Jennifer Brooks Hutchinson
Acting Assistant General Counsel and Director

May 20, 2020

VIA ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 4915 – FY2020 Electric Infrastructure, Safety, and Reliability Plan
Revised Quarterly Update – Fourth Quarter Ending March 31, 2020

Dear Ms. Massaro:

On behalf of National Grid,[1] I have enclosed a revised electronic version[2] of the Company's fiscal year (FY) 2020 Electric Infrastructure, Safety, and Reliability (ISR) Plan quarterly update for the fourth quarter ending March 31, 2020.

The Company revised the third bullet on page 2 of the enclosed quarterly report to correct the FY 2020 Distributed Generation budget from $1.6 million to $4.7 million. The remainder of the report remains unchanged from the Company's May 15, 2020 filing.

Thank you for your attention to this matter. If you have any questions, please contact me at 401-784-7288.

Very truly yours,

Jennifer Brooks Hutchinson

Enclosures

cc: Docket 4915 Service List
Christy Hetherington, Esq.
John Bell, Division
Greg Booth, Division

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

[2] Per practice during the COVID-19 emergency period, the Company is providing a PDF version of the above-referenced quarterly update. The Company will provide the Commission Clerk with a hard copy and, if needed, additional hard copies of this quarterly update at a later date.

280 Melrose Street, Providence, RI 02907
T: 401-784-7288 ■ jennifer.hutchinson@nationalgrid.com ■ www.nationalgrid.com

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.

Joanne M. Scanlon

May 20, 2020
Date

Docket No. 4915 - National Grid's Electric ISR Plan FY 2020
Docket No. 4857 - Performance Incentives Pursuant to R.I.GL. §39-1 27.7.1(e)(3)

Service List as of 8/15/2019

Name/Address	E-mail Distribution	Phone
Jennifer Hutchinson, Esq. **National Grid** 280 Melrose St. Providence, RI 02907	jennifer.hutchinson@nationalgrid.com; celia.obrien@nationalgrid.com; Joanne.scanlon@nationalgrid.com;	401-784-7288
National Grid Melissa Little Dennis Antonino Ryan Moe Adam Crary William Richer Patricia Easterly	Melissa.Little@nationalgrid.com; Ryan.Moe@nationalgrid.com; dennis.antonino@nationalgrid.com; Adam.Crary@nationalgrid.com; Patricia.easterly@nationalgrid.com; William.Richer@nationalgrid.com;	
Division of Public Utilities (Division) Christy Hetherington, Esq. Dept. of Attorney General 150 South Main St. Providence, RI 02903	Chetherington@riag.ri.gov ; Dmacrae@riag.ri.gov; MFolcarelli@riag.ri.gov; John.bell@dpuc.ri.gov; Macky.McCleary@dpuc.ri.gov; Jonathan.Schrag@dpuc.ri.gov; Kevin.Lynch@dpuc.ri.gov; Joseph.shilling@dpuc.ri.gov; Ronald.gerwatowski@dpuc.ri.gov;	
Gregory L. Booth, PLLC 14460 Falls of Neuse Rd. Suite 149-110 Raleigh, N. C. 27614	gboothpe@gmail.com;	919-441-6440

Linda Kushner L. Kushner Consulting, LLC 514 Daniels St. #254 Raleigh, NC 27605	Lkushner33@gmail.com;	919-810-1616
Office of Energy Resources (OER) Andrew Marcaccio, Esq. Dept. of Administration Division of Legal Services One Capitol Hill, 4th Floor Providence, RI 02908	Andrew.marcaccio@doa.ri.gov;	401-222-3417
Christopher Kearns, OER Carrie Gill Nick Ucci	Christopher.Kearns@energy.ri.gov; Carrie.Gill@energy.ri.gov; Nicholas.Ucci@energy.ri.gov;	
File an original & ten copies w/: Luly E. Massaro, Commission Clerk John Harrington, Commission Counsel Public Utilities Commission 89 Jefferson Blvd. Warwick, RI 02888	Luly.massaro@puc.ri.gov; John.harrington@puc.ri.gov; Cynthia.WilsonFrias@puc.ri.gov; Todd.bianco@puc.ri.gov; Alan.nault@puc.ri.gov;	401-780-2107

Electric Infrastructure, Safety, and Reliability Plan

FY 2020 Quarterly Update

Revised Fourth Quarter Ending March 31, 2020

EXECUTIVE SUMMARY

As shown in Attachment A for Fiscal Year 2020 (FY 2020), the Company[1] spent $103.7 million for capital investment projects against a FY 2020 budget of $101.8 million. Overall, FY 2020 spending was over-budget by $1.9 million. FY 2020 spending for the Non-Discretionary category was $5.1 million over the budget of $40.5 million. FY 2020 spending for the Discretionary category, including the Southeast Substation project, was $3.3 million under the budget of $61.3 million. Each of these categories is addressed in more detail below.

