Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A16C09 **Status** open **Revision** 9

Project Title Blaine St SS add 34.5-12kV 10MVA tr **Operating Unit**

Initiated By Lynne Godbout **Initiated Date** 11/12/2015 18:16:16

Description of Work Blaine Street - Remove 4kV Equipment, Add 34.5-12kV 10MVA transformer

Location DIST SUBS - NEW HAMPSHIRE

Project Schedule / Expenditures **Est Start Date :** 1/1/2016 **Est Complete Date :** 6/30/2018

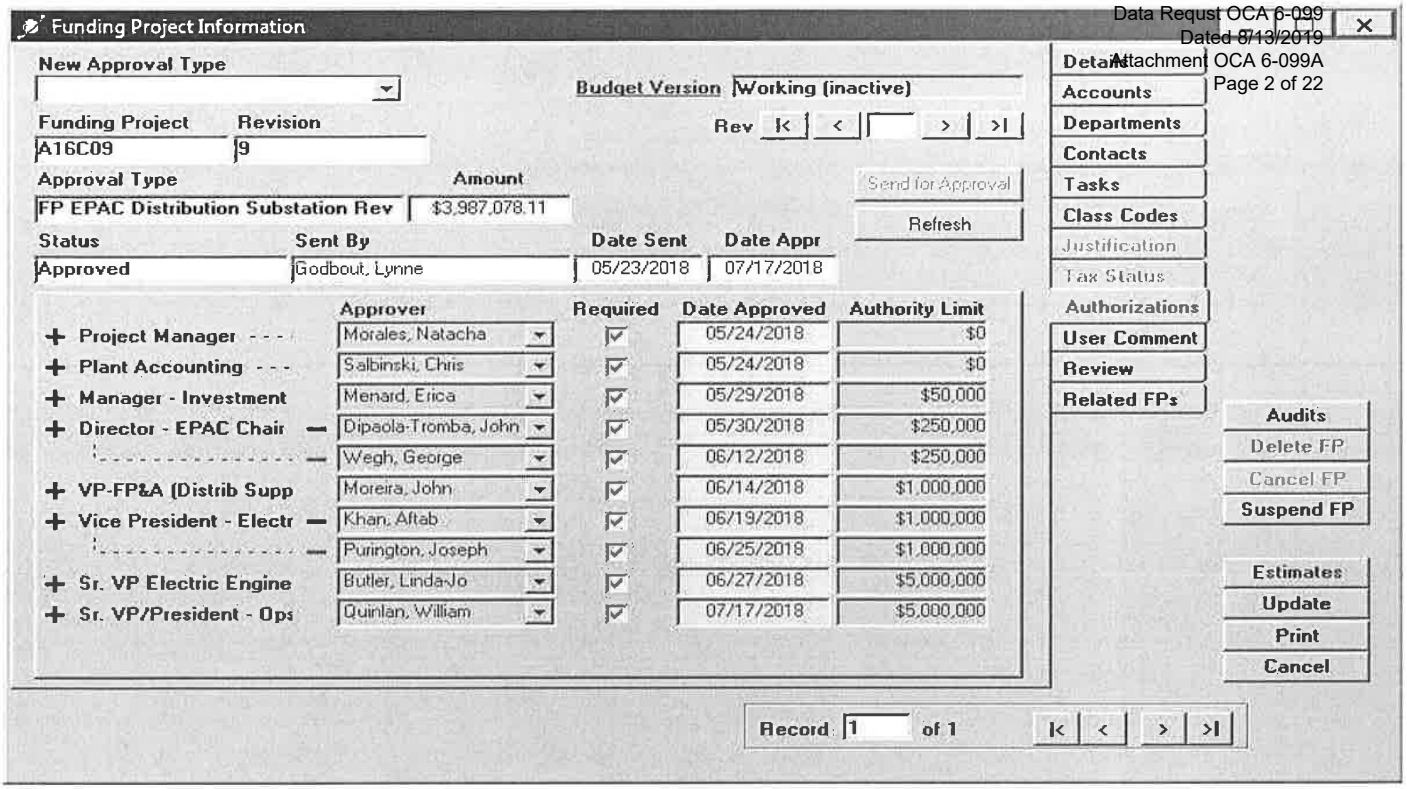
	2016	2017	2018	2019	2020	Future Years	Total
	$288,344.19	$2,937,733.92	$761,000.00	$0.00	$0.00	$0.00	$3,987,078
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$3,944,665	$0	$42,413	$0	$0	$3,987,078.11

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Morales, Natacha	$0	05/24/2018
Plant Accounting	Salbinski, Chris	$0	05/24/2018
Manager - Investment Pla	Menard, Erica	$50,000	05/29/2018
Director - EPAC Chair	Dipaola-Tromba, John	$250,000	05/30/2018
Director - EPAC Chair	Wegh, George	$250,000	06/12/2018
VP-FP&A (Distrib Supplem	Moreira, John	$1,000,000	06/14/2018
Vice President - Electric Pl	Khan, Aftab	$1,000,000	06/19/2018
Vice President - Electric Pl	Purington, Joseph	$1,000,000	06/25/2018
Sr. VP Electric Engineering	Butler, Linda-Jo	$5,000,000	06/27/2018
Sr. VP/President - Ops	Quinlan, William	$5,000,000	07/17/2018


