eleconly)	Project Title	Estimate Amount(\$M)			

Page 3 of 12

REDACTED

			Attachine
C084495	T-Sub	Iron Mine Hill Road T-Sub	7.300
C084614	T-Line	H-17 Interconnect	2.640
C084622	T-Sub	Riverside Substation Upgrades	0.400
C084619	T-Sub	West Farnum Substation Upgrades	0.375
		Tota	l: 10.715
Project Number	Project Type (Eleconly)	Project Title	Estimate Amount(\$M)
C084972	D-Sub	Iron Mine Hill Road D-Sub	7.462
C086237	D-Line	Iron Mine D-Line	1.704
		Tota	9.166

Associated Projects - N/A

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
3/11/2020	USSC	\$6.36M	\$17.551M	Partial	USSC-20-053	+50/-25%

The project sanction amount is based off of the Final System Impact Study, dated 6/5/2020. The major drivers of the cost increase were the need for concrete caisson foundations and different structure types. The foundation and structure design changes were not included in the original estimate used for the partial sanction request.

Key Milestones	
Milestone	Date (Month / Year)
Begin Requirements and Design	February 2020
Partial Sanction	March 2020
Construction Start	January 2021
Sanction	February 2021
Engineering Design Complete - EDC	May 2021
Construction Complete / Ready for Load / Use	December 2021
Final Payment (Reconciliation Payment)	February 2022
Project Closure Sanction	September 2022

Civil Construction will commence in advance of Engineering Design Complete.

Next Planned Sanction

Date (Month/Year) September 2022 Purpose of Sanction Review Closure

Category

Category

Reference to Mandate, Policy, or NPV
 Mandatory Policy-Driven Justified NPV 	The projects are requested by a customer and will be fully funded. National Grid has to facilitate interconnection of the new generation facilities with a fully executed Interconnection Service Agreement
	Tully executed interconnection Service Agreement.

Asset Management Risk Score: 49

PRIMARY RISK SCORE DRIVER

◯ Reliability ◯ Environment ◯ Health & Safety ● Not Policy Driven

Complexity Level: 25

 \odot High Complexity \bigcirc Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project:
Yes
No

Current Planning Horizon

Transmission								
			Current Planning Horizon					
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	
CapEx	0.000	7.354	3.283	0.000	0.000	0.000	0.000	10.637
OpEx	0.000	0.020	0.015	0.000	0.000	0.000	0.000	0.035
Removal	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.043
Total	0.000	7.374	3.341	0.000	0.000	0.000	0.000	10.715
Distribution								
				Current I	Planning Ho	orizon		
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	
CapEx	0.000	5.871	3.237	0.000	0.000	0.000	0.000	9.108
OpEx	0.000	0.000	0.058	0.000	0.000	0.000	0.000	0.058
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	5.871	3.295	0.000	0.000	0.000	0.000	9.166
Tatala								
Capex	0.000	12 225	6 520	0.000	0.000	0.000	0.000	10 745
	0.000	0.020	0.020	0.000	0.000	0.000	0.000	0.003
Removal	0.000	0.020	0.073	0.000	0.000	0.000	0.000	0.093
Total	0.000	13 245	6 636	0.000	0.000	0.000	0.000	19 881
Resources, O	perations, &	Procuren	nent	0.000	-	-	-	-
	• •	RE	SOURCE	SOURCIN	G			
Engineering Resources to	g & design be provided					Co	ontractor	
Construction/Ir Resources to	nplementation be provided		Inte	rnal		C	ontractor	
		RE	SOURCE	DELIVER	Y			

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			Attachmer	nt DI
Availability of internal resources to delivery project:	\bigcirc Red	O Amber	I Green	Pag
Availability of external resources to delivery project:	⊖ Red	⊖ Amber	Green	
	OPERATIONAL	IMPACT		
Outage impact on network system	◯ Red	⊖ Amber	Green	
	PROCUREMEN	T IMPACT		
Procurement impact on network system:	◯ Red	◯ Amber	 Green 	
Key Issues				
1 This project is coordinating out	tages with the 345	kV 315 Line Asset Co	ndition Refurbishment	
Project to complete foundation	and structure wor	k.	nation Refutbionment	
2 Coordination of site access to	the ROW has bee	n agreed with the Cus	tomer, which reduces the	
requirement for traffic manage	ment and matting.			
Net Zero				
Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	 Positive 	O Negative	
Impact on adaptability of network for future climate change:	○ Neutral	Positive	O Negative	
Qualifies for Green Financing:	⊖ Yes	No	○ N/A	
List References				
1 Iron Mine Hill Road SIS FINAL	_44MVA pdf (Syste	em Impact Study)		
2 E40 0007 keys Miss Dead New		tation Transmission O	hatian 4.0	
2 E19-0237-Iron Mine Road-New	115-34.5KV SUDS	tation- I ransmission S	tation-4.2	
3 E19-0238-Iron Mine Road-New	v 115-34.5kV Subs	tation-Distribution Stat	tion-4.2	
4 Iron Mine Hill Solar Farm Stage	e 4_2 Electric Tran	s Line Option Scope D	Document version 1_4	

Safety, Environmental and Project Planning Issues

Safety All work is expected to be performed in accordance with state, local, and National Grid policies and procedures.

Permitting

Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date
ACOE	Certain	3 Months	Complete	September 2020
RI Cultural	Certain	2 Months	Complete	September 2020
RIDEM	Certain	3 Months	Complete	September 2020
Town of North Smithfield approval	Certain	2 Months	Complete	September 2020
EFSB RI	Certain	60 days	Complete	September 2020

Investment Recovery and Customer Impact

Investment Recovery

Investment Recovery will be through generation interconnection Customers' Contribution in Aid of Construction (CIAC) payments. All project costs associated with this customer will be recovered.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0M.

Execution Risk Appraisal

	Diele Coore				
Risk ID + Title	IF Statement	THEN Statement		Risk Response Strategy	Risk Score
R1 - EPC Firm	IF errors are found in design	Then project will incur additional cost.	Transfer	Risk is transferred to the EPC contractor.	15
R19 - Excessive Ledge	IF excessive ledge is discovered	Then completion timeline is under threat.	Reduce	Geotechnical report is complete.	9
R20 - Engineering	IF design does not comply with National Grid Standards	Then completion timeline is under threat.	Reduce	Engineering will support the bid package and scope of work details.	9
R5 - Material	IF the National Grid supplied material is delivered late or defective	Then this could delay the project.	Transfer	All major material will be ordered by the EPC contractor.	12
			1		

						F
R6 - Loss of Outages	IF loss of outage occurs due to system conditions, weather or conflicts with other projects	Then this could delay the project schedule and ready for load date.	Reduce	The project team will work closely with outage coordination.	1	

Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-25 NE Distribution Electric Capital Plan	🔾 Yes 🖲 No	⊖ Over ⊖ Under ● N/A	(10.715)
FY21-25 NE Transmission Electric Capital Plan	🔘 Yes 🖲 No	◯ Over ◯ Under ● N/A	(9.166)

If Cost > Approved

if costs > approved Business Plan how will this be funded?

N/A, DG project.

CIAC Reimbursen	nent							
\$M	Drior Vro	FY	FY	FY	FY	FY	FY	Total
	PHOLITS	2021	2022	2023	2024	2025	2026	Totai
CIAC/Reimbursement	0.000	17.550	2.331					19.881
Cost Summary Ta	ble							
Transmission								
Project _{C084495} Number	Project Title	Iron Mine F	lill Road T-S	Sub	Pr Es Le	oject timate +1 vel	0/-10	
Spend	Prior Yrs		FY	FY	FY	FY		Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	5.351	1.949	0.000	0.000	0.000	0.000	7.300
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	5.351	1.949	0.000	0.000	0.000	0.000	7.300
Project C084614 Number	Project Title	H-17 Interc	onnect		Pr Es Le	oject timate +1 vel	0/-10	
		FY	FY	FY	FY	FY	FY	

Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	1.903	0.659	0.000	0.000	0.000	0.000	2.562
Opex	0.000	0.020	0.015	0.000	0.000	0.000	0.000	0.035
Removal	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.043
Total	0.000	1.923	0.717	0.000	0.000	0.000	0.000	2.640
Project C084622 Number	Project Title	Riverside S	Substation l	Jpgrades		Project Estimate Level	+10/-10	
Spend	Prior Yrs		FY	FY	FY	FY		Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.025	0.375	0.000	0.000	0.000	0.000	0.400
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	0.025	0.375	0.000	0.000	0.000	0.000	0.400
Project C084619 Number	Project Title	West Farn	um Substat	ion Upgrad	les	Project Estimate Level	+10/-10	
Spend	Prior Yrs		FY	FY	FY	FY		Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.075	0.300	0.000	0.000	0.000	0.000	0.375
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	0.075	0.300	0.000	0.000	0.000	0.000	0.375
Distribution								
Project Number ^{C084972}	Project Title	Iron Mine I	Hill Road D-	Sub		Project Estimate Level	+10/-10	
Spend	Prior Yrs		FY	FY	FY	FY		Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	5.084	2.350	0.000	0.000	0.000	0.000	7.434
Opex	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.028
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	5.084	2.378	0.000	0.000	0.000	0.000	7.462
Project Number ^{C086237}	Project Title	Iron Mine [D-Line			Project Estimate Level	+10/-10	
Spend	Prior Yrs		FY	FY	FY	FY		Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.787	0.887	0.000	0.000	0.000	0.000	1.674
Орех	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.030
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.787	0.917	0.000	0.000	0.000	0.000	1.704

Total Project Sanctic	on							
Capex	0.000	13.225	6.520	0.000	0.000	0.000	0.000	19.745
Opex	0.000	0.020	0.073	0.000	0.000	0.000	0.000	0.093
Removal	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.043
Total	0.000	13.245	6.636	0.000	0.000	0.000	0.000	19.881
Project Costs p	er Business	Plan						
Transmission								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Сарех	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Variance								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Сарех	0.000	(7.354)	(3.283)	0.000	0.000	0.000	0.000	(10.637)
Opex	0.000	(0.020)	(0.015)	0.000	0.000	0.000	0.000	(0.035)
Removal	0.000	0.000	(0.043)	0.000	0.000	0.000	0.000	(0.043)
Total Variance	0.000	(7.374)	(3.341)	0.000	0.000	0.000	0.000	(10.715)
Project Costs p	er Business	Plan						
Distribution								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Сарех	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Variance								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Capex	0.000	(5.871)	(3.237)	0.000	0.000	0.000	0.000	(9.108)
Opex	0.000	0.000	(0.058)	0.000	0.000	0.000	0.000	(0.058)
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Variance	0.000	(5.871)	(3.295)	0.000	0.000	0.000	0.000	(9.166)

Cost Assumptions

The cost assumptions for the transmission line and substation were created from estimates developed by the Estimating Department during the Option Selection phase of the project.

The distribution line costs were developed by distribution planning using the project cost book to cover all costs associated with the Point of Common Coupling. This may result in an amendment to the Customer Interconnection Service Agreement; however, under the state of Rhode Island tariff, there will be a project reconciliation of up to 10% of the project cost.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

N/A.

Additional Impacts

This is a customer driven project. All project costs are fully recovered through customer CIAC payments. No financial impacts are expected.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	McColgan, Karen; DiConza, Gle	n Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark; Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Ahern, Barry; Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Maglione, Nicole; Altenburger, Peter F.; Swanson, Leonard G.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Harju, Andrew
Regulatory	Azarcon, Carolyn; Artuso, Michael V.
Jurisdictional Delegate(s)	Easterly, Patricia; Hill, Terron P.
Procurement	Chevere, Diego
Control Centers (CC)	Lavallee, Phillip H.; Gallagher, Michael W.

Decisions

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 02/10/2021: (a) APPROVE the investment of \$19.881M and a tolerance of +/-10% for final design and full execution; indicating that the baseline cost, scope and schedule as described herein has been approved through the Network Development Process.

(b) NOTED that Place, Matthew has the approved financial delegation

	DocuSigned by:	
Signature	Mike Gillespie	
Date	2/22/2021	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

N/A.

nationalgrid

Short: US	Sanction Paper		
Title:	RI VVO Exp – Farnum Pike 23	Sanction Paper #:	USSC-20-075
Project #:	C080894, C080898	Sanction Type:	Sanction
Operating	The Narragansett Electric	Date of Request:	3/10/2020
Company:	Company		
Author:	Matulaitis, Andrew	Sponsor(s):	Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean
			Tofigh, Banafsheh
Executive Su	immany		

This paper requests Sanction of C080894, C080898 in the amount of \$1.573M with a tolerance of +/-10% for the purposes of full implementation.

This sanction amount is \$1.573M broken down into:

\$1.310M Capex \$0.196M Opex \$0.067M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

This sanction is for the full implementation of one (1) substation and six (6) feeders within the total scope of the VVO/CVR expansion in FY21. The VVO/CVR substation/feeder sets were selected to maximize the value of the technology and avoid areas undergoing major infrastructure changes.

National Grid will build upon the infrastructure deployed during the Rhode Island VVO/CVR Pilot to cost effectively deploy the technology to high value substations in the service territory. work will utilize the existing Adaptivolt VVO/CVR server, deployed in Lincoln, RI. For this project, existing substation and distribution device locations will be retrofitted with advanced control and communications. The project estimates a 3% reduction in demand and energy usage for the 7.6k customers in the project area of the six (6) feeders.

Background

Advanced Volt VAR Optimization and Conservation Voltage Reduction (VVO/CVR) is a program where centralized, coordinated control is deployed to manage existing distribution assets with the intent of better optimizing the performance of the system, and deliver energy at a voltage which

results in peak efficiency for the customer- saving the customer an estimated 3% on their energy and demand charges. This technology also provides the Company's internal groups with more granular information on distribution asset performance and operations with real time distribution information.

Advanced VVO/CVR technology was first proposed as part of the Infrastructure, Safety, and Reliability (ISR) process in December of 2012 (Docket 4382). At that time, the Public Utilities Commission approved a year of conceptual design and engineering analysis. In December of 2013, the pilot scope was proposed (Docket 4473), which included two target areas: 3 feeders out of the Putnam Pike substation, and 4 feeders out of the Tower Hill Substation. Construction began on the pilot in July of 2014, and was completed in March of 2017. Two of the seven total project feeders have been operational since March 2016, and have been used to provide quantifiable performance metrics. The pilot was extremely useful in a few key ways.

Established a centralized controller, with expandable capability, which was networked into the Company Energy Management System (EMS)/Supervisory Control and Data Acquisition (SCADA) system.

Refined the approach taken for communicating with distribution devices to optimize cost of installation and ownership.

Optimized the interaction and management that would be provided to EMS to avoid nuisance alarms and onerous operating resources.

This project proposal leverages these learnings and infrastructure to further deploy the technology in an improved cost efficient manner. This paper seeks to deploy this technology on the Farnum substation and their associated feeders.

Project Description

This project will include modifying the substation regulator control/Line Tap Changers (LTCs) to allow remote data access from the VVO/CVR Server. Twenty five (25) new advanced switching capacitors will be installed and one (1) advanced line regulator. Finally nine (9) end-of-line voltage monitors will be deployed.

Note: EMS is installed at this station. This project will require EMS integration for the substation VVO equipment.

Summary of Benefits

The customers in the areas identified will benefit from the deployment of this technology in several ways. The most significant will be the reduction of peak demand and energy usage, resulting in lower bills. An estimated 2.8% reduction is anticipated. The project has an estimated benefit-cost ratio of 1.8. This proposal will also include EMS integration of the key operating parameters for distribution devices in the target project area. Real time interval data from these devices will provide increased visibility into system performance, outage management, and more accurate planning. These benefits are not quantified in this paper.

The demand and energy reductions will incrementally reduce the Company's capacity cost, as well

as energy procurement costs.

Business and Customer Issues

The VVO/CVR technology proposed will integrate into the Company's existing distribution system and not introduce an impact to customers on the affected feeders. As the Company will now be monitoring key points of the distribution system in real-time, we expect an overall reduction in the voltage variation provided to customers. The technology will improve our operational voltage profile by adaptively controlling voltage and VAR regulating devices in response to system demand changes in real time. This happens without customer involvement.

Drivers:

National Grid views this VVO/CVR project as advancing its US Connect21 Strategy, which seeks to transform National Grid's electricity and natural gas networks to support the 21st century digital economy with smarter, cleaner, and more resilient energy solutions. This project supports many of the Connect21 goals, particularly investing to grow and modernize the system, but also ensuring safety/compliance and reliability.

Deploying this technology will further refine the strategy that will ultimately be incorporated into these proposals. Moreover, this technology will provide the Company with greater visibility into the real time operation of the local distribution system.