On July 11, 2016, the Rhode Island Public Utilities Commission (PUC) issued an Order[2] directing the Company to provide more detail on capital spending in the Damage/Failure category. The detail must include work type, location, and, where applicable, Level 1 Inspections and Maintenance (I&M) repairs completed with Damage/Failure funding. The Company has included additional detail on Level 1 I&M repairs in Section 5 of this report and has included summary information on capital spending in the Damage/Failure category in Attachment F of this report. Attachment F is also included as an executable Excel file that organizes raw data captured in the Company's financial, asset, and work management systems.

For FY 2020, the Company and the Rhode Island Division of Public Utilities and Carriers (Division) agreed to provide a quarterly budget and project management report on the Southeast Substation project. The latest report is included as Attachment G of this report.

As part of the FY 2020 budget process, the Company has agreed to provide detail related to meter purchases as part of its quarterly report. Attachment H is the meter purchase detail through March 31, 2020.

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).
[2] Written Order No. 22471 (issued on July 11, 2016 in Docket No. 4592), at pages 16, 29.

I. FY 2020 Capital Spending by Key Driver Category

1. Non-Discretionary Spending

a. Customer Request/Public Requirement – $1.6 million over budget

FY 2020 capital spending in the Customer Request/Public Requirement category was $28.7 million, which was over budget by $1.6 million. The major drivers of the variance are

- New Business Commercial and Public Requirements projects spending was $13.0 million, $3.5 million over the FY 2020 budget of $9.5 million.
- Transformer purchase spending was $5.2 million, $1.6 million over the FY 2020 budget of $3.5 million. This is primarily driven by increased purchases of capacitors and regulators and applied capital overheads.
- Partially offsetting these overages was the FY 2020 spending on Distributed Generation projects, which was $1.6 million, $3.1 million under the FY 2020 budget of $4.7 million.

b. Damage/Failure - $3.5 million over budget

FY 2020 capital spending in the Damage/Failure category was $17.0 million, which was $3.5 million over the budget of $13.5 million. This variance is primarily driven by overspending of $2.6 million on the storms capital confirming projects and two transformer failures. The budget includes a cost estimate for one transformer failure.

2. Discretionary Spending

a. Asset Condition (without Southeast Substation) - $5.0 million under budget

FY 2020 capital spending in the Asset Condition category (excluding the Southeast Substation project) was $28.5 million, which was $5.0 million under the budget of $33.4 million. The major variances were the following:

- Capital spending on Dyer Street substation was $0.7 million, $4.2 million under the FY 2020 budget of $4.9 million. The Company has paused work on this project so that options can be reassessed as current cost estimates are higher than previous estimates.

- Capital spending on the Providence Area Study projects was $1.6 million, $1.3 million under the FY 2020 budget of $2.9 million primarily due to project delays.
- Capital spending on the Lee, Cottage and Front Street projects was $4.8 million, $1.5 million over the FY 2020 budget of $3.3 million. The overage is due to additional costs on Cottage and Front Street projects associated with working in a thickly settled, urban area.
- Capital spending on the South Street Substation project was $0.8 million less than the budget of $1.8 million due to work occurring in FY 2019 that was expected to occur in the FY 2020 when the budget was developed.
- Capital spending on the Pawtucket 1 breaker replacement project was $1.1 million under the FY 2020 budget due to less expensive manufacturing costs associated with the Pawtucket breakers.

b. Non-Infrastructure – $0.4 million under budget

Capital spending for FY 2020 for the Non-Infrastructure category was $0.2 million, which was $0.4 million under the budget of $0.6 million. This variance is attributed to the application of capital overheads.

c. System Capacity and Performance - $3.9 million over budget

FY 2020 capital spending for the System Capacity and Performance category was $25.0 million, which was $3.9 million over the budget of $21.1 million.

- Capital spending on the Aquidneck Island project was $17.7 million, $3.6 million over the budget of $14.1 million. The factors impacting costs were limitations placed on work hours and soil conditions.
- Capital spending on Quonset and Chase Hill substations was $1.9 million. Budgets were not set for these projects in FY 2020 as project delays pushed completion of work from FY 2019 into FY 2020 after budgets were set.

d. Southeast Substation Projects – $1.8 million under budget

FY 2020 capital spending on the Southeast Substation project was $4.4 million, $1.8 million under the budget of $6.3 million. The Company expects the FY 2020 delays to be caught up in FY 2021. See Attachment G for additional details.

e. Large Project Variances

As ordered by the PUC in Docket No. 4473,[3] the Company provides explanations for large projects[4] with variances that exceed +/- 10% of the annual fiscal year budget in quarterly reports. These projects represented $42.3 million of the total FY 2020 budget of $101.8 million. Specific project information is provided in Attachment E.

f. New Distribution System Technology Update

In Order No. 22955, the PUC directed the Company to include an explanation of all new technologies that National Grid is exploring to assist in distribution planning, particularly related to the integration of distributed energy resources or providing additional visibility on the distribution grid.[5] Currently, these include the following:

- The Company utilizes CYME advanced power engineering software to perform distribution system analysis. The software's Hosting Capacity module was used to develop the Rhode Island Hosting Capacity Map which was delivered via the System Data Portal on September 28, 2018.