Funding Project Information
New Approval Type
Budget Version
Working (inactive)
Rev
Funding Project
A16C09
Revision
9
Approval Type
FP EPAC Distribution Substation Rev
Amount
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Status
Approved
Sent By
Godbout, Lynne
Date Sent
05/23/2018
Date Appr
07/17/2018
Send for Approval
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Required
Date Approved
Authority Limit
Project Manager
Morales, Natacha
05/24/2018
$0
Plant Accounting
Salbinski, Chris
05/24/2018
$0
Manager - Investment
Menard, Erica
05/29/2018
$50,000
Director - EPAC Chair
Dipaola-Tromba, John
05/30/2018
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06/12/2018
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VP-FP&A (Distrib Supp
Moreira, John
06/14/2018
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Vice President - Electr
Khan, Aftab
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Purington, Joseph
06/25/2018
$1,000,000
Sr. VP Electric Engine
Butler, Linda-Jo
06/27/2018
$5,000,000
Sr. VP/President - Ops
Quinlan, William
07/17/2018
$5,000,000
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Tasks
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Justification
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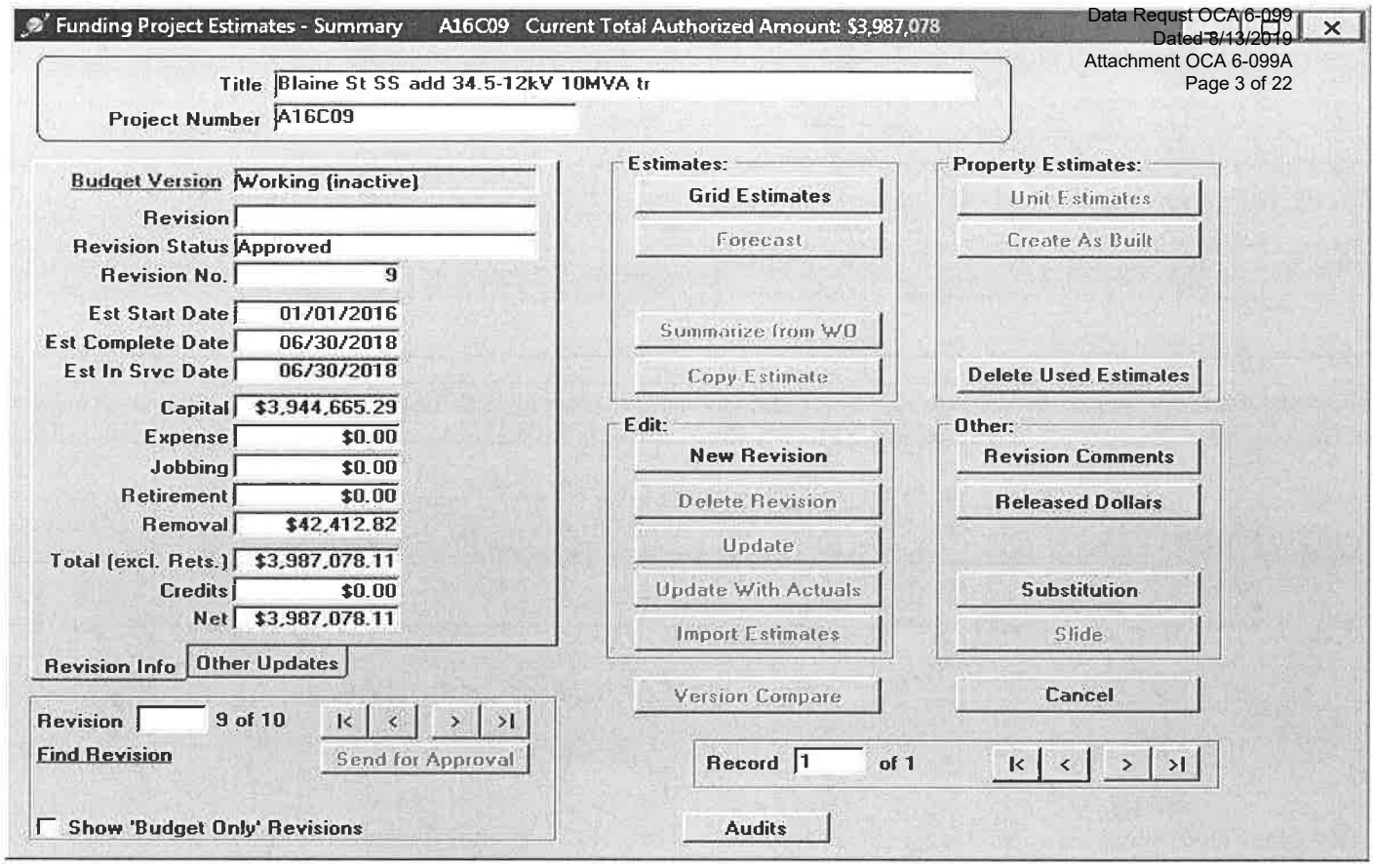
Funding Project Estimates - Summary A16C09 Current Total Authorized Amount: $3,987,078
Title Blaine St SS add 34.5-12kV 10MVA tr
Project Number A16C09
Budget Version Working (inactive)
Revision
Revision Status Approved
Revision No. 9
Est Start Date 01/01/2016
Est Complete Date 06/30/2018
Est In Srvc Date 06/30/2018
Capital $3,944,665.29
Expense $0.00
Jobbing $0.00
Retirement $0.00
Removal $42,412.82
Total (excl. Rets.) $3,987,078.11
Credits $0.00
Net $3,987,078.11
Revision Info
Other Updates
Revision 9 of 10
Find Revision
Send for Approval
Show 'Budget Only' Revisions
Estimates:
Grid Estimates
Forecast
Summarize from WO
Copy Estimate
Property Estimates:
Unit Estimates
Create As Built
Delete Used Estimates
Edit:
New Revision
Delete Revision
Update
Update With Actuals
Import Estimates
Other:
Revision Comments
Released Dollars
Substitution
Slide
Version Compare
Cancel
Record 1 of 1
Audits

Annual Estimates (Grid Entry)

Fund Proj: A16C09 | Costs: $3,944,665.29 | Retirements: $0.00 | Credits: $0.00 | Est Start Date: 01/01/2016 | Revision / Version: Selected Revision

Revision: 9 | Expense: $0.00 | Removal: $42,412.82 | Jobbing: $0.00 | Est End Date: 06/30/2018

Fund Proj	Rev	Exp Type	Est Charge Type	Department	Budg PR Class	Work Order	Job Task	Description	Curve	Spread Factor	Total	2016	2017	2018
A16C09 Blaine											$3,987,078.11	$288,344.19	$2,937,733.92	$761,000.00
Dollars	9	Additions	FP Alloc- AFUDC - 23	(none)		(none)			(none)	(none)	$14,000.13	$2,104.13	$2,896.00	$9,000.00
Dollars	9	Additions	FP Alloc- AS+E - 230	(none)		(none)			(none)	(none)	$30,504.09	$2,050.11	$19,453.98	$9,000.00
Dollars	9	Additions	FP Alloc- E+S - 296	(none)		(none)			(none)	(none)	$487,200.95	$33,400.95	$154,800.00	$299,000.00
Dollars	9	Additions	FP Alloc Mat load 231	(none)		(none)			(none)	(none)	$196,000.00	$0.00	$196,000.00	$0.00
Dollars	9	Additions	FP Alloc Mat loaded 2	(none)		(none)			(none)	(none)	$34,771.60	$8,700.85	$26,070.75	$0.00
Dollars	9	Additions	FP Alloc PR load 233	(none)		(none)			(none)	(none)	$65,560.31	$11,969.94	$53,590.37	$0.00
Dollars	9	Additions	FP Labor L01	(none)		(none)			(none)	(none)	$135,336.00	$22,336.00	$113,000.00	$0.00
Dollars	9	Additions	FP Material M02	(none)		(none)			(none)	(none)	$1,163,000.00	$0.00	$1,163,000.00	$0.00
Dollars	9	Additions	FP Other O00	(none)		(none)			(none)	(none)	$83,604.21	$32,604.21	$51,000.00	$0.00
Dollars	9	Additions	FP Outside Svc Contr	(none)		(none)			(none)	(none)	$1,734,000.00	$175,000.00	$1,115,000.00	$444,000.00
Dollars	9	Retirements	FP Alloc- AS+E - 230	(none)		(none)			(none)	(none)	$342.92	$0.00	$342.92	$0.00
Dollars	9	Retirements	FP Alloc- E+S - 296	(none)		(none)			(none)	(none)	$5,500.00	$0.00	$5,500.00	$0.00
Dollars	9	Retirements	FP Alloc Mat loaded 2	(none)		(none)			(none)	(none)	$1,470.00	$0.00	$1,470.00	$0.00
Dollars	9	Retirements	FP Outside Svc Contr	(none)		(none)			(none)	(none)	$35,000.00	$0.00	$35,000.00	$0.00
											$3,987,078.11	$288,344.19	$2,937,733.92	$761,000.00

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APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Request Form

Approved at May 9, 2018 EPAC

Link to Meeting Minutes

Date Prepared: May 1, 2018	**Project Title: Blaine Street 12kV Substation**
Company/Companies: Eversource - NH	**Project ID Number: A16C09**
Organization: NH – Operations	**Plant Class/(F.P.Type): Distribution Substation**
Project Initiator: Michael Warren	**Project Type: Specific**
Project Manager: Natacha Morales	**Capital Investment Part of Original Operating Plan? Yes**
Project Sponsor: James Eilenberger	**O&M Expenses Part of the Original Operating Plan? Yes**
Current Authorized Amount: $2,719K	**Estimated in service date(s): June 30th, 2018**
Supplement Request: $1,268K	**Other:**
Total Request: $3,987K	

Supplement Justification

This request is for supplemental funding in the amount of $1,268K for the completion of the re-construction of the Blaine Street Substation.

The project is currently under construction. The ISD is projected to be June 30, 2018.