Alternat	IVes		
Number		Title	
1	"Do Nothing"		
	The Company co distribution system	uld "Do Nothing" in this area, and not pursue VVO/CVR control o m. This approach is not recommended for several reasons:	f the
	1. A benefit co cost.	est analysis was conducted for this project and the benefits are gr	eater than the
	2. The Compa real time monitor storm restoration	ing will benefit from a significant increase in operational awarenes ing of distribution device locations. This will help in unquantified v , planning, and operation of these areas.	ss through ways during
Related	Projects, Scori	ng and Budget	
Summa	ry of Projects		
Project Number	<i>Project</i> <i>Type</i> (Elec only)	Project Title	Estimate Amount(\$M)
C080894	D-Line	RI VVO/CVR Expansion - Farnum Pike 23, Dline	1.227
C080898	D-Sub	RI VVO/CVR Expansion - Farnum Pike 23, Dsub	0.346
		Total:	1.573
Associa	ted Projects - N	/Α	

Prior Sanctioning History - N/A

Key Milestones	
Milestone	Date (Month / Year)
Sanction	March, 2020
Preliminary Engineering Complete	June, 2020
Construction Start	November, 2020
Construction Complete - CC	September, 2021
Construction Complete / Ready for Load / Use	October, 2021
Project Closure Sanction	January, 2022
Next Planned Sanction	
Date (Month/Year)	Purpose of Sanction Review
January, 2022	Closure
Category	
Category	Reference to Mandate, Policy, or NPV
○ Mandatory	
Policy-Driven	
◯ Justified NPV	Docket No. 4995 - National Grid's Electric Infrastructure, Safety, and Reliability (ISR) Plan for FY 2021 (filed 12/20/2020)
Asset Management Risk Score: 17	
PRIMARY RISK SCORE DRIVER	
$ullet$ Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc	Not Policy Driven
Complexity Level: 18	
⊖ High Complexity ⊖ Medium Complexity ● Low 0	Complexity 〇 N/A

Net Zero				
Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	Positive	○ Negative	
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative	
Qualifies for Green Financing:	• Yes	○ No	○ N/A	

Investment Recovery and Customer Impact

Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.299M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-24 NE Distribution Capital Plan	● Yes ○ No	\odot Over \bigcirc Under \bigcirc N/A	(0.290)
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

0.000

0.746

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

Cost Summary Table

Total

Project Number	Project Title	RI VVO/C ^v 23, Dline	√R Expans	ion - Farnui	m Pike	Project Estimate Level	+/- 10%	
		FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	0.426	0.596	0.000	0.000	0.000	0.000	1.022
Opex	0.000	0.128	0.025	0.000	0.000	0.000	0.000	0.153
Removal	0.000	0.043	0.009	0.000	0.000	0.000	0.000	0.052
Total	0.000	0.597	0.630	0.000	0.000	0.000	0.000	1.227
Project Number	Project Title	RI VVO/C ^v 23, Dsub	√R Expans	ion - Farnui	m Pike	Project Estimate Level	+/- 10%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
Spend		2021	2022	2023	2024	2025	2026	TOLA
Capex	0.000	0.106	0.182	0.000	0.000	0.000	0.000	0.288
Opex	0.000	0.032	0.011	0.000	0.000	0.000	0.000	0.043
Removal	0.000	0.011	0.004	0.000	0.000	0.000	0.000	0.015
Total	0.000	0.149	0.197	0.000	0.000	0.000	0.000	0.346
Total Project Sanction	0.000	0 522	0 778	0.000	0.000	0.000	0.000	1 310
Ωηρεχ	0.000	0.032	0.000	0.000	0.000	0.000		0.100
	0.000	0.160	0.036	0.000	0.000	0.000		0.196
Removal	0.000	0.054	0.013	0.000	0.000	0.000	0.000	0.067

0.000

0.000

0.000

0.000

1.573

0.827

Project Costs per Business Plan

\$M		FY	FY	FY	FY	FY	FY	
	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	1.150	0.000	0.000	0.000	0.000	0.000	1.150
Opex	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100
Removal	0.000	0.033	0.000	0.000	0.000	0.000	0.000	0.033
Total Cost in Bus. Plan	0.000	1.283	0.000	0.000	0.000	0.000	0.000	1.283
Variance								
		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	0.618	(0.778)	0.000	0.000	0.000	0.000	(0.160)
Opex	0.000	(0.060)	(0.036)	0.000	0.000	0.000	0.000	(0.096)
Removal	0.000	(0.021)	(0.013)	0.000	0.000	0.000	0.000	(0.034)
Total Variance	0.000	0.537	(0.827)	0.000	0.000	0.000	0.000	(0.290)

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Bostic, Christina
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-24 Page 7 of 9

Decisions

I:

(a) APPROVE the investment of \$1.573M and a tolerance of +/-10% for full implementation .

(b) NOTED that McGovern, Sean has the approved financial delegation

DocuSigned by: Inistine Mclure Signature 4/15/2020 Date

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-24 Page 9 of 9

Appendix

N/A

			national grid		
Short: US \$	Sanction Paper				
Title:	RI VVO/CVR Expansion: Pontiac 27	Sanction Paper #	USSC-20-076		
Project #:	C080897,C080901	Sanction Type:	Sanction		
Operating Company:	The Narragansett Electric Company	Date of Request:	3/10/2020		
Author:	Matulaitis, Andrew	Sponsor(s):	Sedewitz, Carol A.		
			VP Electric Asset Mgmt & Planning		
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean		
			Tofigh, Banafsheh		
Executive Summary					

This paper requests Sanction of C080897,C080901 in the amount of 1.662M with a tolerance of +/-10% for the purposes of full implementation .

This sanction amount is \$1.662M broken down into:

\$1.385M Capex \$0.208M Opex \$0.069M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

This full sanction is for full implementation of one (1) substation and six (6) feeders within the total scope of the VVO/CVR expansion in FY21. The VVO/CVR substation/ feeder sets were selected to maximize the value of the technology and avoid areas undergoing major infrastructure changes.

National Grid will build upon the infrastructure deployed during the Rhode Island VVO/CVR Pilot to cost effectively deploy the technology to high value substations in the service territory. The project will utilize the existing Adaptivolt VVO/CVR server, deployed in Lincoln, RI. For this project, existing substation and distribution device locations will be retrofitted with advanced control and communications. The project estimates a 3% reduction in demand and energy usage for the 9k customers in the project area of the six (6) feeders.

Background

Advanced Volt VAR Optimization and Conservation Voltage Reduction (VVO/CVR) is a program where centralized, coordinated control is deployed to manage existing distribution assets with the

intent of better optimizing the performance of the system, and deliver energy at a voltage which results in peak efficiency for the customer- saving the customer an estimated 3% on their energy and demand charges. This technology also provides the Company's internal groups with more granular information on distribution asset performance and operations with real time distribution information.

Advanced VVO/CVR technology was first proposed as part of the Infrastructure, Safety, and Reliability (ISR) process in December of 2012 (Docket 4382). At that time, the Public Utilities Commission approved a year of conceptual design and engineering analysis. In December of 2013, the pilot scope was proposed (Docket 4473), which included two target areas: 3 feeders out of the Putnam Pike substation, and 4 feeders out of the Tower Hill Substation. Construction began on the pilot in July of 2014, and was completed in March of 2017. Two of the seven total project feeders have been operational since March 2016, and have been used to provide quantifiable performance metrics. The pilot was extremely useful in a few key ways.

Established a centralized controller, with expandable capability, which was networked into the Company Energy Management System (EMS)/Supervisory Control and Data Acquisition (SCADA) system.

Refined the approach taken for communicating with distribution devices to optimize cost of installation and ownership.

Optimized the interaction and management that would be provided to EMS to avoid nuisance alarms and onerous operating resources.

This project proposal leverages these learnings and infrastructure to further deploy the technology in an improved cost efficient manner. This paper seeks to deploy this technology on the Pontiac substation and their associated feeders.

Project Description

This project will include modifying the substation regulator control/Line Tap Changers (LTCs) to allow remote data access from the VVO/CVR Server. Twenty nine (29) new advanced switching capacitors will be installed and one (1) advanced line regulator. Finally seven (7) end-of-line voltage monitors will be deployed.

Note: EMS is installed at this station. This project will require EMS integration for the substation VVO equipment.

Summary of Benefits

The customers in the areas identified will benefit from the deployment of this technology in several ways. The most significant will be the reduction of peak demand and energy usage, resulting in lower bills. An estimated 2.6% reduction is anticipated. The project has an estimated benefit-cost ratio of 1.67. This proposal will also include EMS integration of the key operating parameters for distribution devices in the target project area. Real time interval data from these devices will provide increased visibility into system performance, outage management, and more accurate planning. These benefits are not quantified in this paper.

The demand and energy reductions will incrementally reduce the Company's capacity cost, as well as energy procurement costs.

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The VVO/CVR technology proposed will integrate into the Company's existing distribution system and not introduce an impact to customers on the affected feeders. As the Company will now be monitoring key points of the distribution system in real-time, we expect an overall reduction in the voltage variation provided to customers. The technology will improve our operational voltage profile by adaptively controlling voltage and VAR regulating devices in response to system demand changes in real time. This happens without customer involvement.

Drivers:

National Grid views this VVO/CVR project as advancing its US Connect21 Strategy, which seeks to transform National Grid's electricity and natural gas networks to support the 21st century digital economy with smarter, cleaner, and more resilient energy solutions. This project supports many of the Connect21 goals, particularly investing to grow and modernize the system, but also ensuring safety/compliance and reliability.

Deploying this technology will further refine the strategy that will ultimately be incorporated into these proposals. Moreover, this technology will provide the Company with greater visibility into the real time operation of the local distribution system.

Alternatives						
Number		Title				
1	"Do Nothing"					
	The Company could "Do Nothing" in this area, and not pursue VVO/CVR control of the distribution system. This approach is not recommended for several reasons:					
	 A benefit cost analysis was conducted for this project and the benefits are far greater than the cost. The Company will benefit from a significant increase in operational awareness through real time monitoring of distribution device locations. This will help in unquantified ways during storm restoration, planning, and operation of these areas. 					
Related	Projects, Scori	ng and Budget				
Summa	ry of Projects					
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)			

C080897	D-Line	RI VVO Exp -Pontiac 27 - Dist - C080897		1.093
C080901	D-Sub	RI VVO Expansion - Pontiac 27, Substation -C080901		0.570
			Total:	1.663

Associated Projects - N/A

Prior Sanctioning History - N/A

Key Milestones					
Milestone	Date (Month / Year)				
Sanction	March, 2020				
Preliminary Engineering Complete	June, 2020				

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-25 November, 2020 Page 4 of 8

Construction Start Construction Complete - CC Construction Complete / Ready for Load / Use Project Closure Sanction

Next Planned Sanction

Date (Month/Year) January, 2022 Purpose of Sanction Review Closure

September, 2021

October, 2021

January, 2022

Category	
Category	Reference to Mandate, Policy, or NPV
◯ Mandatory	
Policy-Driven	
◯ Justified NPV	Docket No. 4995 - National Grid's Electric Infrastructure, Safety, and Reliability (ISR) Plan for FY 2021 (filed 12/20/2020)
Asset Management Risk Score: 17	

PRIMARY RISK SCORE DRIVER

 \odot Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc Not Policy Driven

Complexity Level: 18

◯ High Complexity ◯ Medium Complexity ● Low Complexity ◯ N/A

Contribution to National Grid's 2050 80% emissions reduction target:	O Neutral	Positive	○ Negative
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative
Qualifies for Green Financing:	• Yes	\bigcirc No	○ N/A

Investment Recovery and Customer Impact

Investment Recovery

Investment recovery will be through standard rate recovery mechanisms.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.307M.

Business Plan

			Attachinent	1 DIV 5-2-25
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)	Page 5 of 8
FY21-25 NE Distribution Capital Plan	● Yes ○ No	● Over ◯ Under ◯ N/A	(0.362)	

If Cost > Approved

if costs > 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.

Cost Summary Table

Project Number	Project Title	RI VVO Ex	p -Pontiac 2	27 - Dist - (F C080897 E L	Project Estimate + .evel	-/- 10%	
On and		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
Capex	0.000	0.380	0.530	0.000	0.000	0.000	0.000	0.910
Opex	0.000	0.114	0.023	0.000	0.000	0.000	0.000	0.137
Removal	0.000	0.038	0.008	0.000	0.000	0.000	0.000	0.046
Total	0.000	0.532	0.561	0.000	0.000	0.000	0.000	1.093
Project Number	Project Title	RI VVO Ex Substation	pansion - P -C080901	ontiac 27,	F E L	Project Estimate + .evel	-/- 10%	
		FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	0.187	0.288	0.000	0.000	0.000	0.000	0.475
Opex	0.000	0.056	0.015	0.000	0.000	0.000	0.000	0.071
Removal	0.000	0.019	0.005	0.000	0.000	0.000	0.000	0.024
Total	0.000	0.262	0.308	0.000	0.000	0.000	0.000	0.570
Total Project Sanction								
Capex	0.000	0.567	0.818	0.000	0.000	0.000	0.000	1.385
Opex	0.000	0.170	0.038	0.000	0.000	0.000	0.000	0.208
Removal	0.000	0.057	0.013	0.000	0.000	0.000	0.000	0.070
Total	0.000	0.794	0.869	0.000	0.000	0.000	0.000	1.663
Project Costs per	Busines	s Plan						
\$M		FY	FY	FY	FY	FY	FY	
	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	1.135	0.000	0.000	0.000	0.000	0.000	1.135
Opex	0.000	0.128	0.000	0.000	0.000	0.000	0.000	0.128

								Attachmen	nt DIV 3-2-25
Removal	0.000	0.038	0.000	0.000	0.000	0.000	0.000	0.038	Page 6 of 8
Total Cost in Bus. Plan	0.000	1.301	0.000	0.000	0.000	0.000	0.000	1.301	
Variance									
		FY	FY	FY	FY	FY	FY		
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal	
Capex	0.000	0.568	(0.818)	0.000	0.000	0.000	0.000	(0.250)	
Opex	0.000	(0.042)	(0.038)	0.000	0.000	0.000	0.000	(0.080)	
Removal	0.000	(0.019)	(0.013)	0.000	0.000	0.000	0.000	(0.032)	
Total Variance	0.000	0.507	(0.869)	0.000	0.000	0.000	0.000	(0.362)	

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers					
Function	Individual				
Finance	Bostic, Christina				
Regulatory	Azarcon, Carolyn				
Jurisdictional Delegate(s)	Easterly, Patricia				
Procurement	Chevere, Diego				
Control Centers (CC)	Gallagher, Michael W.				

Decisions

I:

(a) APPROVE the investment of \$1.662M and a tolerance of +/-10% for full implementation .

(b) NOTED that McGovern, Sean has the approved financial delegation

DocuSigned by: Christine McClure Signature 957B264AFE26466 4/15/2020

Date _____

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-25 Page 8 of 8

Appendix

N/A

			national grid
Resanction	: US Sanction Paper		
Title:	NARBAYCOM_NewSvc_Pawtucke tRI	Sanction Paper #:	USSC-20-247 v2
Project #:	C083870	Sanction Type:	Resanction
Operating Company:	The Narragansett Electric Company	Date of Request:	11/8/2021
Author:	McGovern, Sean	Sponsor(s):	Castro, Kathy US Dir UK Snr Mgr Eng Elec Plan & Des
Utility Service:	Electricity T&D	Project Manager:	McGovern, Sean
Executive Sur	nmary		
This paper reques purposes of Full ir This sanction amo \$1.450M Cap \$0.030M Ope \$0.220M Rer	ets Resanction of C083870 in the amo nplementation. punt is \$1.700M broken down into: pex ex noval	ount of \$1.700M wi	th a tolerance of +/-10% for the

With a CIAC/Reimbursement of \$0.183M With a Salvage Value of \$0.000M

Note the originally requested sanction amount of \$1.260M.

Project Summary

Narragansett Bay Commission (NBC) is a new 6 megawatt (MW) primary metered customer project split into two phases. Initially, the customer will be supplied from the existing Pawtucket 107W53 feeder to be converted into an express feeder in order to meet the required in-service date of January 31, 2021. The existing load on feeder 107W53 will be transferred to adjacent feeders. Once the new Dunnell Park #1201 substation is in service, the customer will be switched over to the proposed Dunnell Park express feeder 1201W8.

Drivers:

This is a mandatory distribution service project. This customer has requested a primary meter service under the Company's Terms and Conditions for Distribution Service, Rhode Island Public Utilities Commission (RIPUC) No. 2130.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C083870	D-Line	NARBAYCOM_NewSvc_PawtucketRI	1.700
		Total:	1.700

1.700

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
5/26/2020	USSC	\$1.260M	\$1.260M	Sanction	USSC-20-247	10%
8/29/2019	Electronic DoA	\$15k	N/A	Partial	N/A	10%

Over / Under Expenditure Analysis							
Summary Analysis	Capex	Opex	Removal	Total			
Resanction Amount	1.450	0.030	0.220	1.700			
Latest Approval	0.859	0.197	0.204	1.260			
Change	0.591	(0.167)	0.016	0.440			

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	August 2019
Begin Requirements and Design	August 2019
Engineering Design Complete - EDC	April 2020
Sanction	May 2020
Construction Start	May 2020
Re-sanction	November 2021
Construction Complete - CC	November 2021
Project Closure Sanction	January 2022

Next Planned Sanction

Date (Month/Year) January 2022

Purpose of Sanction Review Closure

Net Zero				
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative	
Impact on adaptability of network for future climate change:	Neutral	\bigcirc Positive	○ Negative	

DocuSian Envelope ID: 9399AED4-825E-4363-996E-DC8	The Narragansett Electric Company			
..				d/b/a National Grid
				RIPUC Docket No. 5209
				Attachment DIV 3-2-26
Qualifies for Green Financing:	• Yes	○ No	○ N/A	Page 3 of 7

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 NE Distribution Electric Capital Plan	\odot Yes \bigcirc No	\bigcirc Over \bigcirc Under $\textcircled{oldsymbol{ imes}}$ N/A	(0.735)
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

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

Detailed Analysis Table		
Detail Analysis	Over/Under Expenditure?	Amount (M's)
Police Protection costs greater than expected	\odot Over \bigcirc Under	0.047
Overhead costs greater than expected	\odot Over \bigcirc Under	0.243
Transportation costs greater than expected	\odot Over \bigcirc Under	0.077
Scope change	\odot Over \bigcirc Under	0.073

Explanation of Key Variations

Transportation, traffic protection and capital overheads were not fully accounted for during design phase. Additional scope, including a primary metered service and a recloser, were identified during construction phase. This scope was not accounted for in the original sanction.