- The Company has implemented advanced protection function and logic in Point of Common Coupling (PCC) Reclosers which will help reduce the witness testing required at customer DG sites. Also, the advanced sensing and logic functions will allow automatic reconnect to the utility for utility side interruptions which will minimize outage and nuisance tripping.

- The Company has implemented Python Scripting training to assist in refining CYME models. The training focused on creation scripts intended to automate tasks formally done by hand and create accurate base models in a more efficient manner. The training can also be used for data maintenance and review.

3. Investment Placed-in-Service

For FY 2020, $105.0 million of plant additions were placed-in-service which was 102% of the FY 2020 current projected year-end target of $102.8 million. Details by spending rationale are included in Attachment B.

---

[3] Written Order No. 21559 (issued on August 12, 2014 in Docket No. 4473), at page 25.
[4] Large projects are defined as exceeding $1.0 million in total project cost.
[5] Written Order No. 22955 (issued on November 14, 2017 in Docket No. 4682), at page 19.

As shown on Attachment B, for FY 2020, Non-Discretionary plant additions placed in service totaled $47.9 million, which was 142% of the annual forecast of $33.6 million. The Discretionary plant additions place in service totaled $57.1 million, which was 83% of the annual forecast of $69.2 million.

4. Vegetation Management (VM)

In FY 2020 the Company completed 1,208 miles or 100% of its annual distribution mileage cycle pruning goal. The Company's VM O&M spending was $10.5 million, 1% over budget, for the year.

Attachment C provides the spending for FY 2020 for the sub-components of VM, as well as an update of the gypsy moth and other pest-related damage tracked by the Company.[6]

5. Inspection and Maintenance (I&M)

In FY 2020 the Company completed 100% of its annual structure inspection goal of 53,241 with an associated spend of $0.5 million, or 102% of the Repair and Inspections Related Cost category of the O&M budget. Repairs and Inspection Related Costs includes mobile elevated voltage testing and repairs, which the PUC approved in Docket No. 4237.

The Company began performing inspections on its overhead distribution system in FY 2011 and began performing the repairs based on those inspections in FY 2012. Deficiencies found are categorized as Level I, II, or III. Level I deficiencies are repaired immediately or within one week of the inspection. The Company bundles Level II and III work for planned replacement. At the end of the FY 2020, the Company has completed repairs for 33% of the total deficiencies found. Total deficiencies found and repairs made are shown in the table below.

[6] At the March 20, 2018 Open Meeting, in Docket 4783, the PUC directed the Company to include a summary in its FY 2019 ISR quarterly reports of the gypsy moth and other pest-related damage tracked by the Company.

Summary of Deficiencies and Repair Activities RI Distribution				
Year Inspection Performed	**Priority Level/Repair Expected**	**Deficiencies Found (Total)**	**Repaired as of 3/31/20**	**Not Repaired as of 3/31/20**
FY 2011	I	18	18	0
	II	13,146	13,128	18
	III	28	28	2,578
FY 2012	I	17	17	0
	II	15,847	15,455	392
	III	626	567	1,200
FY 2013	I	15	15	0
	II	26,149	16,471	9,678
	III	8,862	4,617	4,245
FY 2014	I	11	11	0
	II	22,418	3,898	18,520
	III	8,623	2,789	5,834
FY 2015	I	5	5	0
	II	21,136	1	21,135
	III	4,383	0	4,383
FY 2016	I	2	2	0
	II	11,018	558	10,460
	III	6,441	59	6,382
FY 2017	I	2	2	0
	II	8,300	0	8,300
	III	7,539	0	7,539
FY 2018	I	11	11	0
	II	8,740	0	8,740
	III	7,208	0	7,208
FY 2019	I	28	28	0
	II	3,699	0	3,699
	III	2,464	0	2,464
FY 2020	I	19	19	0
	II	67	1	66
	III	31	0	31
Total Since Program Inception	**I, II, III**	**176,853**	**57,700**	**122,872**