Background

The long-term plan for the west side of Manchester has been to convert the vintage 4kV to 12kV and then add additional 12kV sources to provide capacity and back up capability. This will allow the removal of the 60-year-old substation transformer and metal clad switchgear line up which will make room for the installation of the new 34.5/12.47kV 12.5MVA transformer with 15kV Metalclad switchgear to feed two new 12.47kV circuits, which will tie to the recently upgraded Pinardville Substation and Notre Dame Substation.

Switching and back feed capabilities for 8,777 customers will improve on the West side of Manchester. All customers are currently served from three 12kV circuits out of two substations (Pinardville and Notre Dame) and the wire size on one of the circuits is 1/0 AL Spacer. A new 12kV substation with two additional 12kV circuits would allow for greater switching flexibility and improved reliability due to additional back feeds and switching points.

As of end of April 2018, the project is at $3.5M spent which includes the cost of the switchgear procurement.

Executive Summary

Since the start of project, there have been some changes on construction, test and commissioning as well as materials. The construction contract was competitively bid and properly awarded however due to deficient performance and manufacturing of the switchgear, the construction contractor has had to take on tasks to address the switchgear's defects that were not included in the original construction scope of work. The same has occurred with test and commissioning. The test and commissioning vendors will need to double their efforts to make sure that the switchgear is up to standards and is ready for commissioning.

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APS 1 - Project Authorization Policy

Supplement Request Form

Some of the charges incurred due to the poor manufacturing of the switchgear will be disputed with AZZ to recover these additional costs. These charges are related to engineering and construction services.

There are other costs for services that were overlooked in the original estimate, these include soil testing, soil removals, substation security, fencing and landscaping, easement acquisition, permitting, real estate taxes and sound testing. Also, the original estimates for construction, testing and commissioning were underestimated.

Since the start of project, the E&S loaders have been raised from 25% to 40% also affecting the original budget.

Justification for Additional Resources

Please, refer to the following break-down for each category:

Outside services:

The original estimate for outside services was for $675,000. Once the bids came back from all the vendors, the project was over budget by $787,326 and in order to finish the project, we are forecasting another $306,923.5 for a total of $1,094,249.50 The breakdown for these charges are listed below:

Vendor/Services	Original estimate from vendor	Added services	Projection	Delta
TF Moran (permitting/environmental) • Site plan package • Permits • Meetings • Permit fees • Expenses • Survey	$28,150	• NHDES Shoreland application • Acoustic Testing	$46,250	$18,100
GZA (soils testing and characterization)	$27,200	• Soil transportation and disposal after finding arsenic • Health and safety plan preparation • Soil management assistance, observation and air monitoring • Regulatory notifications to NHDES after removal	$93,750	$66,550
Securitas (security)	$40,700	Security for substation while in construction	$40,700	$0
RLC (engineering) • P&C • Civil	$236,000	• Design modification after site walk – through • Drafting efforts to complete AZZ's drawings (some or all	$288,420	$52,420

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Supplement Request Form

• PM & Manufacturing Interface • Substation • Scope document		costs will be recovered from AZZ) • Re-IFC's design package to ensure drawings are complete with comments received from Eversource after switchgear was inspected (some or all costs will be recovered from AZZ)		
Oil disposal (Disposal of oil from decommissioned transformer)	$6,957		$6,957	$0
Metal Disposal (Disposal of all decommissioned metal from substation)	$27,000		$27,000	$0
Outside labor (Randstad)	$8,700	Scheduling	$12,000	$3,300
ES Boulos (Construction) • P&C • Substation • Site development • Civil	$729,000	• Impact recorder services/report for transformer transfer • Additional animal protection • Corrective tasks to cover AZZ's punch list items (some or all costs will be recovered from AZZ)	$759,177	$30,177
EIG (Commissioning Engineer)	$122,500	Another 1.5 months in the field due to the changes caused by the wrong wiring in the switchgear	$170,000	$47,500
Eaton (Testing)	$230,124	Another 1.5 months in the field to do testing on the re-wiring of the switchgear	$319,000	$88,876
IC Reed (line work)	$5,995		$5,995	$0
Totals	$1,462,326	**Projection total**		$1,769,249

Outside services was originally estimated for $675,000. The difference between the estimate and the projection is $1,094,249. All above vendors bids total $1,462,326 which is $787,326 more than the original estimate for outside services. The difference between the original bids and the projection of the extra efforts from all the vendors is $306,923. All these extra charges and the difference between the original estimate and bids adds up to the $1,094,249 ($787,326 + $$306,923).

Straight time labor:

The original estimate was for $122,000. Eversource provided reviews for the RLC engineering, this also includes the coverage needed at the Substation for any construction and line work.
Through April 1st, the project has spent $120,622. The projection for this line item to complete the project is at $135,000, another $13,000 from original estimate.

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Materials:

The original estimate was for $1,400K.
The following materials were needed to complete this project:

Transformer	$475,166
Switchgear	$619,226
Construction	$68,632
Total	$1,163,024

The materials line item is less than what was estimated by $236,976

Real estate taxes:

Real estate taxes ware not part of the original estimate. Through April 1st, the project has spent $25,692.

AFUDC:

The original estimate was $6,000. Through April 1st, the project has spent $7,342 with a projection of $15,054. The difference between the estimate and the projection is $9,000.

Overheads:

The original estimate was $458,000. Through April 1st, the project has spent $770,457. This is due mostly to the increase of the rates. The projection is $821,557. The difference between the estimate and the projection is $363,557.

Actions to prevent recurrence:

The importance of monitoring the status of planned project spend and comparing against the authorized budget is reinforced to all project management staff at weekly staff meetings. Project Managers need to work with project cost analysts on a regular basis to impede projects from exceeding authorized budgets. A proactive approach in controlling project costs is imperative. Management receives reports on a regular basis to identify projects that are approaching authorized spend amounts to facilitate a proactive approach to controlling project costs.

Project manager will be more involved in the estimates created by Engineering as well as the scope of work for projects. Project costs and spend projections will be closely monitored, particularly once updated to include construction bids, bill of materials, and other vendor costs including permitting, environmental, monitoring, testing and commissioning. This will facilitate a more accurate budget for the project. Project Managers need to identify potential budgetary issues and resolve by appropriate means as early as possible.

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Supplement Request Form

Summary Table:

Dollar values are in thousands

Activity	Amount Authorized	Forecast	Delta
Labor	$122	$135	$13
Materials	$1,400	$1,163	($237)
Outside Services	$675	$1,769	$1,094
Indirects	$458	$821	$363
AFDUC	$6	$15	$9
Real Estate Taxes	$0	$26	$26
Contingency	$58	$58	$0
Totals	$2,719	$3,987	$1,268

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 2,255	$ 896	$ 3,151
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 2,255	$ 896	$ 3,151
Capital Additions - Indirect	458	363	821
AFUDC	6	9	15
Total Capital Request	$ 2,719	$ 1,268	$ 3,987
O&M	-	-	-
Total Request	**$ 2,719**	**$ 1,268**	**$ 3,987**

Note: Dollar values are in thousands:

	Year 2017	Year 2018	Year 20__+	Total
Capital Additions - Direct	$ 452	$ 444		$ 896
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 452	$ 444	$ -	$ 896
Capital Additions - Indirect	55	308		363
AFUDC	-	9	-	9
Total Capital Request	$ -	$ 761	$ -	$ -
O&M	-	-	-	-
Total Request	**$ 507**	**$ 761**	**$ -**	**$ 1,268**

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: 03/14/2016	Project Title: Blaine St 12 kV Substation
Company: Eversource - NH	Project ID Number: A16C09
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Michael Warren	Project Category: Reliability - Substation
Project Owner/Manager: Lee Lajoie	Project Purpose – part of regulatory tracked program? No
Project Sponsor: James Eilenberger	Project Type: Specific
Estimated in service date: 12/01/2017	Capital Investment Part of Original Operating Plan? Yes
If Transmission Project: N/A	Supplement to Existing Authorization? No
	O&M Expenses Part of the Original Operating Plan? Yes

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

The long term plan for the west side of Manchester has been to convert the old 4 kV to 12 kV and then to add additional 12kV sources to provide capacity and back up capability. Currently two 12 kV substations in the area serve approximately 8,800 customers (15 MW's) but the limited substation capacity of one of the stations (3.75 MVA @ Notre Dame S/S) significantly restricts any back-up or switching capability.