Cost Summary Table

Distribution

Project Number C083870	Project N Title N	ARBAYCC)M_NewSv	c_Pawtuck	etRI Es Le	roject stimate +, evel	/-10%	
		FY	FY	FY	FY	FY	FY	T . ()
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotal
Capex	0.561	0.889	0.000	0.000	0.000	0.000	0.000	1.450
Opex	0.017	0.013	0.000	0.000	0.000	0.000	0.000	0.030
Removal	0.064	0.156	0.000	0.000	0.000	0.000	0.000	0.220
Total	0.642	1.058	0.000	0.000	0.000	0.000	0.000	1.700

Opex	0.017	0.013	0.000	0.000	0.000	0.000	0.000	0.030
Capex	0.561	0.889	0.000	0.000	0.000	0.000	0.000	1.450
Total Project Sanction								

RIPUC Docket No. 5209

								Attachment DI
Removal	0.064	0.156	0.000	0.000	0.000	0.000	0.000	0.220 ^{Pa}
Total	0.642	1.058	0.000	0.000	0.000	0.000	0.000	1.700
Project Costs p	er Busines	s Plan						
Distribution								
\$M		FY	FY	FY	FY	FY	FY	Tatal
	Prior frs	2022	2023	2024	2025	2026	2027	Total
Capex	0.561	0.285	0.000	0.000	0.000	0.000	0.000	0.846
Opex	0.017	0.029	0.000	0.000	0.000	0.000	0.000	0.046
Removal	0.064	0.009	0.000	0.000	0.000	0.000	0.000	0.073
Total Cost in Bus. Plan	0.642	0.323	0.000	0.000	0.000	0.000	0.000	0.965
Variance								
		FY	FY	FY	FY	FY	FY	
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	lotal
Сарех	0.000	(0.604)	0.000	0.000	0.000	0.000	0.000	(0.604)
Opex	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.016
Removal	0.000	(0.147)	0.000	0.000	0.000	0.000	0.000	(0.147)
Total Variance	0.000	(0.735)	0.000	0.000	0.000	0.000	0.000	(0.735)

Improvements / Lessons Learned

A thorough preliminary investigation with Operations and Design should identify all necessary work is being captured. Additionally, the area in which the work is to be performed should be site visited by Operations personnel to identify and account for all necessary traffic protection. The full extent of anticipated capital overhead costs should be accounted for during estimating.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Kapxhiu, Ana
Regulatory	Fraga, Shane; Solomon, Amy

Jurisdictional Delegate(s)	Easterly, Patricia	P
Procurement	Chevere, Diego	
Control Centers (CC)	Gallagher, Michael W.	

Decisions

I:

(a) APPROVE the investment of \$1.700M and a tolerance of +/-10% for Full implementation.

(b) NOTED that McGovern, Sean has the approved financial delegation

	DocuSigned by:	
Signature	5AF1193570264C2	
	11/8/2021	
Date		

Carol A. Sedewitz

Vice President Electric Asset Management & Engineering - New England

Appendix

N/A

nationalgrid

Short: US Sanction Paper			
Title:	RI Mobile 3V0 Units	Sanction Paper #:	USSC-20-277
Project #:	C085628	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	6/9/2020
Author:	Magno, Evan	Sponsor(s):	Sedewitz, Carol A.
Utility Service:	Electricity T&D	Project Manager:	Monaghan, Brendan
Executive Summary			
This paper reques purposes of purch	ts Sanction of C085628 in the amounasing four mobile 3V0 trailers.	nt of \$1.200M with a	a tolerance of +/-10% for the

This sanction amount is \$1.200M broken down into:

\$1.200M Capex \$0.000M Opex \$0.000M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Project Summary

This project is to purchase four mobile 3V0 trailers which will be used to facilitate the connection of Distributed Generation to Narragansett Electric Company's (the Company) system prior to permanent 3V0 protection installation at a substation.

Background

This project is to purchase four mobile 3V0 trailers capable of measuring three-phase, zero sequence voltage (3V0) for neutral overvoltage protection within the substation where the high side transformer winding has a delta configuration.

Line to ground faults on the transmission system are normally cleared by line protection. However, with the increasing penetration of Distributed Generation (DG) on the distribution system, the generation can backfeed a transmission fault through the substation transformer after remote (transmission) ends have operated to isolate the fault. A combination of high DG capacity relative to load current, low fault currents supplied by aggregate DG and the delta-wye winding configuration of the substation transformer can allow this condition. For this reason, the neutral overvoltage protection (3V0) is required to detect transmission line-to-ground faults and isolate the faulted area via operation of one or more station breakers.

The stations that require this 3V0 protection are identified by the Distribution Asset Management group based on substation transformer winding configuration and a comparison of load to generation. The duration of the 3V0 work can create unexpected financial impact to the DER development community. Recent legislation in the state of Rhode Island (RI) with required interconnection timelines also presents execution challenges for the Company. National Grid has an existing program to advance the installation of 3V0 at targeted substations to enable DER interconnections. To further support DER enablement, National Grid is proposing to purchase mobile 3V0 units which will expedite the installation of 3V0 and DER interconnection at those stations waiting to be implemented with the permanent protective equipment. It is expected that the four units can be used to expedite 2-4 stations per year. The units will consist of one 34.5 kV unit and three 23 kV units.

Each mobile 3V0 unit would cost approximately \$300,000.00. The total cost of purchasing four mobile 3V0 units will be approximately \$1.2M in FY 2021.

Project Description

The overall scope of this project is to purchase four mobile 3V0 trailers to provide mobile 3V0 protection for DG interconnections.

Summary of Benefits

As explained above, the purchased equipment will allow DG Customers to interconnect their facilities prior to the installation of permanent 3V0 protection within the substation. A mobile 3V0 unit has a very short implementation timeline (8-12 weeks) compared to a typical 3V0 installation (60-72 weeks).

This mobile solution adds a window of opportunity for internal resources to complete the engineering, design, and construction of the permanent protection scheme. It also enables critical or high-profile Customers to be operational in accordance with their need dates, which may increase DER project viability. Emergent or existing issues resulting from the aggregation of DER in a timely manner can be resolved, reducing existing risk to Company equipment that cannot be mitigated through developer-funded investments.

Additionally, the flexibility of these mobile 3V0 units allow the Company to install them regardless of arrangement, with limited to no substation modifications. The units feature flexible relaying, wiring, and EMS options. Design concept can be reused or adjusted to fit the needs of similar voltage configurations.

Business and Customer Issues

Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Drivers:

The primary driver behind this project is reliability. The existing protection scheme on the transmission system was not originally designed for Customer-fed DG. As more Customers install DG, the Company's need to install associated 3V0 protection will also increase.

Alterna	lives
Number	Title
1	Do Nothing - This alternative is not recommended due to the increasing amount of DG interconnection requests that will require 3V0 protection for the system to operate safely.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)		Project Title		Estimate Amount(\$M)
C085628	D-Sub	RI Mobile 3V0 Units			1.200
				Total	1.200

Associated Projects - N/A

Prior Sanctioning History - N/A

Key Milestones	
Milestone	Date (Month / Year)
Sanction	June, 2020
Ready for Procurement	July, 2020
Award for Procurement	September, 2020
Down Payment	October, 2020
Final Payment	February, 2021
Project Closure Sanction	April, 2021

Next Planned Sanction	
Date (Month/Year)	Purpose of Sanction Review
April, 2021	Closure
Category	
Category	Reference to Mandate, Policy, or NPV
◯ Mandatory	3V0 Program RI, January 2018
Policy-Driven	Strategic Distributed Energy Resources
⊖ Justified NPV	December 2019
	The Asset Management & Engineering Business
	Management Standards (BMS 04) sets performance
	requirements for the "maintenance, repair,
	replacement, operations, and retirement of assets."

decisions based on reliability, safety, environmental

performance, and cost.
PRIMARY RISK SCORE DRIVER

O Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc Not Policy Driven

Complexity Level: 14

 \bigcirc High Complexity \bigcirc Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	Positive	○ Negative
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative
Qualifies for Green Financing:	• Yes	\bigcirc No	○ N/A

Investment Recovery and Customer Impact

Investment Recovery

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

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.222M.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-25 NE Distribution Capital Plan	\odot Yes \bigcirc No	\bigcirc Over \bigcirc Under $\textcircled{old O}$ N/A	0.000

If Cost > Approved

if costs > approved Business Plan how will this be funded?

N/A

Cost Summary Table

Distribution

Project Number C085628	Project R Title R	I Mobile 3	/0 Units		Pi Es Le	roject stimate +/ evel	-10%	
Spand		FY	FY	FY	FY	FY	FY	Tatal
Spend	Phot its	2021	2022	2023	2024	2025	2026	TOLAI
Capex	0.000	1.200	0.000	0.000	0.000	0.000	0.000	1.200
Орех	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	1.200	0.000	0.000	0.000	0.000	0.000	1.200
Total Project Sanctic	n							
Capex	0.000	1.200	0.000	0.000	0.000	0.000	0.000	1.200
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	1.200	0.000	0.000	0.000	0.000	0.000	1.200
Distribution	el Dusiliess	Fidii						
Distribution	Prior Yrs	F1011 FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Distribution \$M Capex	Prior Yrs	FTAIT FY 2021 1.200	FY 2022 0.000	FY 2023 0.000	FY 2024 0.000	FY 2025 0.000	FY 2026 0.000	Total
Distribution \$M Capex Opex	Prior Yrs 0.000 0.000	FY 2021 1.200 0.000	FY 2022 0.000 0.000	FY 2023 0.000 0.000	FY 2024 0.000 0.000	FY 2025 0.000 0.000	FY 2026 0.000 0.000	Total 1.200 0.000
Distribution \$M Capex Opex Removal	Prior Yrs 0.000 0.000 0.000	FY 2021 1.200 0.000 0.000	FY 2022 0.000 0.000 0.000	FY 2023 0.000 0.000 0.000	FY 2024 0.000 0.000 0.000	FY 2025 0.000 0.000 0.000	FY 2026 0.000 0.000 0.000	Total 1.200 0.000 0.000
Distribution \$M Capex Opex Removal Total Cost in Bus. Plan	Prior Yrs 0.000 0.000 0.000 0.000	FY 2021 1.200 0.000 0.000 1.200	FY 2022 0.000 0.000 0.000 0.000	FY 2023 0.000 0.000 0.000 0.000	FY 2024 0.000 0.000 0.000 0.000	FY 2025 0.000 0.000 0.000 0.000	FY 2026 0.000 0.000 0.000 0.000	Total 1.200 0.000 0.000 1.200
Distribution \$M Capex Opex Removal Total Cost in Bus. Plan Variance	Prior Yrs 0.000 0.000 0.000 0.000	FY 2021 1.200 0.000 0.000 1.200	FY 2022 0.000 0.000 0.000 0.000	FY 2023 0.000 0.000 0.000 0.000	FY 2024 0.000 0.000 0.000 0.000	FY 2025 0.000 0.000 0.000 0.000	FY 2026 0.000 0.000 0.000 0.000	Total 1.200 0.000 0.000 1.200
Distribution \$M Capex Opex Removal Total Cost in Bus. Plan Variance	Prior Yrs 0.000 0.000 0.000 0.000	FY 2021 1.200 0.000 0.000 1.200 FY	FY 2022 0.000 0.000 0.000 0.000	FY 2023 0.000 0.000 0.000 0.000	FY 2024 0.000 0.000 0.000 0.000	FY 2025 0.000 0.000 0.000 0.000 FY	FY 2026 0.000 0.000 0.000 0.000 FY	Total 1.200 0.000 0.000 1.200
Distribution \$M Capex Opex Removal Total Cost in Bus. Plan Variance \$M	Prior Yrs 0.000 0.000 0.000 Prior Yrs	FY 2021 1.200 0.000 0.000 1.200 FY 2021	FY 2022 0.000 0.000 0.000 0.000 FY 2022	FY 2023 0.000 0.000 0.000 0.000 FY 2023	FY 2024 0.000 0.000 0.000 0.000 FY 2024	FY 2025 0.000 0.000 0.000 0.000 FY 2025	FY 2026 0.000 0.000 0.000 0.000 FY 2026	Total 1.200 0.000 0.000 1.200 Total
Distribution SM Capex Opex Removal Total Cost in Bus. Plan Variance SM Capex	Prior Yrs 0.000 0.000 0.000 Prior Yrs 0.000	FY 2021 1.200 0.000 0.000 1.200 FY 2021 0.000	FY 2022 0.000 0.000 0.000 0.000 FY 2022 0.000	FY 2023 0.000 0.000 0.000 0.000 FY 2023 0.000	FY 2024 0.000 0.000 0.000 0.000 FY 2024 0.000	FY 2025 0.000 0.000 0.000 0.000 FY 2025 0.000	FY 2026 0.000 0.000 0.000 0.000 FY 2026 0.000	Total 1.200 0.000 0.000 1.200 Total 0.000
Distribution SM Capex Opex Removal Total Cost in Bus. Plan Variance SM Capex Opex Opex	Prior Yrs 0.000 0.000 0.000 Prior Yrs 0.000 0.000	FY 2021 1.200 0.000 0.000 1.200 FY 2021 0.000 0.000	FY 2022 0.000 0.000 0.000 0.000 FY 2022 0.000 0.000	FY 2023 0.000 0.000 0.000 0.000 FY 2023 0.000 0.000	FY 2024 0.000 0.000 0.000 0.000 FY 2024 0.000 0.000	FY 2025 0.000 0.000 0.000 0.000 FY 2025 0.000 0.000	FY 2026 0.000 0.000 0.000 0.000 FY 2026 0.000 0.000	Total 1.200 0.000 1.200 Total 0.000 0.000
Distribution SM Capex Opex Removal Total Cost in Bus. Plan Variance SM Capex Opex Removal Removal	Prior Yrs 0.000 0.000 0.000 Prior Yrs 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	FY 2021 1.200 0.000 0.000 1.200 1.200 FY 2021 0.000 0.000	FY 2022 0.000 0.000 0.000 0.000 FY 2022 0.000 0.000	FY 2023 0.000 0.000 0.000 0.000 FY 2023 0.000 0.000	FY 2024 0.000 0.000 0.000 0.000 FY 2024 0.000 0.000	FY 2025 0.000 0.000 0.000 0.000 0.000 FY 2025 0.000 0.000	FY 2026 0.000 0.000 0.000 0.000 FY 2026 0.000 0.000	Total 1.200 0.000 0.000 1.200 Total 0.000 0.000 0.000

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Altenburger, Peter F.	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual

Finance	McNeill, Brian
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I:

(a) APPROVE the investment of \$1.200M and a tolerance of +/-10% for purchasing four mobile 3V0 trailers.

(b) NOTED that Monaghan, Brendan has the approved financial delegation

DocuSigned by: Unistine Mclure Signature 957B264AFE26466

7/2/2020 Date

Christine McClure, Vice President, Finance Business Partner Service Company, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-27 Page 8 of 8

Appendix

N/A

			national grid
Resanctior	n: US Sanction Paper		
Title:	RI UG 79F1 and 13F6 Duct Charles Orms Sts	Sanction Paper #:	USSC-20-288 V3
Project #:	C074307	Sanction Type:	Resanction
Operating	The Nerrogeneett Electric	Date of Request:	0/14/2021
Company:	Company	Date of Request.	9/ 14/2021
Author:	Sullivan, Patrick	Sponsor(s):	Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Sullivan, Patrick
Executive Sur	mmary		
This paper reques purposes of full in	sts Resanction of C074307 in the am aplementation.	ount of \$3.850M wi	th a tolerance of +/-10% for the

This sanction amount is \$3.850M broken down into:

\$3.734M Capex \$0.039M Opex \$0.077M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Note the originally requested sanction amount of \$2.600M.

Project Summary

This project installs 1600 feet of new ducts adjacent to the exiting duct line. Upon completion of this project, feeders 79F1 and 13F6 will be proactively replaced under separate funding projects that are part of the Rhode Island (RI) Underground (UG) Cable Replacement Program.

Drivers:

Asset condition is the primary driver of this project. The existing duct line contains feeders that supply the Capital Center District in Downtown Providence; it has ducts that are either in use or are severely deteriorated and unusable. If an attempt to pull out and pull in new cable during a feeder outage were to be unsuccessful, the time required to install new duct line under reactionary conditions would result in unacceptable long-term loading on the other feeders that supply the Capital Center District.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title		Estimate Amount(\$M)
C074307	D-Line	RI UG 79F1 and 13F6 Duct Charles Orms Sts		3.850
			Total:	3.850

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
1/19/2021	USSC	2.600	2.600	Sanction	USSC-20- 288 v2	10%
5/12/2020	USSC	0.250	1.100	Partial	USSC-20-288	10%
9/30/2017	Electronic DoA	0.015	N/A	Partial	N/A	10%

Increased capital overheads and changes to the civil scope led to an increase from the previous capital investment of \$1.25M.