FY 2020 – I&M Level 1 Deficiencies Repaired						
Year Inspection Performed	Deficiencies Found	Structure Number	Location	Description of Work Performed	Inspection Date	Repaired Date
2019	1	53	Douglas Ave, Providence	Replaced switch tag.	4/4/2019	4/16/2019
2019	1	83	Danielson Pike, Scituate	Replaced switch tag.	4/4/2019	5/9/2019
2019	1	181	Plainfield Pike, Foster	Replaced switch tag.	5/8/2019	5/14/2019
2019	1	6	Hilton St, Pawtucket	Replaced defective switch.	5/23/2019	6/4/2019
2019	1	5	Eaton Ave, Warwick	Repaired floating insulator.	9/13/2019	9/16/2019
2019	1	143	Pippin Orchard Rd, Cranston	Repaired broken guy wire.	9/10/2019	9/26/2019
2019	1	105	Rockland Rd, Scituate	Replaced switch tag.	6/14/2019	10/31/2019
2019	1	10	Chestnut St, Warwick	Repaired floating primary.	10/15/2019	11/12/2019
2019	1	16	Peck Hill Rd, Johnston	Repaired street light hazard condition	9/18/2019	11/12/2019
2019	1	9273	Pawtucket Ave, East Providence	Replaced switch tag.	11/13/2019	11/20/2019
2019	1	17	Langworthy Rd, Westerly	Replaced switch tag.	10/8/2019	11/27/2019
2019	1	2	Snow Rd, Warwick	Replaced switch tag.	9/19/2019	12/2/2019
2019	1	1	Namquid Dr, Warwick	Replaced switch tag.	9/17/2019	12/2/2019
2019	1	158-50	Cmdr Oliver Hazard Perry Memor, South Kingstown	Replaced switch tag.	6/24/2019	12/2/2019
2019	1	7	Farnum Rd, Warwick	Replaced switch tag.	9/19/2019	12/3/2019
2019	1	1	Maple St, Warwick	Replaced switch tag.	9/19/2019	12/3/2019
2019	1	9006	Maple St, Warwick	Replaced switch tag.	9/19/2019	12/3/2019
2019	1	87	Warwick Ave, Warwick	Replaced switch tag.	9/19/2019	12/3/2019
2019	1	63-50	West Shore Rd, Warwick	Replaced switch tag.	9/19/2019	12/3/2019

Note: Table includes replaced switch tag deficiencies identified during FY20, but these are not considered Level 1 work that requires repair within one week.

As shown in the table below, results of the Company's manual elevated voltage testing for FY 2020 have not indicated any instances of elevated voltages found through either overhead or manual elevated voltage inspections.

Manual Elevated Voltage Testing				
Manual Elevated Voltage Testing	Total System Units Requiring Testing	FY 2020 Units Completed thru 3/31/20	Units with Voltage Found (>1.0v)	Percent of Units Tested with Voltage (>1.0v)
Distribution Facilities	268,651	52,587	0	0%
Underground Facilities	12,438	3	0	0%
Street Lights	4,929	0	0	0%

FY 2020 I&M program costs and other O&M spending are shown in Attachment D

Attachment A

US Electricity Distribution - Rhode Island
Capital Spending by Spending Rationale
FY 2020 through March 31, 2020
($000)

	FY 2020		
	Budget	**Actual**	**Variance Over Spend / (Under Spend)**
Customer Request/Public Requirement	$27,025	$28,646	$1,621
Damage Failure	$13,505	$17,028	$3,523
Subtotal Non-Discretionary	*$40,530*	*$45,674*	*$5,144*
Asset Condition	$33,425	$28,450	($4,975)
Non-Infrastructure	$550	$145	($405)
System Capacity & Performance	$21,045	$24,957	$3,912
Subtotal Discretionary (Without Southeast Sub)	*$55,020*	*$53,553*	*($1,467)*
Southeast Substation Project	$6,250	$4,427	($1,823)
Subtotal Discretionary	*$61,270*	*$57,980*	($3,290)
Total Capital Investment in System	**$101,800**	**$103,654**	**$1,854**

Attachment B

US Electricity Distribution - Rhode Island
Plant Additions by Spending Rationale
FY 2020 through March 31, 2020
($000)

	Target	Actual	% of Target Placed in Service
Customer Request/Public Requirement	$20,053	$29,844	149%
Damage Failure	$13,568	$18,035	133%
Subtotal Non-Discretionary	*$33,621*	*$47,879*	142%
Asset Condition (w/Southeast Substation)	$28,008	$23,271	83%
Non- Infrastructure	$553	$194	35%
System Capacity & Performance	$40,615	$33,671	83%
Subtotal Discretionary	*$69,176*	*$57,136*	83%
Total Capital Investment in System	**$102,797**	**$105,015**	102%

Attachment C

US Electricity Distribution - Rhode Island
Vegetation Management O&M Spending
FY 2020 through March 31, 2020
($000)

	Budget	Actual	% Spend
Cycle Pruning (Base)	$5,600	$5,540	99%
Hazard Tree	$2,250	$2,230	99%
Sub-T (on & off road)	$500	$616	123%
Police/Flagman Details	$825	$746	90%
Core Crew (all other activities)	$1,225	$1,385	113%
Total VM O&M Spending	**$10,400**	**$10,517**	**101%**

	Goal	Completed	% Complete
Distribution Mileage Trimming	**1,208**	**1,208**	**100%**