Since the last of the 4 kV circuits out of Blaine Street S/S is being converted in 2016, this will allow the removal of the 60 year old substation transformer and metal clad switchgear lineup which will make room for the installation of a new 34.5/12.47 kV 12.5 MVA transformer with 15 kV Metalclad switchgear to feed two new 12.47 kV circuits which will tie to the recently upgraded Pinardville S/S (12.5 MVA) and Notre Dame S/S (3,750 MVA). This will complete a multi-year plan to replace aging infrastructure and provide greater capacity and reliability to the west side of Manchester with a 12 kV interconnected system. Automated Distribution will be added to these circuits as part of the REP distribution automation project to further improve the area reliability.

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

($000)	Prior Authorized*	2015	2016	2017+	Totals
Capital Additions - Direct		$ -	$ 230	$ 1,990	$ 2,220
Customer Contribution		$ -	$ -	$ -	$ -
Removals net of Salvage		$ -	$ -	$ 35	$ 35
Total - Direct Spending	$ -	$ -	$ 230	$ 2,025	$ 2,255
Capital Additions - Indirect		$ -	$ 56	$ 401	$ 457
Subtotal Request	$ -	$ -	$ 286	$ 2,426	$ 2,712
AFUDC (half-year convention)		$ -	$ 3	$ 3	$ 6
Total Request	$ -	$ -	$ 289	$ 2,429	$ 2,718

Summary Project Description

The 4kV equipment at Blaine Street S/S is more than 60 years old. This project will replace this old equipment with a new 34.5-12.47kV, 12.5 MVA transformer and a 15 kV Metalclad switchgear. This project addresses the substation work only and does not include any 12.47kV line work to create the system ties to the other substations. Separate project(s) will be generated to include creating the 12 kV circuit ties (Estimated in the $270K Range) and any distribution automation will be included in the REP distribution automation project.

Note: Dollar values are in thousands

	Total Project Costs	Amount in Operating Plan	Difference
Capital	$2,718	$2,718	$0
O&M	0	$0	$0
Total	$2,718	$2,718	$0

Project Authorization

Approver	Approver Name	Approver Signature	Date
Project initiator	Michael E Warren		
Project manager	Lee Lajoie		
Plant Accounting	Michele Roncaioli		
Manager	Thelma Brown		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

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Accounting Policy Statement No. 2
Operations Project Authorization

Overall Justification

A 12 kV substation at Blaine Street is part of the original West Side plan conceived in 2012. With the need to shed load due to over loaded CTs on the Blaine Street S/S transformer, the overall age of the west side's distribution substation equipment (Shirley Hill 1956, Blaine St 1956, Pinardville 1961, Notre Dame 1976) and the large pocket of 4 kV load with no ties or back feeds, the decision was made to convert the area to 12 kV and install new modern 12 kV substations at Pinardville and Blaine Street.

West Side project timeline

- 2011 – Blaine Street CTs over loaded. Off load 12H1 to 3138X
- 2012 – West Side plan created. Off load half the 12H5 to the 3151X10
- 2013 – Off load 35H1 and eliminate 1956 vintage Shirley Hill Substation
- 2014 – Convert 18H1 to 12 kV and construct new Pinardville 12 kV Substation
- 2015 – Convert 12H2 and remaining 12H5 out of Blaine Street and move to Pinardville.
- 2016 – Convert 12H4 and off load to Pinardville. Begin design of new 12 kV Blaine Street.
- 2017 – Construct new 12 kV Substation at Blaine Street site.

During the past 5 years peak loading for the west side was 15.1 MVA. Due to the small size of the 3,750 KVA transformer at Notre Dame S/S, switching is severely limited between the 3 circuits. Notre Dame's transformer has been loaded to 69% of summer TFRAT. Once all 4 kV circuits have been converted to Pinardville the peak load will be at or slightly above nameplate rating. A new 12 kV substation situated at the old Blaine Street 4 kV site would eliminate this issue and improve reliability, loading and switching options. Customers impacted include West High School, Parkside Junior High School, Gossler Park Elementary, two nursing homes and the Parker Varney School.

Project Scope

The scope will include:

- Remove the existing 34.5-4.16kV unit substation at Blaine St S/S.
- Reconfigure/Rebuild the 34.5kV bus at Blaine St S/S
- Install a new 34.5-12.47kV power transformer
- Install a new 15kV metalclad switchgear (three feeder positions (2 – 2017, 1 – future), one transformer position)

Project Objectives

Improve overall capacity, switching and back feed capabilities for 8,777 customers on the West side of Manchester. All customers are currently served from three 12 kV circuits out of two substations (Pinardville and Notre Dame). Switching options are limited currently by the size of the transformer at Notre Dame (3,750 KVA) and wire sizes on one of the circuits (1/0 AL Spacer). A new 12 kV substation with two additional 12 kV circuits would allow for greater switching flexibility and improved reliability due to additional back feeds and switching points. In service date of the new substation would be 2017.

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Accounting Policy Statement No. 2
Operations Project Authorization

Business Process and / or Technical Improvements

The project benefits include:

- 8,777 customers fed from five 12 kV circuits instead of just three circuits.
- Three substations totaling at least 39 MVA verses two at 22 MVA.
- Additional capacity would allow Distribution Automation capable of limiting outages to fewer than 1000 customers per event and eventually 500 per event.

Assumptions

- All permits are obtained in 2016.
- The 4kV system at Blaine Street S/S is offloaded by the end of 2016.

Alternatives Considered

Replace the 3,750 MVA transformer at Notre Dame S/S with a 12.5 MVA unit. This would provide more capacity but Blaine Street S/S's location and existing circuits are better positioned for the customer footprint. The Notre Dame's single circuit is not centrally located to the existing load base.

If the circuits are left as currently configured we would have the following issues:

- Loss of entire 18W1 would mean hitting 100% of emergency rating of 1/0 ACSR on Putnam St.
- Loss of entire 18W1 puts 18W3 breaker at 98% of Pick Up current level.
- Even with Distribution Automation installed there is the potential for large blocks of customers to be affected by a single outage.
- Total loss of Pinardville substation leaves over 4,500 customers without power and no backup available until a mobile S/S can be installed.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Scope Documents and Permitting	July 2016
Bid Switchgear	July 2016
IFC Drawings	February 2017
Equipment Delivery	July 2017
ISD	October 2017

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Accounting Policy Statement No. 2
Operations Project Authorization

Financial Evaluation

Direct Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$22	$100	$	$122
Overtime Labor	$	$	$	$
Outside Services	$175	$500	$	$675
Materials	$	$1,400	$	$1,400
Other, including contingency amounts (describe)	$33	$25	$	$58
Total	$230	$2,025	$	$2,255

Indirect Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Benefits / Loaders	$56	$401	$	$458
Capitalized interest or AFUDC, if any	$3	$3	$	$6
Total	$58	$405	$	$463

Total Capital Costs	$288	$2,430	$	$2,718
Total O&M Costs	$	$	$	$
Total Project Costs ($000)	$288	$2,430	$	$2,718