Over / Under Expendit	ure Analysis				
Summary Analysis	Capex	Opex	Removal	Total	
Resanction Amount	3.734	0.039	0.077	3.850	
Latest Approval	2.210	0.130	0.260	2.600	
Change	1.524	(0.091)	(0.183)	1.250	
Key Milestones					
Milest	tone		Date (Month / Year)		
Partial Sanction			September 2017		
Begin Requirements and D	esign		July 2017		
Engineering Design Comple	ete - EDC		May 2020		
Partial Sanction			May 2020		
Construction Start			August 2020		
Sanction	Sanction		January 2021		
Re-sanction			September 2021		
Construction Complete - Co	C	October 2021			
Project Closure Sanction			February 2022		

Next Planned Sanction

Date (Month/Year) February 2022

Purpose of Sanction Review Closure

Net Zero

Contribution to National Grid's 2050 80% emissions reduction target:	 Neutral 	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	Neutral	○ Positive	○ Negative
Qualifies for Green Financing:	• Yes	○ No	○ N/A

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 NE Distribution Capital Plan	\odot Yes \bigcirc No	⊖ Over ⊖ Under ● N/A	0.000
If Cost > Approved			

if costs > approved Business Plan how will this be funded? N/A

Detailed Analysis Table			
Detail Analysis	Over/Under Expenditure?	Amount (M's)	
Capital Overheads	\odot Over \bigcirc Under		0.850
Change in Civil Scope	● Over ◯ Under		0.325
Police Detail	● Over ◯ Under		0.075

Explanation of Key Variations

There were increased costs due to the community engagement having greater involvement with this project due to the project path conflicting with another large National Grid sponsored transmission project and being located within the Rhode Island School of Design campus. Regular outreach was needed to keep the school informed on the progress as well as accommodating the student schedules. This lead to night work requirements which were not accounted for in the original bid.

During construction, change orders came through related to the proposed duct line path. The duct path needed to be rerouted from the sidewalk into the paved roadway for about 400 of the 1600 feet of the project. This was due to concrete footings from the buildings along the sidewalk came out beyond the property line and into the proposed duct path below the sidewalk causing the path to move into the road. This increased roadway restoration costs, and sidewalk restoration costs due to the relocation.

There were also additional environmental costs that were not originally estimated. Due to the proximity to the transmission project, all spoils from excavation were considered hazardous and had to be removed and disposed of through a specific vendor.

Cost Summary Ta	ble							
Distribution								
Project Number C074307	Project Title	RI UG 79F1 Orms Sts	and 13F6 D	ouct Charles	Pro Est Lev	oject timate +/-1 vel	10%	
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	Total

		2022	2023	2024	2025	2026	2027	
Capex	1.398	2.336	0.000	0.000	0.000	0.000	0.000	3.734
Opex	0.023	0.016	0.000	0.000	0.000	0.000	0.000	0.039
Removal	0.013	0.064	0.000	0.000	0.000	0.000	0.000	0.077
Total	1.434	2.416	0.000	0.000	0.000	0.000	0.000	3.850
Total Project Sanctic	on							
Capex	1.398	2.336	0.000	0.000	0.000	0.000	0.000	3.734
Opex	0.023	0.016	0.000	0.000	0.000	0.000	0.000	0.039
Removal	0.013	0.064	0.000	0.000	0.000	0.000	0.000	0.077
Total	1.434	2.416	0.000	0.000	0.000	0.000	0.000	3.850
Project Costs p	er Business	Plan						
Distribution								
\$M	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	1.398	2.336	0.000	0.000	0.000	0.000	0.000	3.734
Opex	0.023	0.016	0.000	0.000	0.000	0.000	0.000	0.039
Removal	0.013	0.064	0.000	0.000	0.000	0.000	0.000	0.077
Total Cost in Bus. Plan	1.434	2.416	0.000	0.000	0.000	0.000	0.000	3.850
Variance								
		FY	FY	FY	FY	FY	FY	T - 4 - 1
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai
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 Variance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Improvements / Lessons Learned

Scheduling this work along with other projects in the area was something that went well as we will be coordinating roadway restoration and sidewalk restoration to coincide with construction schedules so that we are not repaying the same area year over year.

Because we were working closely with the other projects ongoing, there was some requirements that were applied to the D-line project, that aren't typically required, for example the removal of all spoils and proper disposal through Coneco isn't typical of D-line work in Providence, however because this project was ongoing at the same time as the transmission line project, their project requirements for soil disposal spilled into our project.

Statement of Support		
Department	Individual	Responsibilities

Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards

Reviewers	
Function	Individual
Finance	Kapxhiu, Ana
Regulatory	Azarcon, Carolyn
Jurisdictional Delegate(s)	Easterly, Patricia
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.

Decisions

I:

(a) APPROVE the investment of \$3.850M and a tolerance of +/-10% for full implementation.

(b) NOTED that Sullivan, Patrick has the approved financial delegation

Signature	Docusigned by: Mike Gillespie	
Date	10/13/2021	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-28 Page 7 of 7

Appendix			

N/A

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			national grid
Resanction	n: US Sanction Paper		
Title:	DG-RI, Kent County Sub, 3310, 00206311, 00206313	Sanction Paper #	USSC-20-361 v2
Project #:	C086055; C086046	Sanction Type:	Resanction
Operating Company:	The Narragansett Electric Company	Date of Request:	12/8/2020
Author:	Gisiger, Urs	Sponsor(s):	Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Antunes, Nelson
	-		·

Executive Summary

This paper requests Resanction of C086055; C086046 in the amount of \$5.132M with a tolerance of +/-10% for the purposes of final design and full implementation; indicating that the baseline costs, scope and schedule as described herein has been approved through the Network Development Process.

This sanction amount is \$5.132M broken down into:

\$5.108M Capex \$0.019M Opex \$0.005M Removal

With a CIAC/Reimbursement of \$5.132M With a Salvage Value of \$0.000M

Note the originally requested sanction amount of \$4.273M.

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

The customer, Green Development, requested to interconnect two 10 MW Distributed Generation (DG) Solar project to National Grid's Electric System.

In order to safely and reliably interconnect the customer project, National Grid needs to extend the existing Kent County 3310, 34.5 kV circuit underground along Hopkins Hill Road, Division Road, and Nooseneck Hill Road in West Greenwich, RI to the customer Facility.

Drivers:

This is a customer-driven project.

The new distribution infrastructure enables the interconnection of 20 MW of clean renewable power to the network. Development of the project ensures reliable access to clean renewable resources and helps state and local authorities to reach their target for of renewable generation resources.

The new infrastructure provides continued compliance with all applicable federal and regional reliability

standards and criteria while maintaining reliable electric service to generator interconnection customers as well as load customers in the area.

	Related P	ojects, Scor	ing and B	udget
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Summary	of Projects			
Project Number	<i>Project</i> <i>Type</i> (Elec only)	Project Title		Estimate Amount(\$M)
C086046	D-Sub	D-Sub Green Nooseneck DG Solar		0.025
C086055	D-Line	DG-RI, Kent County Sub, 3310, 00206311, 00206313		5.107
			Total:	5.132

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
10/13/2020	USSC	4.273	N/A	Sanction	USSC-20-361	+/-10%
7/8/2020	Electronic DoA	0.015	N/A	Partial	N/A	+/-10%
7/2/2020	Electronic DoA	0.015	N/A	Partial	N/A	+/-10%

Initial Sanction amount is increased to \$5.132M from \$4.273M to pay for a larger conductor needed to accommodate two additional distributed generation customer projects.

Over / Under Expenditure Analysis							
Summary Analysis	Capex	Opex	Removal	Total			
Resanction Amount	5.108	0.019	0.005	5.132			
Latest Approval	4.249	0.019	0.005	4.273			
Change	0.859	0.000	0.000	0.859			

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	July, 2020
Down Payment	August, 2020
Start Preliminary Engineering	November, 2020
Sanction	October, 2020
Gate C - Approval to Begin Engineering & Design	November, 2020
Re-sanction	December, 2020
Engineering Design Complete - EDC	May, 2021
Gate C1 - Approval to Progress to Field Execution	June, 2021
Construction Start	October, 2021
Construction Complete / Ready for Load / Use	February, 2022
Construction Complete - CC	March, 2022
Gate D - Approval to Progress to Closeout	April, 2022
Project Closure Sanction	September, 2022

Sanction date is aligned with associated Transmission project. Riser poles need to be set before customer starts construction of civil duct bank and manhole system.

Next Planned Sanction

Date (Month/Year) September, 2022 Purpose of Sanction Review Closure

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	○ Neutral	 Positive 	○ Negative
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative
Qualifies for Green Financing:	⊖ Yes	• No	○ N/A

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY21-25 NE Distribution Electric Capital Plan	⊖ Yes ● No	\bigcirc Over \bigcirc Under $\textcircled{old O}$ N/A	0.000
If Cost > Approved			

if costs > approved Business Plan how will this be funded?

N/A

Detailed Analysis Table		
Detail Analysis	Over/Under Expenditure?	Amount (M's)
Larger cable required	● Over ◯ Under	0.859

Explanation of Key Variations

The original Sanction amount included the cost estimate for the installation of a 3-1/c-500 kcmil Cu EPR 35 kV cable which is what is required to connect the 20 MW customer distributed generation project.

Two additional customers are currently in study phase and are expected to sign their respective Interconnection Service Agreements (ISA) in April 2021. In order to accommodate these additional distributed generation customer projects a 3-1/c-1000 kcmil Cu EPR 35 kV cable will have to be installed instead of the smaller 3-1/c-500 kcmil Cu EPR 35 kV cable.

Cost Summary Table						
Distribution						
Project Number	Project Title	D-Sub Green Nooseneck DG Solar	Project Estimate Level	+/-10%		

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A 1	.	FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.017
Opex	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.008
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.025
Project Number	Project I Title (DG-RI, Ken 00206311,	t County S 00206313	ub, 3310,	P E L	Project Estimate + evel	·/-10%	
Spend	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Capex	0.000	1.977	3.114	0.000	0.000	0.000	0.000	5.091
Opex	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.011
Removal	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
Total	0.000	1.993	3.114	0.000	0.000	0.000	0.000	5.107
Total Project Sanctior Capex	n 0.000	1.977	3.131	0.000	0.000	0.000	0.000	5.108
Орех	0.000	0.011	0.008	0.000	0.000	0.000	0.000	0.019
Removal	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
Total	0.000	1.993	3.139	0.000	0.000	0.000	0.000	5.132
Project Costs pe	er Business	Plan						
Distribution								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Capex	0.000	1.977	3.131	0.000	0.000	0.000	0.000	5.108
Opex	0.000	0.011	0.008	0.000	0.000	0.000	0.000	0.019
Removal	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
Total Cost in Bus. Plan	0.000	1.993	3.139	0.000	0.000	0.000	0.000	5.132
Variance								
\$M	Prior Yrs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	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 Variance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Improvements / Lessons Learned

Ensure Gate B material high-lights any additional system modification scope required due to other distributed generation projects.

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin	Endorses scope, design, conformance with design standards
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers					
Function	Individual				
Finance	Harju, Andrew				
Regulatory	Azarcon, Carolyn; Long, James				
Jurisdictional Delegate(s)	Easterly, Patricia				
Procurement	Chevere, Diego				
Control Centers (CC)	Gallagher, Michael W.				

Decisions

I:

(a) APPROVE the investment of \$5.132M and a tolerance of +/-10% for final design and full implementation; indicating that the baseline costs, scope and schedule as described herein has been approved through the Network Development Process.

(b) NOTED that Antunes, Nelson has the approved financial delegation

	DocuSigned by:
Signature	Mike Gillespie
12/30 Date	0/2020

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

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DUE TO THE COVID-19 PANDEMIC, THE COMPANY'S ABILITY TO DELIVER THIS PROJECT MAY BE AT RISK. THE PROJECT(S) WITHIN THIS PAPER AS WELL AS THE ENTIRE JURISDICTIONAL PORTFOLIO WILL CONTINUE TO BE EVALUATED EACH MONTH THROUGH THE COMPANY'S CURRENT CONTROL PROCEDURES AND, IF NECESSARY, SPECIAL ACTIONS WILL BE TAKEN TO REEVALUATE THEIR

VIABILITY FOR THE CURRENT FISCAL YEAR.

This document has been reviewed and does not contain Critical Energy/Electric RIPUC Docket No. 5209 Infrastructure Information (CEII). 10/26/2020 Page 1 of 14

nationalgrid

Long: US Sanction Paper							
Title:	New Lafayette 115/12.47kV Station Sanction Paper #: USSC-20-388						
Project #:	Multiple Projects	Sanction Type:	Partial Sanction				
Operating Company:	The Narragansett Electric Company	Date of Request:	10/14/2020				
Author:	White, Stephen	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning Gemmell, Brian VP Trnsmsn Asset Mgmt Plan & Del				
Utility Service:	Electricity T&D	Project Manager:	White, Stephen				

Executive Summary

This paper requests Partial Sanction of Multiple Projects in the amount of \$6.000M with a tolerance of +/-25% for the purposes of engineering, design, procurement, and advanced construction.

This sanction amount is \$6.000M broken down into:

\$6.000M Capex \$0.000M Opex \$0.000M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Specific capital efficiencies will be identified in the individual project sanctions upon the completion of project scope development.

NOTE the potential investment of \$19.692M with a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of the final estimate.

Project Summary

The project is for the development of a new 115/12.47 kV substation on the parcel adjacent to the current Lafayette substation site. The station shall be built with 3V0 protection to accommodate existing and proposed distributed generation in the area. This paper seeks approval for the development of the site and installation of the combined control house in conjunction with construction planned on the Wickford Junction family of projects that will be adjacent to the new Lafayette station on the Lafayette 30 parcel.

Background

A comprehensive study of the South County East area was performed to identify existing and potential future distribution system performance concerns. Through the study multiple reliability concerns were noted along with several asset condition deficiencies.

The purpose of accelerating construction activities for site preparation and development, and the construction of a combined control house is to enable efficiencies by coordinating with the customer driven Wickford Junction Project. At present the Wickford Junction project has a target to be in service in the Fall of calendar year 2021. Developing the site in a combined effort will provide efficiencies such as construction bundling opportunities and a single combined control house rather than separate control houses.

The proposed plan to intergrate the identified advanced work is to assign the Wickford Junciton EPC vendor the lead on progressing the design and construction of the New Lafayette advanced work.

Project Description

The scope of work is as follows:

- Build a new open air, low profile, breaker-and-one-half substation consisting of a single 115/12.47 kV 24/32/40 MVA transformer, four regulated feeders, and one 7.2 MVAr station capacitor bank with of two 3.6 MVAr stages.
- Install new single span 115 kV tap line from L190 to supply the new Lafayette substation, replace two structures, and install one loadbreak switch to the north in the L190 mainline.
- Install a manhole and ductline system for the feeder getaways out to city streets. The feeders will follow existing overhead routes and generally utilize existing overhead infrastructure.
- Retirement of the 34.5 kV supply to Lafayette addressing the asset condition concerns and mitigating the access issues associated with the right-of-way.
- Remove the existing 34.5/12.47 kV station at Lafayette once the new station is in-service.

Summary of Benefits

The primary benefit of this project is addressing the load at risk and asset condition issues in the service area associated to the study. Additionally, by building the new station to 3V0 standards National Grid will be able to better support distributed generation developed in the area.

Business and Customer Issues

None

Drivers:

The primary driver for the development of this project is to address thermal concerns on area feeders, transformers, and supply lines, and to address the identified load at risk in the study area. Additional drivers for this project include addressing the asset condition concerns with the 84T3 and the 3312 lines.

Alternatives	
Number	Title

1

New Mainsail Dr 115/12.47 kV Station:

The major component of this plan is a new 115/12.47 kV substation in Quonset to be built on a green field site and the refurbishment of the 34.5 kV supply system to Lafayette substation. The substation site will have to be acquired from either the Quonset Development Corporation (QDC) or some other private party. The proposed substation would consist of a single 115/12.47 kV 40 MVA LTC transformer and four feeders. Acquiring a substation site in Quonset would be challenging. The site would have to be in close proximity to the transmission system and land availability is very limited.

This option requires the refurbishment of the 34.5 kV supply system to Lafayette substation. Large sections of the right-of-way have wetlands and potentially sensitive vegetation. There will be anticipated wetland challenges along with restrictive backyard construction. The lines were built in the 1930's and a visual inspection identified significant deterioration of the pole plant and associated equipment. A refurbishment in place would leave all the right of way challenges unaddressed. If this option is to be pursued, it is recommended that relocating these lines to the roadway be further explored and developed.

Additionally the overall cost of this option has been identified at approximately double that of the selected option.

2 Expansion of Old Baptist Station:

The major component of this plan is to expand Old Baptist substation by installing a third bay, two additional feeders, and station capacitor banks. This plan would also refurbish the 34.5 kV supply to Lafayette substation.

Similar to Option 1, this option requires the refurbishment of the 34.5 kV supply system to Lafayette substation. Large sections of the right-of-way have wetlands and potentially sensitive vegetation. There will be anticipated wetland challenges along with restrictive backyard construction. The lines were built in the 1930's and a visual inspection identified significant deterioration of the pole plant and associated equipment. A refurbishment in place would leave all the right of way challenges unaddressed. If this option is to be pursued, it is recommended that relocating these lines to the roadway be further explored and developed.

Additionally the overall cost of this option has been identified at approximately \$10.000M greater than the selected option.

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C081675	D-Sub	Lafayette Substation 115/12kV	5.726
C081683	D-Line	Lafayette 115/12kV (D-Line)	4.523
C081685	D-Line	84T3 ROW Removals	3.051
		Total:	13.300
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C081691	T-Sub	Lafayette Substation 115-12kV	2.191
C081740	T-Line	L-190 T Tap	1.696
C081663	T-Line	3312 ROW Removals	2.505

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C081881	Wickford Junction D-Sub (Exeter - EDP & Green)	0.586
C080591	Wickford Junction D-Sub (Dry Bridge - EDP)	2.342
C080594	Wickford Junction T-Sub (EDP - Exeter & Dry Bridge)	15.032
		17.960

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
3/24/2020	USSC	0.571	N/A	Project Development	USSC-20-186	+10%/-10%

*This project was developed under the FY21 Annual Project Development Sanction.