FY 2020 Q4 Gypsy Moth Update

District	Circuit	Location	Removals
Capital	49_53_112W43	Cumberland	18
Capital	49_53_112W44	Cumberland	17
Capital	49_53_127W40	Burrilliville	180
Capital	49_53_34F1	Foster/ Scituate	251
Capital	49_53_34F2	Foster/ Scituate	160
Capital	49_53_34F3	Foster/ Scituate	134
Capital	49_53_38F1	Smithfield	1
Capital	49_53_26W1	North Smithfield	54
Capital	49_53_15F2	Scituate	55
Coastal	49_56_155F6	Hopkinton	38
Coastal	49_56_155F8	Hopkinton	58
Coastal	49_56_30F2	North Kingstown	5
Coastal	49_56_54F1	Coventry	247
Coastal	49_56_63F6	Coventry/Exeter	1,504
Coastal	49_56_85T3	Charlestown	19
Coastal	49_56_68F4	Kenyon	68
Coastal	49_56_68F2	Kenyon	19
Coastal	49_56_68F3	Kenyon	33
Coastal	49_56_68F1	Kenyon	134
Totals			2,995

FY 2020 Total Gypsy Moth Spend	$1,291,634
Gypsy Moth Removals	2,626
Cost/Tree	$492

Attachment D

US Electricity Distribution - Rhode Island
Inspection and Maintenance Program and Other O&M Spending
FY 2020 through March 31, 2020
($000)

	Budget	Actual	% Spend
Opex Related to Capex	$256	$202	79%
Repair & Inspections Related Costs	$515	$524	102%
System Planning & Protection Coordination Study	$25	$104	414%
VVO/CRV Program	$311	$121	39%
Total I&M Program and Other O&M Spending	$1,107	$950	86%

	Goal	Completed	% Complete
RI Distribution Overhead Structures Inspected	53,241	53,241	100%

Attachment E

US Electricity Distribution - Rhode Island
Project Variance Report
FY 2020 through March 31, 2020
($000)

Project Description	Project Funding Number(s)	Budget	Actual	Overspend / (Underspend) Variance	Variance Cause
Aquidneck Island Projects (Gate 2, Newport, Jepson)	CD00649, C024159, C015158, C028628, C054054, CD00656	$14,055	$17,693	$3,638	Limitations placed on working hours, soil conditions, and more mature project estimates
Volt/Var Program	C079300,C080896,C080895,C079282, C080899,C080900,C079482,C079288, C076367,C077201,C077200,C075573, C076365,C080898,C080894,C080897, C080901,C075571,C082915,C082900	$1,850	$1,232	($618)	Project delays. Also, Nasonville projects were swapped for Woonsocket projects.
Lee Street & Cottage Street D-Line and D-Sub	C050758, C051118, C051126, C050760	$2,900	$3,486	$586	**Lee Street D-Line** - FY20 Project received a credit due to duplicate accrual processed in FY19. **Cottage St D-Line overspending** due to conversion work in thickly settled urban area.
SouthEast Substation (D-Line and D-Sub)	C053657, C053658	$6,250	$4,427	($1,823)	**D-Sub** delays in completing final design documents.
Front Street MC Retirement	C050778	$400	$1,309	$909	Project cost increases due to more complex construction and coordination related to being in an urban area
Quonset Substation (D-Line and D-Sub)	C053646,C053647	$0	$742	$742	Project delays pushed completion of work from FY19 into FY20 after the budget was set.
University Solar	C079116	$4,000	$2,391	($1,609)	CIAC Timing
Sockanosett & Westerly Failure	C082725,C081110	$0	$1,870	$1,870	**Sockanosett** - Damage Failure (D/F) of TB#1 and purchase of a repalcement spare. **Westerly** - Final payments for replacement transformer of TB#4 D/F.
Chase Hill Substation (D-Line and D-Sub)	C024175,C024176	$0	$1,149	$1,149	Project delays pushed completion of work from FY19 into FY20 after the budget was set.
East Providence Sub.	C046727,C046726	$1,280	$411	($869)	Project delayed.
Dyer Street Indoor Sub	C051205,C051211	$4,900	$732	($4,168)	Most recent cost estimates are higher than expected. The Company is pausing this project so that options can be reassessed
Hope Substation	C078476,C046697	$750	$2,169	$1,419	Final construction sequencing and outage plans resulted in higher costs than originally estimated. In addition, FY19 decision to combine pole structure work with flood work carried over costs into FY20.
Providence Study	C078734, C078796, C078796, C078797, C078800, C078802-6, C078857	$2,860	$1,594	($1,266)	Project delayed.
South Street Substation	C051212, C051213, C055623	$1,800	$1,016	($784)	Underspending due to work occurring in FY19 that was expected to occur in FY20, such as earlier final cutover to new substation in FY19
Pawtucket Breaker	C069166	$1,225	$104	($1,121)	Project costs expected to be less due to actual breakers being manufactured at lower cost than originally assumed.
		$42,270	**$40,326**	**($1,944)**	