Regulatory Approvals

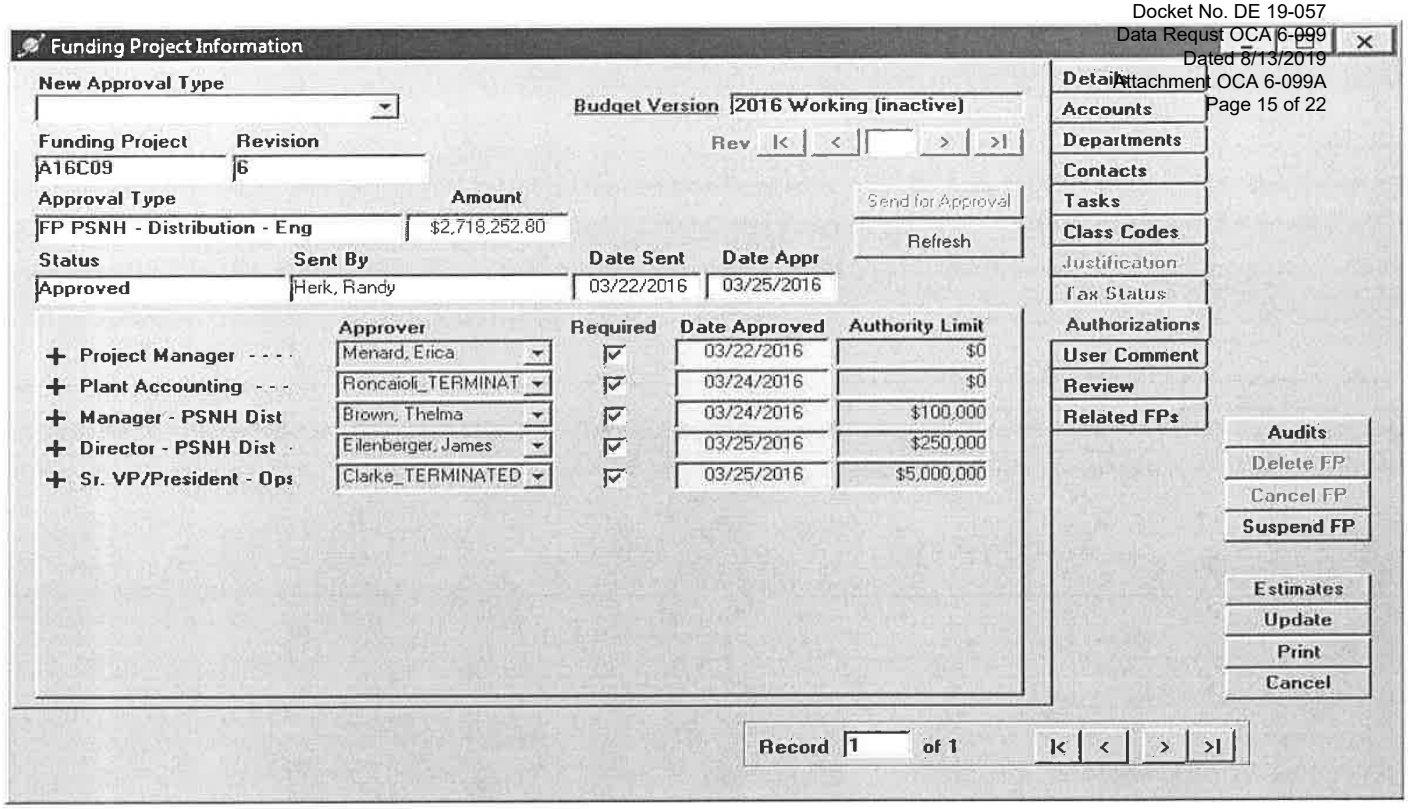
This project will require Manchester Planning and Zoning Board approvals.

Risks and Risk Mitigation Plans

The project risks are:

Permitting process is greater than expected – This will be mitigated by talking with the town early on the project to layout the requirements.

Environmental Issues cause a delay in construction – Testing of the soil, concrete and oil will be taken in the first quarter of 2016 so that construction can be sequenced accordingly.


Funding Project Information
New Approval Type
Budget Version 2016 Working (inactive)
Rev
Funding Project
A16C09
Revision
6
Approval Type
FP PSNH - Distribution - Eng
Amount
$2,718,252.80
Send for Approval
Refresh
Status
Approved
Sent By
Herk, Randy
Date Sent
03/22/2016
Date Appr
03/25/2016
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
03/22/2016
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Plant Accounting
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03/24/2016
$0
Manager - PSNH Dist
Brown, Thelma
03/24/2016
$100,000
Director - PSNH Dist
Eilenberger, James
03/25/2016
$250,000
Sr. VP/President - Ops
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03/25/2016
$5,000,000
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Departments
Contacts
Tasks
Class Codes
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Tax Status
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Review
Related FPs
Audits
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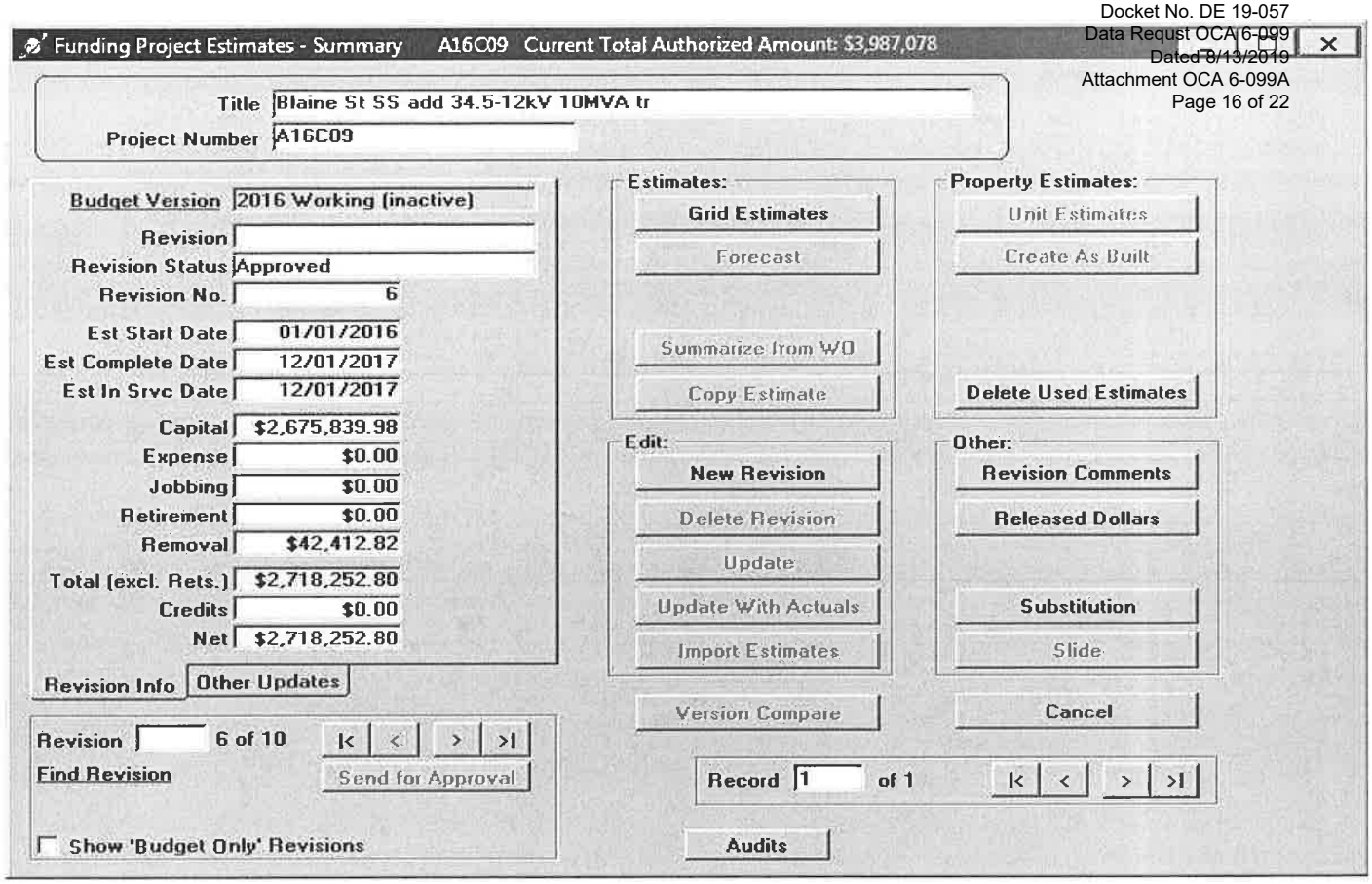
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1