Key Milestones	
Milestone	Date (Month / Year)
Partial Sanction	October 2020
Preliminary Engineering Complete	April 2021
Civil & Control House - Construction Start	November 2020
Gate C - Approval to Begin Engineering & Design	July 2021
Sanction	August 2021
TLINE - Engineering Design Complete - EDC	January 2022
Civil & Control House - Construction Complete - CC	September 2021
DLINE - Engineering Design Complete - EDC	May 2022
SUB - Engineering Design Complete - EDC	September 2022
Gate C1 - Approval to Progress to Field Execution	October 2022
TLINE - Construction Start	October 2022
DLINE - Construction Start	October 2022
SUB - Construction Start	February 2023
Facility Rating to ISO-NE	January 2024
Ready for Load	May 2024
Construction Complete - CC	June 2024
Gate D - Approval to Progress to Closeout	June 2024
Construction Start - Removals	April 2024
Construction Complete - CC - Removals	December 2024
Project Closure Sanction	January 2025

Next Planned Sanction

Date (Month/Year)

Purpose of Sanction Review

August 2021

Sanction

Category Reference to Mandate, Policy, or NPV O Mandatory Asset Condition Assessments and Distribution Image: Policy-Driven Planning Criteria, 2019 Justified NPV Asset Management Risk Score: 35 PRIMARY RISK SCORE DRIVER PRIMARY RISK SCORE DRIVER

O Reliability \bigcirc Environment \bigcirc Health & Safety \bigcirc Not Policy Driven

Complexity Level: 23

 \bigcirc High Complexity \bigcirc Medium Complexity \bigcirc Low Complexity \bigcirc N/A

Process Hazard Assessment

Current Planning Horizon

Distribution

	Current Planning Horizon							
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	
CapEx	0.000	2.026	1.857	2.985	2.285	0.104	0.000	9.257
OpEx	0.000	0.000	0.000	0.067	0.072	0.000	0.000	0.139
Removal	0.000	0.000	0.000	0.000	0.894	3.010	0.000	3.904
Total	0.000	2.026	1.857	3.052	3.251	3.114	0.000	13.300

Transmission

	Current Planning Horizon							
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2021	2022	2023	2024	2025	2026	
CapEx	0.000	0.283	0.595	0.985	1.882	0.079	0.000	3.824
OpEx	0.000	0.000	0.000	0.020	0.024	0.001	0.000	0.045
Removal	0.000	0.000	0.000	0.001	0.264	2.258	0.000	2.523
Total	0.000	0.283	0.595	1.006	2.170	2.338	0.000	6.392
Сарех	0.000	2.309	2.452	3.970	4.167	0.183	0.000	13.081
Opex	0.000	0.000	0.000	0.087	0.096	0.001	0.000	0.184
Removal	0.000	0.000	0.000	0.001	1.158	5.268	0.000	6.427
Total	0.000	2.309	2.452	4.058	5.421	5.452	0.000	19.692
Resources, Operations, & Procurement								

RESOURCE SOURCING

Engineering & design

Internal

✓ Contractor

Resources to be provided			
Construction/Implementation Resources to be provided	✓ Internal ✓ Contractor		Contractor
	RESOURCE D	ELIVERY	
Availability of internal resources to delivery project:	◯ Red	⊖ Amber	 Green
Availability of external resources to delivery project:	⊖ Red	⊖ Amber	 Green
	OPERATIONA	L IMPACT	
Outage impact on network system	⊖ Red	⊖ Amber	 Green
	PROCUREMEN	T IMPACT	
Procurement impact on network system:	\bigcirc Red	⊖ Amber	 Green
Key Issues			
None			
Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	 Neutral 	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	◯ Neutral	Positive	\bigcirc Negative
Qualifies for Green Financing:	• Yes	⊖ No	○ N/A

List References

None

Safety, Environmental and Project Planning Issues

Safety A health and safety plan will be developed and all National Grid safety and environmental rules will be followed.

Permitting

Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date
RI NOI	Certain	2 Months	In Progress	December 2020
Special Use Permit	Certain	2 Months	In Progress	November 2020
Dimensional Setback	Certain	2 Months	In Progress	November 2020
Local Permits	Certain	2 Months	In Progress	November 2020
RIDEM RIPDES	Certain	In Hand	Complete	

RIDOT	Certain	In Hand	Complete
RIHPHC	Certain	In Hand	Complete

Investment Recovery and Customer Impact

Investment Recovery

The overall project is Narragansett Electric Company (NECo) ownership. PTF Transmission Investment: \$1.210M Non-PTF Investment: \$5.182 RI Distribution: \$13.300M. Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.255M.

Execution Risk Appraisal

Risk Breakdown	Qualitative Assessment / Risk Response Strategy						
Structure Category	Risk ID + Title	IF Statement	ent THEN Statement Risk Response Strateg		oonse Strategy	Score	
14. Weather	R1 - Major Weather Event	If a Major Weather event occurs delaying the project.	Then the schedule could be extended along with the cost associated with contracted services.	Accept	Plan for weather accordingly by allowing for schedule float at critical activity junctures.	6	
3. Engineering	R2 - Requirement s Capture for consolidated dual station site.	If all requirements are not captured prior to construction activities.	Then the project could face delays in schedule and increased cost.	Transfer	Transfer Risk to Contracted Services.	3	
4. Permitting	R3 - Permits not secured in time	If all permits are not in hand by the specified time.	Then the project will face a delay in schedule.	Accept	Permitting activities has been in advanced to ensure time to complete activities prior to need by date.	3	
12. Materials	R4 - Material shipping delay, or miss- fabrication	If material is miss- fabricated or delayed in shipping.	Then the project could face minor schedule delays.	Accept	Collaborate with Contractor and vendors throughout the process to ensure conformance to design.	2	
					Risk is being		

R5 - Pre- Construction Activity Construction Efforts conducted by adjacent project	If construction activities do not align to preliminary design plans for the project	Then schedule delays could occur to accommodate changing preliminary design to fit what has been constructed.	Share	shared by both projects. Additionally risk reductions have been pursued by integrating the teams.	1
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Due to the COVID-19 pandemic, the Company's ability to deliver this project/program/blanket may be at risk. The project(s) within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Business Plan			
Business Plan Name & Period (BP 19)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY 21-25 NE Distribution Capital Plan	\odot Yes \bigcirc No	\odot Over \bigcirc Under \bigcirc N/A	(4.468)
FY 21-25 NE Transmission Capital Plan	● Yes ○ No	● Over ◯ Under ◯ N/A	(4.270)

If Cost > Approved

if costs > 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.

Cost Summary T	Table							
Distribution								
Project Number	Project Title	Lafayette S	Substation 1	15/12kV	F E L	Project Estimate .evel	+50%/-25%	
Crand		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	1.808	1.627	0.814	0.917	0.066	0.000	5.232
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	0.230	0.264	0.000	0.494
Total	0.000	1.808	1.627	0.814	1.147	0.330	0.000	5.726
Project Number	Project Title	Lafayette 115/12kV (D-Line)			Project Estimate +50%/-25% Level			
Onend		FY	FY	FY	FY	FY	FY	Tatal
Spena	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.000	0.218	0.230	2.171	1.368	0.038	0.000	4.025
Opex	0.000	0.000	0.000	0.067	0.072	0.000	0.000	0.139
Removal	0.000	0.000	0.000	0.000	0.359	0.000	0.000	0.359
Total	0.000	0.218	0.230	2.238	1.799	0.038	0.000	4.523

Project Number	Project 84 Title	4T3 ROW	Removals		Pi Es Le	roject stimate evel	+50%/-25%	
Onend		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	lotal
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	0.305	2.746	0.000	3.051
Total	0.000	0.000	0.000	0.000	0.305	2.746	0.000	3.051

Transmission

Project Number	Project Title	Lafayette S	ubstation 1	15-12kV	F E L	Project Estimate Level	+50%/-25%	
Spend	Drior Vre	FY	FY	FY	FY	FY	FY	Total
	FIIOI TIS	2021	2022	2023	2024	2025	2026	Total
Capex	0.000	0.144	0.519	0.920	0.554	0.024	0.000	2.161
Opex	0.000	0.000	0.000	0.019	0.011	0.000	0.000	0.030
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	0.000	0.144	0.519	0.939	0.565	0.024	0.000	2.191
Project Number	Project Title	L-190 T Ta	р		F E L	Project Estimate Level	+50%/-25%	
On and		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2021	2022	2023	2024	2025	2026	Iotai
Capex	0.000	0.139	0.076	0.065	1.328	0.055	0.000	1.663
Opex	0.000	0.000	0.000	0.001	0.013	0.001	0.000	0.015
Removal	0.000	0.000	0.000	0.001	0.014	0.003	0.000	0.018
Total	0.000	0.139	0.076	0.067	1.355	0.059	0.000	1.696
Project Number	Project Title	3312 ROW	Removals		F E L	Project Estimate .evel	+50%/-25%	
Spend	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
	1101113	2021	2022	2023	2024	2025	2026	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	0.250	2.255	0.000	2.505
Total	0.000	0.000	0.000	0.000	0.250	2.255	0.000	2.505
Total Project Sanction Capex	0.000	2.309	2.452	3.970	4.167	0.183	3 0.000	13.081
Opex	0.000	0.000	0.000	0.087	0.096	0.001	0.000	0.184

RIPUC Docket No. 5209

								Attachment DIV 3-2-3
Removal	0.000	0.000	0.000	0.001	1.158	5.268	0.000	6.427 Page 10 of 1
Total	0.000	2.309	2.452	4.058	5.421	5.452	0.000	19.692
Project Costs pe	er Busines	s Plan						
Distribution								
\$M	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
		2021	2022	2023	2024	2025	2026	
Capex	0.000	0.390	2.520	1.950	3.025	0.000	0.000	7.885
Opex	0.000	0.001	0.024	0.036	0.036	0.000	0.000	0.097
Removal	0.000	0.008	0.238	0.267	0.337	0.000	0.000	0.850
Total Cost in Bus. Plan	0.000	0.399	2.782	2.253	3.398	0.000	0.000	8.832
Variance								
	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
\$M		2021	2022	2023	2024	2025	2026	
Capex	0.000	(1.636)	0.663	(1.035)	0.740	(0.104)	0.000	(1.372)
Opex	0.000	0.001	0.024	(0.031)	(0.036)	0.000	0.000	(0.042)
Removal	0.000	0.008	0.238	0.267	(0.557)	(3.010)	0.000	(3.054)
Total Variance	0.000	(1.627)	0.925	(0.799)	0.147	(3.114)	0.000	(4.468)
Project Costs pe	er Busines	s Plan						
Transmission								
\$M	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
	11101 113	2021	2022	2023	2024	2025	2026	
Capex	0.000	0.232	0.427	0.717	0.717	0.000	0.000	2.093
Opex	0.000	0.000	0.003	0.005	0.005	0.000	0.000	0.013
Removal	0.000	0.000	0.006	0.005	0.005	0.000	0.000	0.016
Total Cost in Bus. Plan	0.000	0.232	0.436	0.727	0.727	0.000	0.000	2.122
Variance								
	Prior Yre	FY	FY	FY	FY	FY	FY	Total
\$M		2021	2022	2023	2024	2025	2026	
Capex	0.000	(0.051)	(0.168)	(0.268)	(1.165)	(0.079)	0.000	(1.731)
Opex	0.000	0.000	0.003	(0.015)	(0.019)	(0.001)	0.000	(0.032)
Removal	0.000	0.000	0.006	0.004	(0.259)	(2.258)	0.000	(2.507)
Total Variance	0.000	(0.051)	(0.159)	(0.279)	(1.443)	(2.338)	0.000	(4.270)

Sanction Request Breakdown by Project							
Project Number	Capex	Opex	Removal	Total			
C081675	5.500	0.000	0.000	5.500			
C081683	0.000	0.000	0.000	0.000			

C081685	0.000	0.000	0.000	0.000 Page		
C081691	0.500	0.000	0.000	0.500		
C081740	0.000	0.000	0.000	0.000		
C081663	0.000	0.000	0.000	0.000		
Total	6.000	0.000	0.000	6.000		
Cost Assumptions						

Cost of Partial Sanction was developed by analyzing the estimate provided by Options Solutions and well as the final estimate and EPC bid for Wickford Junction.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

N/A

Additional Impacts

None

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen; McColgan, Karen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.; Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Maglione, Nicole; Altenburger, Peter F.	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers						
Function	Individual					
Finance	Harju, Andrew; Byrne, Andrew					
Regulatory	Azarcon, Carolyn; Long, James					
Jurisdictional Delegate(s)	Easterly, Patricia; Hill, Terron P.					
Procurement	Chevere, Diego					

Control Centers (CC)

Gallagher, Michael W.; Lavallee, Phillip H.; Cutler, Joseph H.

Decisions

(a) APPROVE the investment of \$6.000M and a tolerance of +/-10% for engineering, design, procurement, and advanced construction..

(b) NOTED the potential investment of \$19.692M and a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of the final estimate.

(c) NOTED that White, Stephen has the approved financial delegation to undertake the activities stated in (a).

	DocuSigned by:	
	Michael Gillespie	
Signature _	2BE932F13D5E496	
	10/21/2020	
Date		

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 Attachment DIV 3-2-30 Page 14 of 14

Appendix

N/A

REDACTED

This document has been redacted for Critical Energy/Electric Infrastructure Information (CEII). 3/18/2021

			national grid
Project De	velopment: US Sanction Pa	aper	
Title:	FY22 Annual Electric Project Development - NECo	Sanction Paper #:	USSC-21-020
Project #:	Multiple Projects	Sanction Type:	Project Development
Operating	The Narragansett Electric	Date of Request:	3/10/2021
Author:	Cox, Roger D.	Sponsor(s):	Gemmell, Brian
			VP Trnsmsn Asset Mgmt Plan & Del
			Sedewitz, Carol A.
			VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Hudock, Bryan

Executive Summary

This paper requests Project Development of Multiple Projects in the amount of \$9.760M with a tolerance of +/-10% for the purposes of engineering and design activities, purchases of long lead materials, permitting, and land rights.

This sanction amount is \$9.760M broken down into:

\$9.359M Capex \$0.018M Opex \$0.383M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

Specific capital efficiencies will be identified in the individual project sanctions upon the completion of project scope development.

Project Summary

Project Development activities are required for projects in FY21 to support the existing The Narragansett Electric Company (NECo) Investment Plan. The initial list of projects to be developed during FY22 is outlined in the Summary of Projects section. Stage 4.3 activities are required for these complex capital projects under the Network Development Process Model.

Background

The Company has developed a standardized process for developing and delivering complex projects. In accordance with the Network Development Process, below is a list of the common activities that are authorized to take place, as needed, this fiscal year:

- Assemble a cross functional project team to assist in the development of projects to define and approve specific scope;
- Conduct site specific investigative work (i.e. test holes, borings, vegetation evaluation, soil samples,

etc.);

- Pursue permitting and land rights;
- Perform engineering and design and other related tasks;
- Procure materials (i.e. power transformer, etc.);
- Develop the Project Execution Plan (PEP) which includes items above as well as:
 - detailed cost estimate
 - risk register & mitigation plan
 - baseline schedule
 - resource strategy for final design and or project execution
 - contract strategy;
- PEP approval meeting;
- Complete Project Book 4.3 and Gate C Checklist;
- Gate C Approval Meeting

Project Description

Upon Gate B approval, projects included in this paper will proceed with individual development activities as outlined above.

Summary of Benefits

A single authorization for projects in development provides the flexibility to quickly move projects forward into preliminary engineering and respond to work plan needs over the course of the fiscal year

Business and Customer Issues

Due to the COVID-19 pandemic, the Company's ability to deliver these projects may be at risk. The projects within this paper as well as the entire jurisdictional portfolio will continue to be evaluated each month through the Company's current control procedures and, if necessary, special actions will be taken to reevaluate their viability for the current fiscal year.

Drivers:

Each project listed in the Summary of Projects will have progressed through Needs Case and Options Analysis and the individual project drivers will be discussed during the individual full project sanctions at the end of Development.