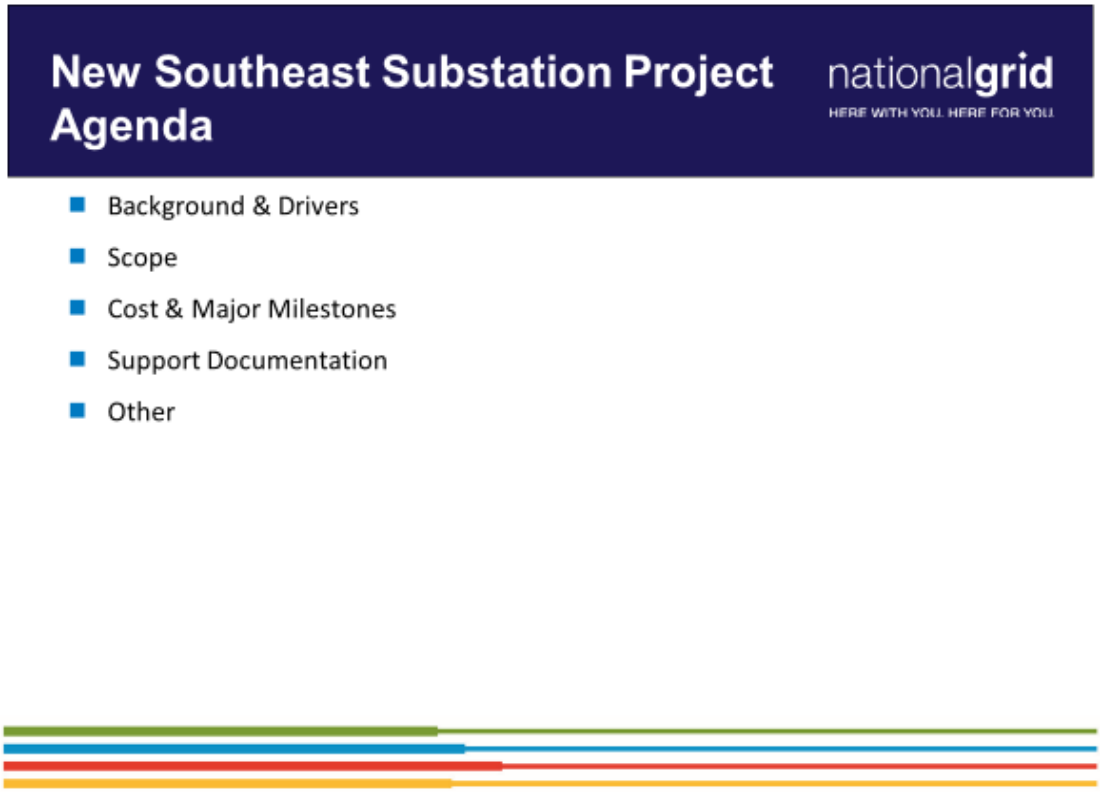
Attachment F

US Electricity Distribution - Rhode Island
Damage/Failure Detail by Work Type
FY 2020 through March 31, 2020
($000)

	Project Type					
	D-Line Blanket	D-Line Property Damage	D-Line Storm	D-Sub Blanket	D-Sub & D-Line Specific	Grand Total
AFUDC	$77,643	$0	$22,589	$3,770	$45,606	**$149,608**
Default Accounting	$1,808,627	$276,668	$173,090	$190,192	$238,574	**$2,687,150**
Engineering/Design/Supervision	$692,559	$101,312	$412,801	$12,557	$44,284	**$1,263,513**
Outdoor Lighting - Cable/Wire	$10,828	($3)	$123	$0	$3	**$10,951**
Outdoor Lighting - Framing	$73,393	$2,064	$2,427	$0	$0	**$77,885**
Outdoor Lighting - Poles/Foundation	$28,995	$3,262	$0	$0	$0	**$32,257**
Overhead Bonding/Grounding	$14,207	$347	$1,659	$0	$184	**$16,398**
Overhead Services	$257,150	$11,320	$133,800	$0	$0	**$402,270**
Overhead Switches/Reclosers/Fuses	$496,443	$34,660	$106,713	$0	$159	**$637,975**
Overhead Transformers/Capacitors/Regulators/Meters	$549,147	$46,471	$315,507	$0	$0	**$911,125**
Overhead Wire & Conductor	$499,361	$12,624	$235,268	$0	$532	**$747,785**
Pole Framing	$274,004	$76,090	$145,444	$0	$2,213	**$497,751**
Poles/Anchors/Guying	$1,571,418	$619,231	$2,462,252	$0	$3,532	**$4,656,433**
Substation Equipment Installations	$0	$0	$0	$460,202	$1,607,332	**$2,067,535**
Substations Civil/Structural	$0	$0	$0	$3,128	$31,421	**$34,549**
Switching and Restoration	$75,912	$4,422	$8,609	$1,164	$0	**$90,107**
Traffic Control	$300,978	$132,376	$118,047	$0	$10,496	**$561,897**
Underground Cable	$895,090	$8,759	$76,752	$0	$69,712	**$1,050,314**
Underground Cable Splicing	$68,841	($392)	$5,163	$0	$0	**$73,612**
Underground Civil Infrastructure	$331,865	$64,868	$13,566	$0	$80,401	**$490,699**
Underground Direct-Buried Cable	$110,211	($1,207)	$7,808	$0	$0	**$116,812**
Underground Services	$20,191	$419	($1,357)	$0	$0	**$19,254**
Underground Switches/Reclosers/Fuses	$135,256	($5)	$4,713	$0	$801	**$140,765**
Underground Transformers/Capacitors/Regulators/Meters	$284,198	$14,453	$19,495	$0	$0	**$318,146**
Grand Total	**$8,576,317**	**$1,407,739**	**$4,264,470**	**$671,013**	**$2,135,250**	**$17,054,789**