Funding Project Estimates - Summary
A16C09 Current Total Authorized Amount: $3,987,078
Title
Blaine St SS add 34.5-12kV 10MVA tr
Project Number
A16C09
Budget Version
2016 Working (inactive)
Revision
Revision Status
Approved
Revision No.
6
Est Start Date
01/01/2016
Est Complete Date
12/01/2017
Est In Srvc Date
12/01/2017
Capital
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Expense
$0.00
Jobbing
$0.00
Retirement
$0.00
Removal
$42,412.82
Total (excl. Rets.)
$2,718,252.80
Credits
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Net
$2,718,252.80
Revision Info
Other Updates
Revision
6 of 10
Find Revision
Send for Approval
Show 'Budget Only' Revisions
Estimates:
Grid Estimates
Forecast
Summarize from WO
Copy Estimate
Property Estimates:
Unit Estimates
Create As Built
Delete Used Estimates
Edit:
New Revision
Delete Revision
Update
Update With Actuals
Import Estimates
Other:
Revision Comments
Released Dollars
Substitution
Slide
Version Compare
Cancel
Record
1
of 1
Audits

Annual Estimates (Grid Entry)

Fund Proj: A16C09 | Costs: $2,675,839.50 | Retirements: $0.00 | Credits: $0.00 | Est Start Date: 01/01/2016 | Revision / Version
Revision: 6 | Expense: $0.00 | Removal: $42,412.82 | Jobbing: $0.00 | Est End Date: 12/01/2017 | Selected Revision

Fund Proj	Rev	Exp Type	Est Charge Type	Department	Budg PR Class	Work Order	Job Task	Description	Curve	Spread Factor	Total	2016	2017
A16C09 Blaine											$2,719,252.00	$289,344.19	$2,429,908.61
Dollars	6	Additions	FP Alloc AFUDC 23	(none)		(none)			(none)	(none)	$5,559.52	$2,104.12	$3,455.39
Dollars	6	Additions	FP Alloc A&G - 230	(none)		(none)			(none)	(none)	$21,504.69	$2,050.11	$19,453.58
Dollars	6	Additions	FP Alloc E+S - 236	(none)		(none)			(none)	(none)	$132,403.25	$33,408.95	$98,574.30
Dollars	6	Additions	FP Alloc Mat Hnd 23	(none)		(none)			(none)	(none)	$190,000.00	$0.00	$150,000.00
Dollars	6	Additions	FP Alloc Mat loader 2	(none)		(none)			(none)	(none)	$34,771.80	$8,730.05	$25,900.75
Dollars	6	Additions	FP Alloc PR load 230	(none)		(none)			(none)	(none)	$65,500.71	$11,069.94	$52,930.37
Dollars	6	Additions	FP Labor LIII	(none)		(none)			(none)	(none)	$122,230.00	$22,230.00	$100,000.00
Dollars	6	Additions	FP Material 400	(none)		(none)			(none)	(none)	$1,400,000.00	$0.00	$1,400,000.00
Dollars	6	Additions	FP Other 800	(none)		(none)			(none)	(none)	$57,606.21	$32,604.21	$25,002.00
Dollars	6	Additions	FP Outside Svc Contr	(none)		(none)			(none)	(none)	$639,999.00	$175,000.00	$464,999.00
Dollars	6	Retirements	FP Alloc A&G - 230	(none)		(none)			(none)	(none)	$342.62	$0.00	$342.62
Dollars	6	Retirements	FP Alloc E+S - 236	(none)		(none)			(none)	(none)	$5,600.00	$0.00	$5,600.00
Dollars	6	Retirements	FP Alloc Mat loader 2	(none)		(none)			(none)	(none)	$1,470.00	$0.00	$1,470.00
Dollars	6	Retirements	FP Outside Svc Contr	(none)		(none)			(none)	(none)	$35,000.00	$0.00	$35,000.00
											$2,719,252.00	$289,344.19	$2,429,908.61

View Options: Expand All | Monthly View | Annual View

Edit Options: Uses Options... | Insert | Copy | Delete

Update | Cancel

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: 03/14/2016	Project Title: Blaine St 12 kV Substation
Company: Eversource - NH	Project ID Number: A16C09
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Michael Warren	Project Category: Reliability - Substation
Project Owner/Manager: Lee Lajoie	Project Purpose – part of regulatory tracked program? No
Project Sponsor: James Eilenberger	Project Type: Specific
Estimated in service date: 12/01/2017	Capital Investment Part of Original Operating Plan? Yes
If Transmission Project: N/A	Supplement to Existing Authorization? No
	O&M Expenses Part of the Original Operating Plan? Yes

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

The long term plan for the west side of Manchester has been to convert the old 4 kV to 12 kV and then to add additional 12kV sources to provide capacity and back up capability. Currently two 12 kV substations in the area serve approximately 8,800 customers (15 MW's) but the limited substation capacity of one of the stations (3.75 MVA @ Notre Dame S/S) significantly restricts any back-up or switching capability.

Since the last of the 4 kV circuits out of Blaine Street S/S is being converted in 2016, this will allow the removal of the 60 year old substation transformer and metal clad switchgear lineup which will make room for the installation of a new 34.5/12.47 kV 12.5 MVA transformer with 15 kV Metalclad switchgear to feed two new 12.47 kV circuits which will tie to the recently upgraded Pinardville S/S (12.5 MVA) and Notre Dame S/S (3,750 MVA). This will complete a multi-year plan to replace aging infrastructure and provide greater capacity and reliability to the west side of Manchester with a 12 kV interconnected system. Automated Distribution will be added to these circuits as part of the REP distribution automation project to further improve the area reliability.

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

($000)	Prior Authorized*	2015	2016	2017+	Totals
Capital Additions - Direct		$ -	$ 230	$ 1,990	$ 2,220
Customer Contribution		$ -	$ -	$ -	$ -
Removals net of Salvage		$ -	$ -	$ 35	$ 35
Total - Direct Spending	$ -	$ -	$ 230	$ 2,025	$ 2,255
Capital Additions - Indirect		$ -	$ 56	$ 401	$ 457
Subtotal Request	$ -	$ -	$ 286	$ 2,426	$ 2,712
AFUDC (half-year convention)		$ -	$ 3	$ 3	$ 6
Total Request	$ -	$ -	$ 289	$ 2,429	$ 2,718

Summary Project Description

The 4kV equipment at Blaine Street S/S is more than 60 years old. This project will replace this old equipment with a new 34.5-12.47kV, 12.5 MVA transformer and a 15 kV Metalclad switchgear. This project addresses the substation work only and does not include any 12.47kV line work to create the system ties to the other substations. Separate project(s) will be generated to include creating the 12 kV circuit ties (Estimated in the $270K Range) and any distribution automation will be included in the REP distribution automation project.