Title

Alternatives

Number

N/A N/A

Related Projects, Scoring and Budget

Summary of Projects

Project Number	Proj. Type (Elec only)	Project Title	PS&I Transfer	Material Purchase	FY22 Project Development	Estimate Amount
C074428	D-Sub	EMS Expansion - Wampanoag 48	0.000	0.000	0.110	0.110
C078735	D-Sub	PROVSTUDY NEW ADMIRAL ST 12KV	0.000	1.200	0.268	1.468
C078797	D-Sub		0.000	0.000	0.527	0.527

REDACTED

		PROVSTUDY ADMIRAL ST- ROCHAMB				
C078801	D-Sub	ProvStudy Admiral St. Demolition	0.000	0.000	0.221	0.221
C078806	D-Sub	PROVSTUDY KNIGHTSVILLE 4KV D- SUB	0.000	0.000	0.274	0.274
C078796	D-Line	PROVSTUDY ADMIRAL ST- ROCHAMB D-LINE	0.000	0.000	0.234	0.234
C078802	D-Line	PROVSTUDY OLNEYVILLE 4KV D- LINE	0.000	0.000	0.261	0.261
C078803	D-Line	PROVSTUDY ADMIRAL ST 12KV MH&DUCT	0.000	0.000	0.272	0.272
C078804	D-Line	PROVSTUDY ADMIRAL ST 12KV CABLES	0.000	0.000	0.271	0.271
C078805	D-Line	PROVSTUDY KNIGHTSVILLE 4KV CONVERT	0.000	0.000	0.275	0.275
C078857	D-Line	PROVSTUDY HARRIS	0.000	0.000	0.005	0.005
					Total	3.918
C052744	T-Sub	FRANKLIN SQ - ASSET SEPARATION	0.000	0.000	Total 0.434	3.918 0.434
C052744 C053781	T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement	0.000	0.000	Total	3.918 0.434 1.117
C052744 C053781 C078951	T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub	0.000 0.000 0.000	0.000 0.720 0.000	Total 0.434 0.397 0.070	3.918 0.434 1.117 0.070
C052744 C053781 C078951 C080891	T-Sub T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub	0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000	Total 0.434 0.397 0.070 0.210	3.918 0.434 1.117 0.070 0.210
C052744 C053781 C078951 C080891 C084296	T-Sub T-Sub T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Philipsdale Sub Asset Replacement	0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000	Total 0.434 0.397 0.070 0.210 0.005	3.918 0.434 1.117 0.070 0.210 0.005
C052744 C053781 C078951 C080891 C084296 C084305	T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Nampanoag Trans Sub Philipsdale Sub Asset Replacement Kenyon SubAsset Replacement	0.000 0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000 0.000	Total 0.434 0.397 0.070 0.210 0.0005 0.160	3.918 0.434 1.117 0.070 0.210 0.005 0.005
C052744 C053781 C078951 C080891 C084296 C084305 C084320	T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Wampanoag Trans Sub Philipsdale Sub Asset Replacement Kenyon SubAsset Replacement kent County	0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000 0.000 0.000	Total 0.434 0.397 0.0070 0.210 0.0005 0.160 0.158	3.918 0.434 1.117 0.070 0.210 0.005 0.005 0.158
C052744 C053781 C078951 C080891 C084296 C084305 C084320 C078262	T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Wampanoag Trans Sub Philipsdale Sub Asset Replacement Kenyon SubAsset Replacement kent County Q143 OH REFURB STEP D CO 5360	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000 0.000 0.000 0.000	Total 0.434 0.397 0.0070 0.210 0.0005 0.160 0.158 0.264	3.918 0.434 1.117 0.070 0.210 0.005 0.005 0.158 0.264
C052744 C053781 C078951 C080891 C084296 C084305 C084320 C078262 C078264	T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Line T-Line	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Wampanoag Trans Sub Philipsdale Sub Asset Replacement Kenyon SubAsset Replacement Kent County Q143 OH REFURB STEP D CO 5360 R144 OH REFURB STEP D CO. 5360	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Total 0.434 0.397 0.0070 0.210 0.0005 0.160 0.158 0.264 0.239	3.918 0.434 1.117 0.070 0.210 0.005 0.005 0.158 0.264 0.239
C052744 C053781 C078951 C080891 C084296 C084320 C078262 C078264 C082847	T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Sub T-Line T-Line	FRANKLIN SQ - ASSET SEPARATION West Kingston Asset Replacement ProvStudy Admiral St. Ckt SW T-Sub Wampanoag Trans Sub Wampanoag Trans Sub Philipsdale Sub Asset Replacement Kenyon SubAsset Replacement Kenyon SubAsset Replacement Kent County Q143 OH REFURB STEP D CO 5360 R144 OH REFURB STEP D CO. 5360 I187/J188 ACR	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.000 0.720 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Total 0.434 0.397 0.0070 0.210 0.0005 0.160 0.158 0.264 0.239 0.018	3.918 0.434 1.117 0.070 0.210 0.005 0.005 0.158 0.264 0.239 0.018
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C084010	T-Line	New Admiral 12kV (T- Line)	0.000	0.000	0.103	0.104
C084011	T-Line	L190 ACR	0.000	0.000	0.700	0.700
C084314	T-Line	L190 and G185S	0.000	0.000	0.069	0.069
C084316	T-Line	332 ACR	0.070	0.000	0.150	0.220
C084321	T-Line	347 ACR	0.050	0.000	0.016	0.066
C084323	T-Line	T172 ACR	0.052	0.000	0.098	0.150
C084326	T-Line	1870 ACR	0.051	0.000	0.129	0.180
C084381	T-Line	F184 - Rhode Island Tap	0.000	0.000	0.360	0.360
C084968	T-Line	E183E E183W line OPGW & Asset Rpl	0.000	0.000	0.360	0.360
C085138	T-Line	G185S OPGW	0.000	0.000	0.550	0.550
C085340	T-Sub	West Cranston Sub XFMR Replacement	0.000	0.000	0.080	0.080
C086769	T-Line	M13_L14 ACR NECO	0.000	0.000	0.060	0.060
C079856	T-Sub	Staples Sub Asset Replacement	0.000	0.000	0.005	0.005
					Total	5.842

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
N/A	N/A	
		0.000

Prior Sanctioning History - N/A

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance

N/A

Key Milestones							
Milestone	Date (Month / Year)						
Sanction	March, 2021						
Completion	March, 2022						
Project Closure Sanction	June, 2022						

Next Planned Sanction

Date (Month/Year)

Purpose of Sanction Review

June, 2022

Closure

Category	
Category	Reference to Mandate, Policy, or NPV
◯ Mandatory	Capital Project Development costs may support the
O Policy-Driven	delivery of projects from all categories.
◯ Justified NPV	
Asset Management Risk Sco	re: 35
PRIMARY RISK SCORE DRIVE	R
\bigcirc Reliability \bigcirc Environment \bigcirc H	ealth & Safety \bigcirc Not Policy Driven
Mixed	
Complexity Level: 21	
High Complexity Medium Cor	nplexity O Low Complexity O N/A

Net Zero			
Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	O Positive	○ Negative
Impact on adaptability of network for future climate change:	 Neutral 	○ Positive	○ Negative
Qualifies for Green Financing:	⊖ Yes	○ No	• N/A

Impact to climate will be determined during each individual project sanction.

Investment Recovery and Customer Impact

Investment Recovery

Investment recovery will be through standard rate recovery mechanisms for each project.

Customer Impact

The first full year revenue requirement, for each project listed in the summary section, will be determined during the individual project sanctions.

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 Distribution Capital plan	\odot Yes \bigcirc No	\odot Over \bigcirc Under \bigcirc N/A	(0.019)
FY22-26 Transmission Capital plan	\odot Yes \bigcirc No	\bigcirc Over \textcircled{O} Under \bigcirc N/A	0.084

If Cost > Approved

if costs > 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.

Cost Summary T	able							
Distribution								
Project Number	Project Title	EMS Expa	ansion - Wa	impanoag 48	3	Project Estimate Level	+/-10%	
Spand	Drior Vro	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	TOLAI
Capex	0.000	0.110	0.000	0.000	0.000	0.000	0.000	0.110
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	0.110	0.000	0.000	0.000	0.000	0.000	0.110
Project Number	Project Title	PROVSTL	JDY NEW /	ADMIRAL ST	Г 12KV	Project Estimate Level	+/-10%	
On and		FY	FY	FY	FY	FY	FY	Tatal
Spena	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai
Capex	0.000	1.453	0.000	0.000	0.000	0.000	0.000	1.453
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.015
Total	0.000	1.468	0.000	0.000	0.000	0.000	0.000	1.468
Project Number	Project Title	PROVSTL	JDY ADMIF	RAL ST-ROC	CHAMB	Project Estimate Level	+/-10%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	TOLAI
Capex	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.027
Total	0.000	0.527	0.000	0.000	0.000	0.000	0.000	0.527
Project Number	Project Title	ProvStudy	Admiral St	t. Demolition		Project Estimate Level	+/-10%	
Crand		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	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	0.221	0.000	0.000	0.000	0.000	0.000	0.221
Total	0.000	0.221	0.000	0.000	0.000	0.000	0.000	0.221

Project Number	Project Title	PROVSTU SUB	DY KNIGH	TSVILLE 4	KV D-	Project Estimate Level	+/-10%	
		FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	lotal
Capex	0.000	0.274	0.000	0.000	0.000	0.000	0.000	0.274
Орех	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	0.274	0.000	0.000	0.000	0.000	0.000	0.274
Project Number	Project Title	PROVSTU D-LINE	DY ADMIR	AL ST-ROO	CHAMB	Project Estimate Level	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.210	0.000	0.000	0.000	0.000	0.000	0.210
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.024
Total	0.000	0.234	0.000	0.000	0.000	0.000	0.000	0.234
Project Number	Project Title	PROVSTU	DY OLNEY	VILLE 4KV	Project Estimate Level	+/-10%		
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	Total
Capex	0.000	0.204	0.000	0.000	0.000	0.000	0.000	0.204
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.057	0.000	0.000	0.000	0.000	0.000	0.057
Total	0.000	0.261	0.000	0.000	0.000	0.000	0.000	0.261
Project Number C078803	Project Title	PROVSTU MH&DUCT	DY ADMIR	AL ST 12K	V	Project Estimate Level	+/-10%	
Spond	Drior Vrs	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	Total
Capex	0.000	0.272	0.000	0.000	0.000	0.000	0.000	0.272
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	0.272	0.000	0.000	0.000	0.000	0.000	0.272
Project Number C078804	Project Title	PROVSTU CABLES	DY ADMIR	AL ST 12K	V	Project Estimate Level	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.271	0.000	0.000	0.000	0.000	0.000	0.271
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	Page 8 of 17
Total	0.000	0.271	0.000	0.000	0.000	0.000	0.000	0.271	
Project Number	Project Title	PROVSTUE CONVERT	DY KNIGHT	SVILLE 4	KV P E La	roject stimate +/ evel	-10%		
Spand	Drior Vro	FY	FY	FY	FY	FY	FY	Total	
	PHOLITS	2022	2023	2024	2025	2026	2027	Total	
Capex	0.000	0.218	0.000	0.000	0.000	0.000	0.000	0.218	
Opex	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018	
Removal	0.000	0.039	0.000	0.000	0.000	0.000	0.000	0.039	
Total	0.000	0.275	0.000	0.000	0.000	0.000	0.000	0.275	
Project Number	Project Title	PROVSTUE RETIRE	DY HARRIS	S AVE 4&1 ⁻	1KV P E	roject stimate +/ evel	/-10%		
0		FY	FY	FY	FY	FY	FY		
Spena	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai	
Capex	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
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	0.005	0.000	0.000	0.000	0.000	0.000	0.005	

Transmission

Project Number C052744	Project Title	FRANKLIN	I SQ - ASS	ET SEPAF	RATION	Project Estimate Level	+/-10%	
On and		FY	FY	FY	FY	FY	FY	Tatal
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai
Capex	0.000	0.434	0.000	0.000	0.000	0.000	0.000	0.434
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	0.434	0.000	0.000	0.000	0.000	0.000	0.434
Project Number	Project Title	West King	ston Asset	Replaceme	ent	Project Estimate Level	+/-10%	
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total
Spend	FIIOL TIS	2022	2023	2024	2025	2026	2027	TOLAT
Capex	0.000	1.117	0.000	0.000	0.000	0.000	0.000	1.117
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	1.117	0.000	0.000	0.000	0.000	0.000	1.117
Project Number C078951	Project Title	ProvStudy	Admiral St	. Ckt SW T	-Sub	Project Estimate Level	+/-10%	

Spond		FY	FY	FY	FY	FY	FY	Total	Page 9 of 17
	PHOLITS	2022	2023	2024	2025	2026	2027	Total	
Capex	0.000	0.070	0.000	0.000	0.000	0.000	0.000	0.070	
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	0.070	0.000	0.000	0.000	0.000	0.000	0.070	
Project Number C080891	Project v Title	Vampanoa	g Trans Sul	b	P E L	Project stimate evel	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.210	0.000	0.000	0.000	0.000	0.000	0.210	
Орех	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	0.210	0.000	0.000	0.000	0.000	0.000	0.210	
Project Number	Project Title F	Philipsdale	Sub Asset I	Replaceme	nt E L	Project Estimate evel	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
Орех	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	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
Project Number	Project Title K	Kenyon Su	bAsset Rep	blacement	P E L	Project Stimate evel	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
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	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
Project Number	Project Title		kent Coun	ty	P E L	Project Stimate evel	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.158	0.000	0.000	0.000	0.000	0.000	0.158	
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	0.158	0.000	0.000	0.000	0.000	0.000	0.158	

Project Number C078262	Project Title	Q143 OH	REFURB S	TEP D CO	5360	Project Estimate Level	+/10%	
		FY	FY	FY	FY	FY	FY	
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Total
Capex	0.000	0.264	0.000	0.000	0.000	0.000	0.000	0.264
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	0.264	0.000	0.000	0.000	0.000	0.000	0.264
Project Number	Project Title	R144 OH	REFURB S	TEP D CO	. 5360	Project Estimate Level	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.239	0.000	0.000	0.000	0.000	0.000	0.239
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	0.239	0.000	0.000	0.000	0.000	0.000	0.239
Project Number	Project Title	l187/J188	ACR			Project Estimate Level	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018
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	0.018	0.000	0.000	0.000	0.000	0.000	0.018
Project Number	Project Title	M13_L14	Sakonnet F	River Reme	diation	Project Estimate Level	+/-10%	
Spend	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
		2022	2023	2024	2025	2026	2027	Total
Capex	0.000	0.418	0.000	0.000	0.000	0.000	0.000	0.418
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	0.418	0.000	0.000	0.000	0.000	0.000	0.418
Project Number C084010	Project Title	New Admi	ral 12kV (T	-Line)		Project Estimate Level	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.104	0.000	0.000	0.000	0.000	0.000	0.104
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Attachment DIV 3-2-31

Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000 Page 11 of 1
Total	0.000	0.104	0.000	0.000	0.000	0.000	0.000	0.104
Project Number	Project Title	L190 ACR			F E L	Project Estimate +, .evel	/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Сарех	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.700
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	0.700	0.000	0.000	0.000	0.000	0.000	0.700
Project Number C084314	Project Title		L1	90 and G1	F 85S E L	Project Estimate +, _evel	/-10%	
Spend	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
	11101 113	2022	2023	2024	2025	2026	2027	
Capex	0.000	0.069	0.000	0.000	0.000	0.000	0.000	0.069
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	0.069	0.000	0.000	0.000	0.000	0.000	0.069
Project Number C084316	Project Title	332 ACR	Project Estimate +/10% Level					
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.220	0.000	0.000	0.000	0.000	0.000	0.220
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	0.220	0.000	0.000	0.000	0.000	0.000	0.220
Project Number	Project Title	347 ACR	Project Estimate +/10% Level					
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.000	0.066	0.000	0.000	0.000	0.000	0.000	0.066
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	0.066	0.000	0.000	0.000	0.000	0.000	0.066
Project Number C084323	Project Title	T172 ACR			F E L	Project Estimate +, .evel	/10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total

Capex	0.000	0.150	0.000	0.000	0.000	0.000	0.000	0.150 ^{Pa}	age 12 of 17
Орех	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	0.150	0.000	0.000	0.000	0.000	0.000	0.150	
Project Number	Project Title	1870 ACR				Project Estimate Level	+/10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.180	0.000	0.000	0.000	0.000	0.000	0.180	
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	0.180	0.000	0.000	0.000	0.000	0.000	0.180	
Project Number	Project Title	F184 - Rho	de Island T	ар		Project Estimate Level	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.360	0.000	0.000	0.000	0.000	0.000	0.360	
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	0.360	0.000	0.000	0.000	0.000	0.000	0.360	
Project Number	Project Title	E183E E18	3W line OF	PGW & Ass	et Rpl	Project Estimate Level	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.360	0.000	0.000	0.000	0.000	0.000	0.360	
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	0.360	0.000	0.000	0.000	0.000	0.000	0.360	
Project Number	Project Title			G185S OP	GW	Project Estimate Level	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.550	
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	0.550	0.000	0.000	0.000	0.000	0.000	0.550	
Project Number	Project Title	West Crans	ston Sub XI	FMR Repla	cement	Project Estimate Level	+/-10%		

		FY	FY	FY	FY	FY	FY	Pa	ige 13 of 1
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Total	
Сарех	0.000	0.080	0.000	0.000	0.000	0.000	0.000	0.080	
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	0.080	0.000	0.000	0.000	0.000	0.000	0.080	
Project Number ^{C086769}	Project Title	M13_L14 A	CR NECO		P E L	Project stimate - evel	+/-10%		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	0.060	0.000	0.000	0.000	0.000	0.000	0.060	
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	0.060	0.000	0.000	0.000	0.000	0.000	0.060	
Project Number	Project Title	Staples Su	b Asset Rep	blacement	P E L	Project Estimate - evel	+/-10%		
On and		FY	FY	FY	FY	FY	FY	Tatal	
Spend	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai	
Сарех	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
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	0.005	0.000	0.000	0.000	0.000	0.000	0.005	
Total Project Sanctio	n								
Capex	0.000	9.359	0.000	0.000	0.000	0.000	0.000	9.359	
Opex	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018	
Removal	0.000	0.383	0.000	0.000	0.000	0.000	0.000	0.383	
Total	0.000	9.760	0.000	0.000	0.000	0.000	0.000	9.760	
Project Costs pe	er Busines	s Plan							
Distribution									
\$M	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.000	3.497	0.000	0.000	0.000	0.000	0.000	3.497	
Орех	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018	
Removal	0.000	0.384	0.000	0.000	0.000	0.000	0.000	0.384	
Total Cost in Bus. Plan	0.000	3.899	0.000	0.000	0.000	0.000	0.000	3.899	
Variance									
		FY	FY	FY	FY	FY	FY		

								Attachme
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	Total
Capex	0.000	(0.020)	0.000	0.000	0.000	0.000	0.000	(0.020)
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001
Total Variance	0.000	(0.019)	0.000	0.000	0.000	0.000	0.000	(0.019)
Project Costs p	er Busines	s Plan						
Transmission								
\$M		FY	FY	FY	FY	FY	FY	Tatal
	PHOLITS	2022	2023	2024	2025	2026	2027	Total
Capex	0.000	5.926	0.000	0.000	0.000	0.000	0.000	5.926
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	5.926	0.000	0.000	0.000	0.000	0.000	5.926
Variance								
		FY	FY	FY	FY	FY	FY	T . (.)
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai
Capex	0.000	0.084	0.000	0.000	0.000	0.000	0.000	0.084
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 Variance	0.000	0.084	0.000	0.000	0.000	0.000	0.000	0.084

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen; McColgan, Karen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Labarre, Alan T.; Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; Maglione, Nicole; Altenburger, Peter F.; Swanson, Leonard G.	Endorses scope, design, conformance with design standards
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers	
Function	Individual
Finance	Harju, Andrew; Gillespie, Michael
Regulatory	

Artuso, Michael V.; Azarcon, Carolyn; Long, James

Jurisdictional Delegate(s)	Easterly, Patricia; Hill, Terron P.
Procurement	Chevere, Diego
Control Centers (CC)	Gallagher, Michael W.; Cutler, Joseph H.