Attachment G

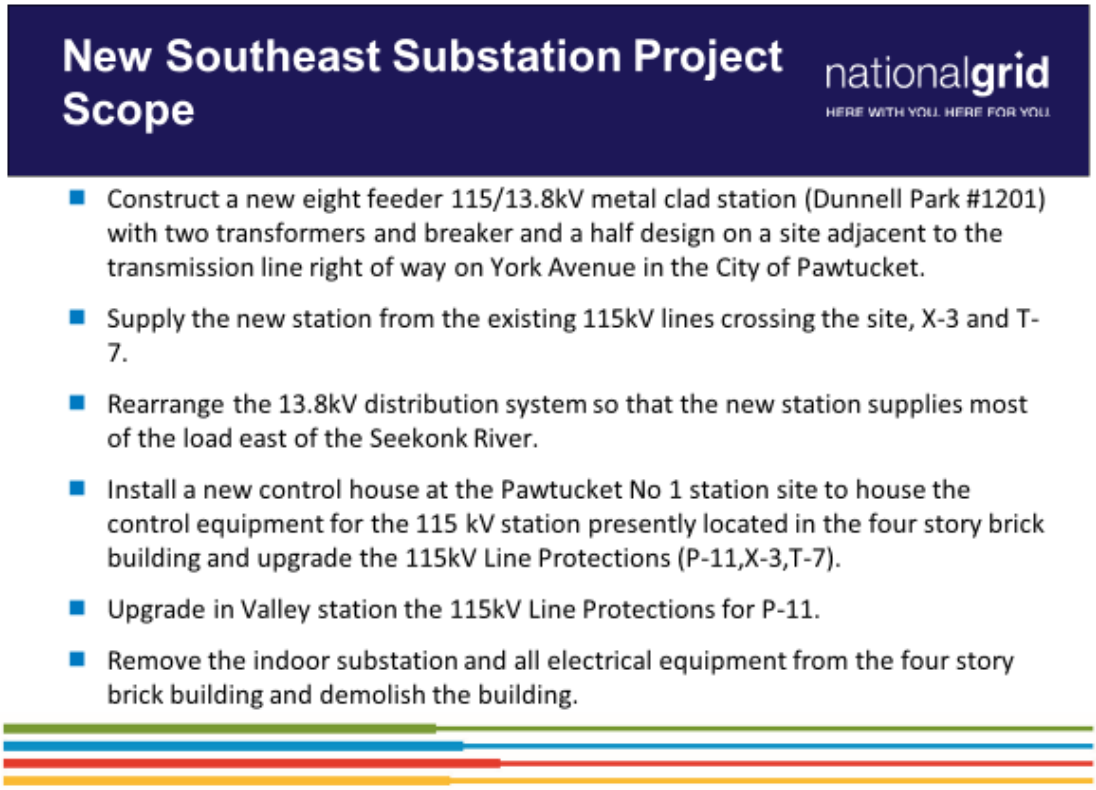
US Electricity Distribution - Rhode Island
New Southeast Substation Budget and Project Management Report
FY 2020 through March 31, 2020


New Southeast Substation Project
Agenda
nationalgrid
HERE WITH YOU. HERE FOR YOU.
Background & Drivers
Scope
Cost & Major Milestones
Support Documentation
Other

New Southeast Substation Project Background & Drivers

nationalgrid
HERE WITH YOU. HERE FOR YOU.