Note: Dollar values are in thousands

	Total Project Costs	Amount in Operating Plan	Difference
Capital	$2,718	$2,718	$0
O&M	0	$0	$0
Total	$2,718	$2,718	$0

Project Authorization

Approver	Approver Name	Approver Signature	Date
Project initiator	Michael E Warren		
Project manager	Lee Lajoie		
Plant Accounting	Michele Roncaioli		
Manager	Thelma Brown		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Overall Justification

A 12 kV substation at Blaine Street is part of the original West Side plan conceived in 2012. With the need to shed load due to over loaded CTs on the Blaine Street S/S transformer, the overall age of the west side's distribution substation equipment (Shirley Hill 1956, Blaine St 1956, Pinardville 1961, Notre Dame 1976) and the large pocket of 4 kV load with no ties or back feeds, the decision was made to convert the area to 12 kV and install new modern 12 kV substations at Pinardville and Blaine Street.

West Side project timeline

- 2011 – Blaine Street CTs over loaded. Off load 12H1 to 3138X
- 2012 – West Side plan created. Off load half the 12H5 to the 3151X10
- 2013 – Off load 35H1 and eliminate 1956 vintage Shirley Hill Substation
- 2014 – Convert 18H1 to 12 kV and construct new Pinardville 12 kV Substation
- 2015 – Convert 12H2 and remaining 12H5 out of Blaine Street and move to Pinardville.
- 2016 – Convert 12H4 and off load to Pinardville. Begin design of new 12 kV Blaine Street.
- 2017 – Construct new 12 kV Substation at Blaine Street site.

During the past 5 years peak loading for the west side was 15.1 MVA. Due to the small size of the 3,750 KVA transformer at Notre Dame S/S, switching is severely limited between the 3 circuits. Notre Dame's transformer has been loaded to 69% of summer TFRAT. Once all 4 kV circuits have been converted to Pinardville the peak load will be at or slightly above nameplate rating. A new 12 kV substation situated at the old Blaine Street 4 kV site would eliminate this issue and improve reliability, loading and switching options. Customers impacted include West High School, Parkside Junior High School, Gossler Park Elementary, two nursing homes and the Parker Varney School.

Project Scope

The scope will include:

- Remove the existing 34.5-4.16kV unit substation at Blaine St S/S.
- Reconfigure/Rebuild the 34.5kV bus at Blaine St S/S
- Install a new 34.5-12.47kV power transformer
- Install a new 15kV metalclad switchgear (three feeder positions (2 – 2017, 1 – future), one transformer position)

Project Objectives

Improve overall capacity, switching and back feed capabilities for 8,777 customers on the West side of Manchester. All customers are currently served from three 12 kV circuits out of two substations (Pinardville and Notre Dame). Switching options are limited currently by the size of the transformer at Notre Dame (3,750 KVA) and wire sizes on one of the circuits (1/0 AL Spacer). A new 12 kV substation with two additional 12 kV circuits would allow for greater switching flexibility and improved reliability due to additional back feeds and switching points. In service date of the new substation would be 2017.

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Business Process and / or Technical Improvements

The project benefits include:

- 8,777 customers fed from five 12 kV circuits instead of just three circuits.
- Three substations totaling at least 39 MVA verses two at 22 MVA.
- Additional capacity would allow Distribution Automation capable of limiting outages to fewer than 1000 customers per event and eventually 500 per event.

Assumptions

- All permits are obtained in 2016.
- The 4kV system at Blaine Street S/S is offloaded by the end of 2016.

Alternatives Considered

Replace the 3,750 MVA transformer at Notre Dame S/S with a 12.5 MVA unit. This would provide more capacity but Blaine Street S/S's location and existing circuits are better positioned for the customer footprint. The Notre Dame's single circuit is not centrally located to the existing load base.

If the circuits are left as currently configured we would have the following issues:

- Loss of entire 18W1 would mean hitting 100% of emergency rating of 1/0 ACSR on Putnam St.
- Loss of entire 18W1 puts 18W3 breaker at 98% of Pick Up current level.
- Even with Distribution Automation installed there is the potential for large blocks of customers to be affected by a single outage.
- Total loss of Pinardville substation leaves over 4,500 customers without power and no backup available until a mobile S/S can be installed.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Scope Documents and Permitting	July 2016
Bid Switchgear	July 2016
IFC Drawings	February 2017
Equipment Delivery	July 2017
ISD	October 2017

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Financial Evaluation

Direct Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$22	$100	$	$122
Overtime Labor	$	$	$	$
Outside Services	$175	$500	$	$675
Materials	$	$1,400	$	$1,400
Other, including contingency amounts (describe)	$33	$25	$	$58
Total	$230	$2,025	$	$2,255

Indirect Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Benefits / Loaders	$56	$401	$	$458
Capitalized interest or AFUDC, if any	$3	$3	$	$6
Total	$58	$405	$	$463

Total Capital Costs	$288	$2,430	$	$2,718
Total O&M Costs	$	$	$	$
Total Project Costs ($000)	$288	$2,430	$	$2,718

Regulatory Approvals

This project will require Manchester Planning and Zoning Board approvals.

Risks and Risk Mitigation Plans

The project risks are:

Permitting process is greater than expected – This will be mitigated by talking with the town early on the project to layout the requirements.

Environmental Issues cause a delay in construction – Testing of the soil, concrete and oil will be taken in the first quarter of 2016 so that construction can be sequenced accordingly.

Eversource Project Funding Authorization Process Summary

Eversource's Project Management process follows several processes and procedures based on the widely accepted Project Management Institute's ("PMI") best practice Project Management Body of Knowledge ("PMBoK"). This process utilizes the five phases of Project Management which are:

1. Initiate
2. Plan
3. Executing
4. Controlling
5. Closing

During each of these phases, project funding authorizations may be requested as the scope is identified and refined. As such, there are several types of estimates used by Eversource depending upon the stage of a capital project.

- Order of Magnitude Cost Estimate – these are used as a placeholder for evaluating alternatives and identifying preferred solutions for capital projects. This type of estimate is used early within the initiation phase of the project in which high level cost comparisons of alternative projects are needed. These estimates have an accuracy range of -50% and +200%.
- Conceptual Cost Estimate – these are used for budget purposes for capital projects. This type of estimate is used in the initial engineering phase of the project (in preparation for Eversource Project Approval Committee "EPAC" authorization). This estimate will be completed to assist the Solution Design Committee in determining the preferred alternative. These estimates have an accuracy range of - 25% and +50%.
- Planning Cost Estimates – are used to detail the cost of a project used in the planning phase of the project. These estimates are usually -/+25%.
- Engineering Cost Estimate – these are used to detail the cost of a project used in the approval and construction phase of the project. This estimate is used when at least 70-90% of the engineering is complete. Often times the pricing of major materials is known at this stage of a project. These estimates have an accuracy range of -10% to +10%.
- Construction Cost Estimate – Used to detail the cost of a project used in construction phase of the project. Service contracts for construction, testing and commissioning are generally in place at this stage. These estimates have an accuracy range of -10% to +10%.
- Actual Final Cost – actual costs incurred at project completion (after closeout).

The need for revised project funding authorization is part of the process throughout the project lifecycle. Below are a few examples of funding requests during the project lifecycle.

Initiate

Initiating a new project within Eversource typically involves the communication of a need from System Planning (load driven, compliance with standards, etc.) or Asset Management (aging infrastructure, equipment obsolescence, etc.). Initially, there may be several potential solutions to

address a need and conceptual engineering may be required to develop these options to a point where the alternatives can be evaluated. As part of the process in this stage, a site visit is conducted with high level stakeholders to begin to prepare conceptual plans/drawings to obtain approval for the project. Initial cost estimates are also developed to include preliminary engineering and the initial project planning cost. Consider this "seed" money to get the correct resources in place to begin the Planning Phase of the project. This would include consideration for hiring external resources if Eversource resources cannot handle the work load.