Decisions

The US Sanctioning Committee (USSC) approved this paper at a meeting held on 03/10/2021: (a) APPROVE the investment of \$9.760M and a tolerance of +/-10% for engineering and design activities, purchases of long lead materials, permitting, and land rights.

(b) NOTED that Hudock, Bryan has the approved financial delegation

	DocuSigned by:	
0	Mike Gillespie	
Signature _	3/15/2021	· · · · · · · · · · · · · · · · · · ·
Date	5/15/2021	

Michael Gillespie, Vice President, Head of Finance Business Partnering, USSC Chair

Appendix

N/A

This document has been reviewed and does not contain Critical Energy/ Electric Infrastructure Information (CEII). 09/01/2021

			national grid
Long: US S	Sanction Paper		
Title:	Providence Area Study Phase 1B – New Admiral Street 115/12 kV Station	Sanction Paper #	: USSC-21-273
Project #:	Multiple Projects	Sanction Type:	Sanction
Operating Company:	The Narragansett Electric Company	Date of Request:	8/23/2021
Author:	Monson, Todd	Sponsor(s):	Sedewitz, Carol A. VP Electric Asset Mgmt & Planning
Utility Service:	Electricity T&D	Project Manager:	Healey, Daniel
Executive Su	mmary		

This paper requests Sanction of Multiple Projects in the amount of \$55.695M with a tolerance of +/-10% for the purposes of final design and full execution.

This sanction amount is \$55.695M broken down into: \$49.687M Capex \$0.320M Opex \$5.688M Removal

With a CIAC/Reimbursement of \$0.000M With a Salvage Value of \$0.000M

This project has been evaluated for capital efficiencies, which are reflected in the sanction amount. The project will continue to be evaluated for any procurement or construction efficiency opportunities upon its release for construction.

Project Summary

This project will address asset condition at Admiral Street Substation and the surrounding distribution network by rebuilding the Substation and converting the majority of the surrounding distribution system from 11.5kV and 4.16kV to 12.47kV.

Background

The Providence Area Long Term Supply and Distribution Study recommended the expansion of the 12.47 kV distribution system, conversion of the majority of 11.5 kV and 4.16 kV load to 12.47 kV and elimination of several 4.16 kV and 11.5 kV indoor and outdoor stations. In addition to the station issues, over 22 miles of underground supply and distribution circuits were identified in the company's cable replacement program. The majority of the new 12.47 kV capacity in the recommended plan would be provided by new 115/12.47 kV stations at Admiral Street and Knightsville.

Project Description

Substation

- Relocate the Admiral Street 11kV supply for Rochambeau Ave (1110 Cable) to another location in the Admiral Street yard.
- Install temporary 11 kV transformer for Rochambeau.
- Remove Admiral Street 4kV & 11kV equipment, including structures, and demolish indoor substation.
- Install two (2) new 33/44/55 MVA, 115/12 kV transformers, two (2) capacitor banks, new 115/12.47 kV breaker-and-one-half metal clad substation, 15 kV switchgear, and duct/manhole system.
- Install a new 15kV feeder breaker and its associated structures and disconnect switches to supply the 1110 Cable.
- Install retaining wall and 115 kV taps with protective devices.

T-Line

- Install new T-line deadend structures and foundations, and extend 115 kV to new substation bus structure at Admiral Street substation.
- Install new conductor, OPGW, and shieldwire.

D-Line

- Extend/upgrade vintage 1110 cable to supply Rochambeau substation.
- Convert Olneyville 4kV and 11kV feeders (6J1, 6J3, 6J6 (partial), 6J7 feeders) to 12.47 kV.
- Install ducts/manholes for new feeders from rebuilt Admiral Street substation 9F1 9F6 feeders.
- Install cable for new 9F1 9F6 feeders from rebuilt Admiral Street substation.

Summary of Benefits

The Providence Long Term Area Study developed a comprehensive plan to address the asset condition issues through the expansion of the 12.47kV distribution system and conversion of the majority of 11.5kV and 4.16kV load to 12.47kV. The project is the second part of phase one for the remaining work of the Providence Long Term Area Study.

Business and Customer Issues

There are no significant business or customer issues. Minimizing disruptions and effectively coordinating with the customers will promote low risk to the project.

Drivers:

Providence is an urban area with concentrated load. The electrical distribution facilities consist of a mix of older 11 kV and 4.16 kV distribution systems and a newer 12.47 kV distribution system. The Providence Study identified the main issue to be asset condition related to indoor substations installed between 1924 and 1939. In addition to the station issues, over 22 miles of underground supply and distribution circuits were identified in the company's cable replacement program. Completing this project enables the retirement of the 4.16kV and 11.5kV Admiral St. indoor substation.

Alternatives

Numbe	ľ
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1

Title

One-to-one replacement of the 11.5 kV and 4.16 kV indoor and outdoor stations. This alternative option was not selected because it was a higher cost option and does not provide adequate capacity for future growth.

Related Projects, Scoring and Budget

Summary of Projects

Project	Project	Project Title	Estimate
Number	Type		Amount(\$M)
	(Elec only)		

Page 3 of 15

			Attachn
C078796	D-Line	PROV STUDY ADMIRAL ST-ROCHAMB	0.963
C078802	D-Line	PROV STUDY OLNEYVILLE 4kV	6.262
C078803	D-Line	PROV STUDY ADMIRAL ST MH&DUCTBANK	17.659
C078804	D-Line	PROV STUDY ADMIRAL ST 12kV CABLE INSTALL	5.959
C078735	D-Sub	PROV STUDY NEW ADMIRAL ST 12kV	13.331
C078797	D-Sub	PROV STUDY ADMIRAL ST-ROCHAMB	2.887
C078801	D-Sub	PROV STUDY ADMIRAL ST DEMOLITION	4.320
		Total	51.381
Project Number	Project Type (Elec only)	Project Title	Estimate Amount(\$M)
C078951	T-Sub	PROV STUDY ADMIRAL ST CKT SW T-SUB	2.512
C084010	T-Line	PROV STUDY NEW ADMIRAL ST 12kV STATION T-LINE	1.802
		Total	4.314

Associated Projects

Project Number	Project Title	Estimate Amount (\$M)
C078857	PHASE 2 - PROV STUDY HARRIS AVE 4&11KV RETIRE	10.359
C078810	PHASE 2 - PROV STUDY HARRISAVE 11KV	2.505
C078811	PHASE 2 - PROV STUDY GENEVA, OLNEYVILLE, ROCHAMB 4KV	19.797
C078847	PHASE 3 - PROV STUDY GENEVA 4KV SUB REMOVAL	0.265
C078849	PHASE 3 - PROV STUDY HARRIS AVE SUB REMOVAL	0.975
C078850	PHASE 3 - PROV STUDY OLNEYVILLE 4KV SUB REMOVAL	0.775
C078851	PHASE 3 - PROV STUDY ROCHAMBEAU 4KV SUB REMOVAL	0.465
C079317	PHASE 3 - PROV STUDY HARRISAV, OLNEYVILLE SUPPLY	1.406
C079318	PHASE 3 - PROV STUDY REMOVE ROCHAMBEAU SUPPLY	0.663
C078805	PHASE 4 - PROV STUDY KNIGHTSVILLE 4KV CONVERT	8.420
C078806	PHASE 4 - PROV STUDY KNIGHTSVILLE 4KV D-SUB	1.708
		47.338

Prior Sanctioning History

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Sanction Type	Sanction Paper	Potential Investment Tolerance
3/10/2021	USSC	3.428	30.894	Project Development	USSC-21-020	+/-10%
3/24/2020	USSC	1.012	30.894	Project Development	USSC-20-186	+/-10%

The first substation estimates for the Providence Long Term Area Study were based off Conceptual Engineering Reports dated 6/20/2018, 8/22/2018, 9/18/2018, and the first distribution line estimates were based off the distribution investment grade estimates for the Providence Long Term Area Study. Listed below are the main drivers and associated increased costs that resulted in the \$24.801M cost difference.

Distribution Line:

- 1. Increased internal project team costs + \$0.471M
- 2. Additional construction related costs + \$8.747M
- 3. Additional transportation + \$0.630M
- 4. Increased financial adders (AFUDC, COD, A&G, escalation) + \$4.606M
- 5. Inclusion of contingency and risk + \$3.658M

Substation / T-Line:

- 1. Increased contractor/consultant charges and materials +\$1.859M
- 2. Increased financial adders (AFUDC, COD, A&G, Escalation)
- 3. Inclusion of contingency and risk + \$2.298M

Note: A one-for-one comparison was not completed for all portions of the substation and T-line projects because the EPE Cost Book was used to develop 4.2 project estimates. Specific cost increases for certain items, such as AFUDC and COD, were not identified because the Cost Book did not specifically quantify financial adders. Additionally, the T-Line funding project is new, and no unique 4.2 scope document was developed.

Key Milestones	
Milestone	Date (Month / Year)
Project Development Sanction	March, 2020
Project Development Sanction	March, 2021
Gate C - Approval to Begin Engineering & Design	May, 2021
Sanction	August, 2021
Engineering Design Complete - EDC	August, 2023
Gate C1 - Approval to Progress to Field Execution	September, 2023
Construction Start	February, 2024
Rating Change (NX-9) Notification to ISO-NE	September, 2024
Construction Complete - CC	March, 2025
Gate D - Approval to Progress to Closeout	May, 2025
Project Closure Sanction	September, 2025

Note: Milestones shown are for Lead Substation Project (C078735) only - see Appendix for all milestones.

Next Planned Sanction

Date (Month/Year) September, 2025 Purpose of Sanction Review Closure

Category

Category

○ Mandatory

Olicy-Driven

 \bigcirc Justified NPV

Reference to Mandate, Policy, or NPV Distribution Planning Guide Policy (DAM-010 Distribution Area Studies)

Asset Management Risk Score: 35

PRIMARY RISK SCORE DRIVER

● Reliability ○ Environment ○ Health & Safety ○ Not Policy Driven

Complexity Level: 29

● High Complexity ○ Medium Complexity ○ Low Complexity ○ N/A

Process Hazard Assessment

A Process Hazard Assessment (PHA) is required for this project: • Yes · No

Current Planning Horizon

Distribution

	Current Planning Horizon							
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	
CapEx	1.277	2.280	16.585	15.430	9.547	0.523	0.000	45.642
OpEx	0.000	0.000	0.258	0.050	0.000	0.000	0.000	0.308
Removal	0.017	0.220	0.994	3.785	0.402	0.013	0.000	5.431
Total	1.294	2.500	17.837	19.265	9.949	0.536	0.000	51.381
Transmission								
				Current	Planning Ho	orizon		
		FY	FY	FY	FY	FY	FY	Total
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	
CapEx	0.200	0.398	0.350	0.761	2.179	0.157	0.000	4.045
OpEx	0.000	0.000	0.000	0.000	0.011	0.001	0.000	0.012
Removal	0.000	0.000	0.000	0.059	0.185	0.013	0.000	0.257
Total	0.200	0.398	0.350	0.820	2.375	0.171	0.000	4.314
Iotals Capox	4 477	0.070	40.005	40.404	44 700	0.000	0.000	40.007
	1.477	2.678	16.935	16.191	0.044	0.680	0.000	49.687
	0.000	0.000	0.258	0.050	0.011	0.001	0.000	0.320
Total	0.017	0.220	0.994	3.844	0.587	0.026	0.000	5.688
Total	1.494	2.898	18.187	20.085	12.324	0.707	0.000	55.695
Resources, (Operations, &	Procurer	nent					
		RES	OURCES	SOURCING	G			
Engineer Resources	ing & design to be provided	Internal				Contractor		
Construction Resources	/Implementation to be provided		🗹 In	ternal		V (Contractor	
		RE	ESOURCE		RY			
Availabili resources to	ty of internal delivery project:		⊖ Red		⊖ Ambe	r	🔘 Gre	een
Availability of external resources to delivery project:			⊖ Red		⊖ Ambe	r	🔵 Gre	een
		OPE	RATIONA	AL IMPAC	т			
Outage imp sy	act on network /stem		⊖ Red			r	🔘 Gre	een
		PRO	CUREME		т			
Procurement	ent impact on k system:		⊖ Red		⊖ Ambe	r	🔘 Gre	een

Key Is	ssues
1	A portion of the route is on guaranteed roadways for the City of Providence and Rhode Island, which will require coordination in support of permitting the roadway excavation and restoration effort in support of the duct bank installation.
2	The estimate assumed the subsurface layout for the new duct bank is feasible and additional test pits are being scheduled to mitigate unknowns in critical areas.
3	There are multiple construction sequencing constraints affecting the distribution line and substation projects which could affect construction start dates, and project sequencing should be monitored to mitigate risk of construction delays.

Outages must be coordinated and are assumed to be available during specified construction 4 schedule.

Not Zorc

Contribution to National Grid's 2050 80% emissions reduction target:	Neutral	○ Positive	○ Negative
Impact on adaptability of network for future climate change:	○ Neutral	Positive	○ Negative
Qualifies for Green Financing:	Yes	⊖ No	○ N/A

List References

N/A

Insert Reference

Safety, Environmental and Project Planning Issues

Safety

A health and safety plan will be developed and all National Grid safety and environmental rules will be followed.

Permitting

Permit Name	Probability Required	Duration to Acquire Permit	Status	Estimated Completion Date
Soil Erosion and Sediment Control	Likely	6 months	Not Applied For	February, 2023
RIPDES Construction	Likely	6 months	Not Applied For	February, 2023
Dimensional variance for the perimeter security fence.	Likely	2-4 months	Not Applied For	February, 2023
Building Permit for retaining wall	Likely	1-2 months	Not Applied For	February, 2023
NOI filing to Rhode Island Energy Facility Siting Board	Certain	2 months	Not Applied For	February, 2023
Road Opening Permit	Certain	1 month	Not Applied For	December, 2021
RIDOT Utility Permit	Certain	1 month	Not Applied For	December, 2021

Investment Recovery and Customer Impact

Investment Recovery

This project affects no Pooled Transmission Facilities (PTF) assets. Investment recovery will follow the applicable Local Network Service (LNS) rates for transmission assets. Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies for distribution assets.

Customer Impact

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$9.073M.

Execution Risk Appraisal

Risk	Qual	itative Assessment / R	isk Response Stra	ategy		
Breakdown Structure Category	Risk ID + Title	IF Statement	THEN Statement	Risk S	Response trategy	Score
11. Construction	R24 - How the duct bank will be installed - congested area already	IF duct bank will be installed in congested area	THEN this could add cost to the project	Reduce	Perform test during final design	16
5. Environmental	R17 - Contaminated / Hazardous Soils or Materials	IF contaminated / hazardous soils or contaminated water are encountered	THEN this could delay the project and add to the project cost	Reduce	Have material staged on site until it is characterized	12
3. Engineering	R24 - Scope Change - arising from MH survey / test pits	IF the manhole survey / test pits identify conflicts	THEN this would cause a delay and redesign	Reduce	Coordinate re-design with design contractor	9
11. Construction	R18 - Damage to existing utilities	IF other utilities get damaged during construction	THEN this would cause a delay in the project with added costs to fix the problem	Transfer	Transfer risk to contractor to mitigate damage and protect utilities	9
3. Engineering	R5 - Unanticipated subsurface conditions/underground utilities.	IF unanticipated subsurface conditions or underground utilities are encountered during the construction	THEN this could delay the project and add to the project cost	Reduce	To perform extra Test pits for better studies	9

Business Plan			
Business Plan Name & Period (BP 20)	Project Included in approved Business Plan?	(Over) / Under Business Plan	Project Cost relative to approved Business Plan (\$M)
FY22-26 Distribution Capital plan	● Yes 〇 No	● Over ◯ Under ◯ N/A	(22.419)
FY22-26 Transmission Capital plan	● Yes 〇 No	● Over ◯ Under ◯ N/A	(1.788)

If Cost > Approved

if costs > 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.