- Pawtucket No. 1 substation supplies load in the City of Pawtucket, Rhode Island. It consists of an indoor substation located in a four story brick building constructed in 1907 and an outdoor substation on the yard. It supplies approximately 36,000 customers with a peak electrical demand of 114MW. There are a number of concerns in this area:
  - The equipment in the indoor substation is 40 to 94 years old, obsolete, and no longer supported by any vendor. Parts have to be custom made or salvaged from facilities removed from service.
  - The building has structural issues that cause concern for the continued safe and reliable operation of the substation.
  - There is un-served load for loss of either the 73 transformer or the 74 transformer that exceeds the distribution planning criteria.
  - The loading on a number of feeders is projected to exceed summer normal ratings along with the loading on bus section 73


New Southeast Substation Project Scope
nationalgrid
HERE WITH YOU. HERE FOR YOU.
Construct a new eight feeder 115/13.8kV metal clad station (Dunnell Park #1201) with two transformers and breaker and a half design on a site adjacent to the transmission line right of way on York Avenue in the City of Pawtucket.
Supply the new station from the existing 115kV lines crossing the site, X-3 and T-7.
Rearrange the 13.8kV distribution system so that the new station supplies most of the load east of the Seekonk River.
Install a new control house at the Pawtucket No 1 station site to house the control equipment for the 115 kV station presently located in the four story brick building and upgrade the 115kV Line Protections (P-11,X-3,T-7).
Upgrade in Valley station the 115kV Line Protections for P-11.
Remove the indoor substation and all electrical equipment from the four story brick building and demolish the building.

New Southeast Substation Project Cost & Major Milestones

nationalgrid
HERE WITH YOU. HERE FOR YOU.

Project Cost

- Total Project Cost of $38.182M (+/- 10%) DOA: $38.182M
- Transmission Project Cost of $12.742M (+/-10%)
- Distribution Project Cost of $25.440M (+/-10%)

New Southeast Substation Project Cost & Major Milestones

nationalgrid
HERE WITH YOU. HERE FOR YOU.

- The variance between the initial potential project investment of $23.000M and this sanction of $38.182M was caused by:
  - Addition of new 115kV equipment on Pawtucket No. 1 and on the new substation (Dunnell Park #1201) 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).
  - 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).
  - 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).
  - Increase on equipment market value and other miscellaneous additional costs ($1.315M).

New Southeast Substation Project Major Milestones

nationalgrid
HERE WITH YOU. HERE FOR YOU.

Project Major Milestones

Project Sanction	July 2019
Engineering Design Complete (EDC)	December 2019
Construction Start	January 2020
Dunnell Park Sub Ready for Load (RFL)	April 2021
Pawtucket 1 & Valley Sub Ready for Load (RLF)	September 2021
Construction Complete (CC)	November 2021
Demolish Pawtucket 1 Station Building	January 2022
Project Closeout	October 2022

Pawtucket No. 1 Station

New Southeast Substation Project Location

nationalgrid
HERE WITH YOU. HERE FOR YOU.

New Southeast Station (Dunnell Park) – Location

Attachment H

US Electricity Distribution - Rhode Island
Meter Purchases
FY 2020 through March 31, 2020

TYPE	DESCRIPTION	QUANTITY
METER	KV2C - 45S	84
METER	KV2C - 9S	296
METER	KV2C - 2S	24
SWITCHES	"B" & "X" SWITCHES	5
METER	CENTRON - 2S ERT CL200	13,200
METER	CENTRON - 12S ERT CL200	3,000
METER	CENTRON - C1SR, CL320 240V	240
METER	FOCUS - 2S AMR 240V CL320	1,344
METER	FOCUS - 2S ERT CL200	8,256
METER	FORM 12S, 120V	960
METER	2S AMR 240V	192
INSTRUMENT TRANSFORMER	CUR OUTDOOR 75/5 15KV	44
INSTRUMENT TRANSFORMER	CUR OUTDOOR 50/5 15KV	10
INSTRUMENT TRANSFORMER	CUR OUTDOOR 15/5 15KV	12
INSTRUMENT TRANSFORMER	CUR OUTDOOR 25/5 15KV	15
INSTRUMENT TRANSFORMER	CUR OUTDOOR 70/1 8.4KV	48
INSTRUMENT TRANSFORMER	CUR OUTDOOR 5/5 15KV	13
INSTRUMENT TRANSFORMER	CUR OUTDOOR 60/1 7.2KV	16
INSTRUMENT TRANSFORMER	CUR OUTDOOR 15KV	12
INSTRUMENT TRANSFORMER	CUR OUTDOOR 15KV	0
INSTRUMENT TRANSFORMER	200:5 BASE BUSHINGS	120
INSTRUMENT TRANSFORMER	400:5 BASE BUSHINGS	240
INSTRUMENT TRANSFORMER	800:5 BASE BUSHINGS	60
INSTRUMENT TRANSFORMER	400:5 CAP	240
INSTRUMENT TRANSFORMER	240:120 VT	24
INSTRUMENT TRANSFORMER	2000:5 BASE BUSHINGS	54
INSTRUMENT TRANSFORMER	600:120 VT	36
INSTRUMENT TRANSFORMER	2000:5 CAP	18
INSTRUMENT TRANSFORMER	1200:5 CAP	30
INSTRUMENT TRANSFORMER	1500:5 CAP	24
INSTRUMENT TRANSFORMER	1500:5 CAP	18
INSTRUMENT TRANSFORMER	ASTRA DB 2.5 300:120	240
	TOTAL	**28,875**