Cost Summary Table

Distribution				
Project C078796 Number	Project Title	PROV STUDY ADMIRAL ST-ROCHAMB	Project Estimate	+/-10%

					L	evel		
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.001	0.327	0.528	0.042	0.000	0.000	0.000	0.898
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.065	0.000	0.000	0.000	0.000	0.065
Total	0.001	0.327	0.593	0.042	0.000	0.000	0.000	0.963
Project Number	Project Title	PROV STU	JDY OLNE	/VILLE 4kV	P E L	Project Stimate evel	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.070	1.059	3.487	0.712	0.000	0.000	0.000	5.328
Opex	0.000	0.000	0.258	0.050	0.000	0.000	0.000	0.308
Removal	0.000	0.000	0.560	0.066	0.000	0.000	0.000	0.626
Total	0.070	1.059	4.305	0.828	0.000	0.000	0.000	6.262
Project Number	Project Title	PROV STU MH&DUCT	JDY ADMIR BANK	RAL ST	P E L	Project stimate evel	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.119	0.275	7.304	9.961	0.000	0.000	0.000	17.659
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	0.119	0.275	7.304	9.961	0.000	0.000	0.000	17.659
Project Number	Project Title	PROV STU INSTALL	JDY ADMIR	RAL ST 12kV		Project Estimate evel	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.068	0.175	0.026	2.014	3.243	0.420	0.000	5.946
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	0.013	0.000	0.013
Total	0.068	0.175	0.026	2.014	3.243	0.433	0.000	5.959
Project Number	Project Title	PROV STL	JDY NEW A	ADMIRAL ST	F 12kV E L	Project Estimate evel	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.381	0.225	3.469	2.349	6.304	0.103	0.000	12.831
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.098	0.402	0.000	0.000	0.500
Total	0.381	0.225	3.469	2.447	6.706	0.103	0.000	13.331
Project Number	Project Title	PROV STL	JDY ADMIR	AL ST-ROC	F HAMB E L	Project Estimate evel	+/-10%	
Spend	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Capex	0.488	0.214	1.771	0.352	0.000	0.000	0.000	2.825

0.000

0.017

1.294

0.000

0.344

3.240

0.000

1.308

9.287

0.000

0.012

1.195

0.000

2.673

13.946

0.000

0.000

0.000

0.000

0.000

0.000

0.000

4.354

28.962

Opex

Removal

Total Cost in Bus.

Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Attachm 0.000	ent DIV 3-2-32
Removal	0.007	0.000	0.055	0.000	0.000	0.000	0.000	0.062	Tage 7 01 1.
Total	0.495	0.214	1.826	0.352	0.000	0.000	0.000	2.887	
Project Number	Project Title	PROV STU DEMOLITI	idy admif On	RAL ST		Project Estimate Level	+/-10%		
Spond	Drior Vro	FY	FY	FY	FY	FY	FY	Total	
		2022	2023	2024	2025	2026	2027	TOLAI	
Сарех	0.150	0.005	0.000	0.000	0.000	0.000	0.000	0.155	
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Removal	0.010	0.220	0.314	3.621	0.000	0.000	0.000	4.165	
Total	0.160	0.225	0.314	3.621	0.000	0.000	0.000	4.320	
Transmission						Project			
Project Number	Project Title	PROVISIU SW T-SUB	JDY ADMII	RALSTCKT		Estimate Level	+/-10%		
Spend	Prior Yrs	FY	FY	FY	FY	FY	FY	Total	
		2022	2023	2024	2025	2026	2027	Total	
Capex	0.112	0.189	0.182	0.632	1.094	0.074	0.000	2.283	
Opex	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Removal	0.000	0.000	0.000	0.055	0.163	0.011	0.000	0.229	
Total	0.112	0.189	0.182	0.687	1.257	0.085	0.000	2.512	
Project Number	Project Title	PROV STU STATION T	JDY NEW /	ADMIRAL S ⁻	T 12kV	Project Estimate Level	+/-10%		
Spend	Prior Yrs	FY 3 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	0.088	0.209	0.168	0.129	1.085	0.083	0.000	1.762	
Opex	0.000	0.000	0.000	0.000	0.011	0.001	0.000	0.012	
Removal	0.000	0.000	0.000	0.004	0.022	0.002	0.000	0.028	
Total	0.088	0.209	0.168	0.133	1.118	0.086	0.000	1.802	
Total Project Sanction									
Capex	1.477	2.678	16.935	16.191	11.726	0.680	0.000	49.687	
Opex	0.000	0.000	0.258	0.050	0.011	0.001	0.000	0.320	
Removal	0.017	0.220	0.994	3.844	0.587	0.026	0.000	5.688	
Total	1.494	2.898	18.187	20.085	12.324	0.707	0.000	55.695	
Project Costs per	Busines	s Plan							
Distribution									
\$M	Prior Yrs	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
Capex	1.277	2.896	7.979	11.273	1.183	0.000	0.000	24.608	

Plan

Variance								
		FY	FY	FY	FY	FY	FY	Tatal
\$M	Prior Yrs	2022	2023	2024	2025	2026	2027	Iotai
Capex	0.000	0.616	(8.606)	(4.157)	(8.364)	(0.523)	0.000	(21.034)
Opex	0.000	0.000	(0.258)	(0.050)	0.000	0.000	0.000	(0.308)
Removal	0.000	0.124	0.314	(1.112)	(0.390)	(0.013)	0.000	(1.077)
Total Variance	0.000	0.740	(8.550)	(5.319)	(8.754)	(0.536)	0.000	(22.419)
Project Costs p	er Busines	s Plan						
Transmission								
\$M	Drior Vre	FY	FY	FY	FY	FY	FY	Total
	FIIUI IIS	2022	2023	2024	2025	2026	2027	TOLAI
Capex	0.200	0.174	0.155	0.155	1.172	0.656	0.000	2.512
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	0.009	0.005	0.000	0.014
Total Cost in Bus. Plan	0.200	0.174	0.155	0.155	1.181	0.661	0.000	2.526
Variance								
	Prior Vrs	FY	FY	FY	FY	FY	FY	Total
\$M		2022	2023	2024	2025	2026	2027	Iotai
Capex	0.000	(0.224)	(0.195)	(0.606)	(1.007)	0.499	0.000	(1.533)
Opex	0.000	0.000	0.000	0.000	(0.011)	(0.001)	0.000	(0.012)
Removal	0.000	0.000	0.000	(0.059)	(0.176)	(0.008)	0.000	(0.243)
Total Variance	0.000	(0.224)	(0.195)	(0.665)	(1.194)	0.490	0.000	(1.788)

Cost Assumptions

The cost estimates in this paper were completed by Electric Project Estimating. The cost estimates in this paper are based on historical material labor costs incurred to perform similar work on recently completed projects using internal estimating tools. The estimate for C078803 assumed full width paving restoration will be required in compliance with the 2019 Rhode Island Utility Fair Share Roadway Repair Act. The estimate also assumed costs for contaminated soil disposal associated with duct bank installation and substation excavation.

Net Present Value / Cost Benefit Analysis

NPV Assumptions & Calculations

N/A

Additional Impacts

Statement of Support		
Department	Individual	Responsibilities
Investment Planning	DiConza, Glen; McColgan, Karen	Endorses relative to 5-year business plan or emergent work
Resource Planning	Wyman, Anne; Phillips, Mark	Endorses construction resources, cost estimate, schedule, and portfolio alignment
Asset Management / Planning	Castro, Kathy; Ahern, Barry	Endorses scope, estimate, and schedule with the company's goals, strategies, and objectives
Engineering and Design	Hellmuth, Kevin; McGrath, Jim; Maglione, Nicole	Endorses scope, design, conformance with design standards
Project Estimation	Lutz, Sara	Endorses cost estimate
Project Management	Arthur, David / Migdal, Sara A.	Endorses resources, cost estimate, schedule

Reviewers						
Function	Individual					
Finance	Joyce, Anisa					
Regulatory	Azarcon, Carolyn					
Jurisdictional Delegate(s)						
	Easterly, Patricia					
Procurement	Chevere, Diego					
Control Centers (CC)	Gallagher, Michael W.; Cutler, Joseph H.					

Decisions

The Senior Executive Sanctioning Committee (SESC) approved this paper at a meeting held on 8/23/21:

(a) APPROVE the investment of \$55.695M and a tolerance of +/-10% for final design and full execution.

(b) NOTED that Healey, Daniel has the approved financial delegation

	DocuSigned by:	
	David Campbell	
Signature	9C8FAF8B612A40D	
	8/26/2021	
Date		

David Campbell Chief Financial Officer, New England Co-Chair, Senior Executive Sanctioning Committee Appendix

STATUS REPORT MILESTONES	ACTIVITY NAME	START	FINISH	FIN SYS PROJ NO.
PROVSTUDY ADMIRAL ST				
MH&DUCTBANK FOR 12KV				
CABLES - GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078803
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		9/30/2021	C078803
MSR.GATEC1	GATE C1 APPROVAL		11/30/2021	C078803
	GATE 3 FINAL RECOMMENDATION		2/21/2022	C070000
MISR.CAIG			3/31/2022	CU78803
	CONSTRUCTION START - MHS/DUCTS			
MSR CS	EFEDERS	06-01-22*		078803
MSR CC		00-01-22	11/30/2022	C078803
MSR RFI			11/30/2023	C078803
			- 1, 30, 2023	
ROCHAMB D-LINE - (REPLACE CABLE 1110 FEEDER) GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078796
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		9/30/2021	C078796
MSR.GATEC1	GATE C1 APPROVAL		11/30/2021	C078796
	CONSTRUCTION START - REPLACE			
MSR.CS	FEEDER CABLE 1110	04-01-22*		C078796
MSR.RFL	DLINE READY FOR LOAD		12/30/2022	C078796
MSR.CC	CONSTRUCTION FINISH		1/12/2023	C078796
PROVSTUDY OLNEYVILLE 4KV D-LINE (REBUILD/CONVERT TO 12KV) - GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078802
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		9/30/2021	C078802
MSR.GATEC1	GATE C1 APPROVAL		11/30/2021	C078802
	GATE 0 - PREPARE DOCUMENTATION			
		12/1/2024	1/20/2022	070000
		12/1/2021	1/28/2022	CU188U2
MSB CAIG			3/15/2022	C078802
WSN.CAIG			5/ 15/ 2022	CU/00UZ
MSR CS	OINFYVILLE FEEDERS TO 12KV	04-01-22*		C078802
MSR.RFI			5/31/2023	C078802
MSR.CC	CONSTRUCTION FINISH		6/14/2023	C078802
PROVSTUDY ADMIRAL ST 12KV			-,, _0_0	
CABLE INSTALL - GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078804
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		9/30/2021	C078804
		ł	11/20/2022	C070004

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MSP CS		04 01 24*	, 30, 2023	C070004
		04-01-24	2/21/2025	C078804
MSR.RFL			3/31/2025	CU78804
MSR.CC	CONSTRUCTION FINISH		4/14/2025	C078804
PROVSTUDY ADMIRAL ST DEMOLITION - GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078801
	TECHNICAL SCOPE DOCUMENT			
MSR.TRD	APPROVAL		11-24-20 A	C078801
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		11/30/2022	C078801
MSR.GATEC1	GATE C1 APPROVAL		1/31/2023	C078801
	GATE 0 PREPARE DOCUMENTATION			
MSR.RFPL	FOR DEMO BID	2/1/2023	3/15/2023	C078801
	GATE 3 FINAL RECOMMENDATION &			
MSR.CAIG	AWARD DEMO CONTRACT		5/10/2023	C078801
MSR.CS	CONSTRUCTION START	06-01-23*		C078801
MSR.CC	CONSTRUCTION FINISH		1/31/2024	C078801
MSR.RFL	OVERALL READY FOR LOAD		1/31/2024	C078801
PROVSTUDY ADMIRAL ST-				
ROCHAMB D-SUB (INSTALL				
TEMPORARY TRANSFORMER)				
GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078797
	TECHNICAL SCOPE DOCUMENT			
MSR.TRD	APPROVAL		10-30-20 A	C078797
	ENGINEERING & DESIGN COMPLETED			
	- ROCHAMBEAU TEMPORARY			
MSR FFC	TRANSFORMER (FDC)		2/28/2022	C078797
MSR GATEC1	GATE C1 APPROVAL		6/29/2022	C078797
MSR CS		11-01-22*	0,23,2022	C078797
MSR REI		11 01 22	5/31/2023	C078797
MSP.CC			6/16/2023	C078707
			0/10/2025	CU78797
	-			
12 NV STATION TLINE - GROUP				
			11 <u>00 10 A</u>	C094010
WISK.GAIEB			11-00-10 A	C084010
				C094010
			07-07-20 A	C084010
			0/21/2022	C094010
			8/31/2023	C084010
MISR.GATECI			3/29/2024	C084010
	GATE 0 - PREPARE DOCUMENTATION	4/4/2024	F /24 /2024	600 404 0
MISR.RFPL		4/1/2024	5/31/2024	C084010
	GATE 3 FINAL RECOMMENDATION &		7/42/2024	6004040
MSR.CAIG	AWARD		//12/2024	C084010
MSR.CS	CONSTRUCTION START	08-01-24*		C084010
MSR.RFL	OVERALL READY FOR LOAD		3/31/2025	C084010
MSR.CC	CONSTRUCTION FINISH		4/15/2025	C084010
PROVSTUDY ADMIRAL ST CKT				
SW T-SUB - GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078951
	TECHNICAL SCOPE DOCUMENT			
MSR.TRD	APPROVAL		12-11-20 A	C078951
	ENGINEERING & DESIGN COMPLETED			
	I			

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MSR.FEC	(EDC)		08-31-23*	C078951
MSR.GATEC1	GATE C1 APPROVAL		9/29/2023	C078951
MSR.CS	CONSTRUCTION START	04-01-24*		C078951
MSR.RFL	OVERALL RFL		2/7/2025	C078951
MSR.CC	CONSTRUCTION FINISH		3/14/2025	C078951
PROVSTUDY NEW ADMIRAL ST				
12KV D-SUB (LEAD PROJECT)				
GROUP 1B.1				
MSR.GATEB	GATE B		11-08-18 A	C078735
	TECHNICAL SCOPE DOCUMENT			
MSR.TRD	APPROVAL		10-30-20 A	C078735
MSR.GATEC	GATE C APPROVAL		05-27-21 A	C078735
MSR.APR	ALL PERMITS IN-HAND		2/27/2023	C078735
	ENGINEERING & DESIGN COMPLETED			
MSR.FEC	(EDC)		8/20/2023	C078735
MSR.GATEC1	GATE C1 APPROVAL		9/17/2023	C078735
	GATE 0 - PREPARE DOCUMENTATION			
MSR.RFPL	FOR CONSTRUCTION BID	9/18/2023	10/13/2023	C078735
	GATE 3 FINAL CONSTRUCTION			
MSR.CAIG	RECOMMENDATION & AWARD		1/15/2024	C078735
MSR.CS	CONSTRUCTION START	02-05-24*		C078735
MSR.RFL	OVERALL READY FOR LOAD		3/14/2025	C078735
MSR.CC	CONSTRUCTION FINISH		4/17/2025	C078735

CUSTOMER IMPACT

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$9.073M.

(Сарех	Percent	
Distribution	45.64	12 18.49	% 8.439
Transmission	4.04	15 15.66	% 0.633

Redacted

Division 3-3

Request:

Regarding DIV 1-6 (Supplemental) response: Provide all NWA analysis and supporting documentation for both the South Kingston and Bonnet 42F1 projects to support the Company statement that NWA bids "had worse customer bill impact than the wires option (in accordance with Least-Cost Procurement Standard 1.3.H)."

Response:

Term	Definition
NWA	Non-Wires Alternative
NPV	Net Present Value
BCA	Benefit-Cost Analysis
BCR	Benefit-Cost Ratio
SCT	Societal Cost Test
UCT	Utility Cost Test
LCP	Least-Cost Procurement

Table 1: Table of Terms

Bonnet 42F1 NWA

Please see the Excel version of Attachment DIV 3-3-1 for supporting documentation regarding the Bonnet 42F1 NWA opportunity and its potential customer bill impact. Please see **Table 2** below for a summarized overview of the customer bill impact and BCA for the Bonnet 42F1 NWA opportunity, which is sourced from Attachment DIV 3-3-1.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 In Re: Electric Infrastructure, Safety, and Reliability Plan FY2023 Responses to Division's Third Set of Data Requests Issued on January 5, 2022

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Table 2: Bonnet 42F1 NWA Bill Impact and BCA Breakdown

Bonnet 42F1 NWA Wires Option Cost Information							
Wires Option Cost							
Bonnet 42	Bonnet 42F1 NWA Submitted Bid Cost Information						
	Bid A	Bid B					
Total Nominal Cost							
Total NPV							
SCT BCA							
UCT BCA							
LCP 1.3.H – Lower than the							
Cost of the Wires Option?							
Evaluation Result Summary							

South Kingstown NWA

Please see Excel version of Attachment DIV 3-3-2 for supporting documentation regarding the South Kingstown NWA opportunity and its potential customer bill impact. Please see Table 3 below for a summarized overview of the customer bill impact and BCA for the South Kingstown NWA opportunity, which is sourced from Attachment DIV 3-3-2.

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 5209 In Re: Electric Infrastructure, Safety, and Reliability Plan FY2023 Responses to Division's Third Set of Data Requests Issued on January 5, 2022

Redacted Division 3-3, page 3

Table 3: South Kingstown NWA Bill Impact and BCA Breakdown

South Kingstown NWA Wires Option Cost Information					
Wires Option Cost					
South Kingstown NWA Submitted Bid Cost Information					
	Bid A	Bid B	Bid B	Bid C	Bid C
		(One-Time payment)	(Annual payment)	(Option A)	(Option B)
Total Nominal Cost					
Total NPV					
SCT BCA					
UCT BCA					
LCP 1.3.H - Lower					
than the Cost of the					
Wires Option?				-	_
Evaluation Result Summary					

Excel Attachments DIV 3-3-1 & DIV 3-3-2

The Company is seeking protective treatment of the Excel versions of Attachments DIV 3-3-1 and DIV 3-3-2

Please see Motion For Protective Treatment of the referenced Excel Files.