Once a preferred solution is selected, further conceptual engineering and analysis may be required to identify certain project specific risks e.g. likelihood of encountering subsurface ledge or other obstructions during excavation, contaminated soils, etc. At each stage of project development, additional detail is defined, risks are uncovered and where appropriate, mitigated. In parallel with the solution definition, the project's estimated cost is developed and refined to a greater level of accuracy. During conceptual engineering, additional funding approval may be required to assess alternatives and, in some cases, approve physical work, for example soil borings, test pits and soil analysis. This is required to develop the preferred solution to a point where full project funding approval can be requested. Once a preferred solution is identified, Eversource's Solution Design Committee evaluates the proposed solution against the viable alternatives and where appropriate recommends moving forward with project funding approval through EPAC. In other cases, the SDC may request additional work to develop other alternatives or refine the preferred alternative prior to approval.

A Project Authorization Form (PAF) is generated at this stage to obtain project approval from upper Management. The PAF includes an Executive Summary, Project Description, Overall Justification along with Alternatives Considered and a Preliminary Cost Estimate. The Cost Estimate is generated using recent completed projects with a similar scope. It also assumes pricing for known materials and service cost.

Plan

Once project approval is obtained, the Planning Stage begins. The outcome of this stage is to prepare a guide through which the project travels. During this stage, several stake holders, including Eversource Engineering, conduct a site visit to begin developing the detailed scope document for the project. Among other things, the scope document is used to prepare bid documents for outsourcing engineering (or as a road map for internal engineering) as well as additional services as may be required. The contractors that are chosen for Request for Proposals (RFP) are selected by the project team and Eversource Procurement Department considering past experience and cost and schedule track records. When the proposals are received, they are reviewed by several members of the project team, including Eversource Engineering and the Procurement Department. Depending on the complexity of the project, the proposals can vary greatly from the Preliminary Cost Estimates provided in the PAF. Once the engineering resource is selected, 30% design packages are generated and used to obtain RFP's for major materials, Lead Commissioning Engineer (LCE) and several other contractors as needed. During engineering, many unknowns begin to come to light and resource requirements are better understood which assist in the RFPs.

Historically, full project funding approval was provided based on the conceptual or planning cost estimate, but in recent years Eversource has transitioned to a staged project sanctioning approach with initial funding provided to develop the detailed engineering and risk mitigation. Once the scope is known in detail, full funding approval is requested which allows for the purchase of engineered equipment with long lead times and the placing of contracts for construction, testing and commissioning, etc. This stage-gate approval approach creates more certainty over actual final cost because the engineering is completed and firm pricing for major materials and when appropriate construction, test and commissioning is available.

Even with the staged approval process, during project execution it is not unusual for unforeseen issues to materialize. These issues include finding buried objects not identified on drawings, changes to approach based on feedback from local stakeholders, storms, equipment failures, emergent outage constraints, etc. To respond appropriately, the Project Manager may need to commit additional resources, identify alternative ways of working, etc. These deviations from the original scope can also affect the project cost estimate.

After receipt of all proposals, the known project costs are compared to the authorized full funding project estimate. If the pricing is in line with the full funding authorization, no requests are made for additional funding. However, if the cost exceeds the initial estimate, a Supplemental Request Form (SRF) may be required for supplementary funding. In circumstances where the project direct costs are forecast to exceed the authorized direct funding by 10% or more, Eversource's project controls require the Project Manager to request supplemental project approval by returning to EPAC and explaining the need for additional project resources be that additional internal labor, outside services, or materials.

When the planning is well underway, and the requested contracts are implemented, the Executing phase begins. During this phase, the work that was planned is carried out. In the early part of this stage, environmental testing is conducted to determine if there are any environmental hazards that need to be remediated. This is normally added as a risk in the PAF or SRF and a dollar value is applied. However, there are some instances where the amount of remediation is much more extensive than anticipated and the costs are much higher than identified as part of the risk. This may also be the case when civil and electrical construction is underway, and unknowns arise. Another submission of the SRF may be needed to capture these costs as well.

Execute/Control

During the Executing Phase, the cost & schedule controls are put in place as part of the Controlling Phase. Weekly Project Meetings are held to discuss the construction progress and the remaining work to be done. From time to time, the weather, as well as storm related outages, can cause schedule delays. The outcomes of these delays can result in change orders from the contractor to cover additional time/resources needed to complete the projects. These change orders are reviewed by the project team to negotiate pricing and confirm that the request is indeed out of scope. Monthly cost meetings are also conducted which include the Eversource Project Management and Upper Management teams. During these cost meetings, the cost controls are discussed, reviewed and recommended corrective actions are implemented as needed. If, at any

time during the Executing Phase, the cumulative effect of project change or contract change orders results in a variance of 10% or greater in direct project cost, then an additional Supplemental Funding Request would be required.

No supplemental request should be required during the Closing Phase.

Indirect Project Costs

All Eversource projects are assessed indirect costs from several overhead categories. These include, but are not limited to:

- Internal labor overheads (employee benefits, etc.)
- Stores (applied to materials ordered through our stock room)
- Engineering and Supervision (E&S)
- Misc. Distribution Expense (MDEC)
- Administrative (AS&E)
- AFUDC (cost of money)

Each of these overheads is assessed at a rate defined by the corporation and is applied to the appropriate category of direct costs charged to the project. These rates vary over time and are adjusted with some frequency.

Indirect costs are included in each type of project estimate and are based upon the rates at that time and the categories of direct costs anticipated at that time.

Variations in the value of indirect costs can come from four basic sources:

1. Variation in overhead rate – generally more of an influence on long duration projects
2. Increase (or decrease) in direct project costs – often seen as the project scope becomes more well defined and direct costs are known. This can be the result of increase in project scope or higher than expected contract service costs due to market conditions.
3. Change from internal resources to contracted (external) resources or vice versa – this would impact the internal labor overheads which are significant, but often comes with an increase or decrease to the direct cost for external labor, ie. true cost of internal labor shows up as a direct labor cost and a labor loader, whereas external labor does not get a labor loader (we are billed a “loaded” rate by vendors). Both will be assessed other applicable overheads such as E&S, MDEC and AS&E.
4. Change from owner furnished to contractor furnished materials – contractor furnished materials will not be assessed the Stores overhead, though usually include a contractor markup. Again, not a large overall difference in project cost, but potentially a noticeable variation in indirect costs.

Though variations (increases) in indirect project costs do not drive the need to secure additional project funding for distribution projects, they do contribute to overall project cost and are included in monthly project forecasting and reporting.

The E&S rate tends to be the most volatile and can result in large variations in overall indirect cost.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/18/2019**
Request No. TS 2-053 **Page 1 of 3**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Blaine St SS add 34.5kV-12kV 10MVA, #A13C06, OCA 6-099A: Please provide the following information involving this project:

a. Re: Justification at page 6: Did Eversource engineers conduct a site visit and site assessment during the initial scoping and designing of the project? If not, why not? Why were the costs for services (soil testing, soil removal, landscaping, etc.) overlooked during the original estimate? Were the design/scoping engineers interviewed by Management to determine the root cause for these omissions? If not, why not? If yes, what were the results of those discussions?
b. Re: Additional Resources at page 6 and 7: Were some or all costs recovered from AZZ as referenced? If yes, please provide an accounting of amounts recovered. Please provide an itemized breakout of overheads, AFUDC, and other costs leading up to the variance.
c. Re: Actions to prevent recurrence at page 8: At the time of construction, was it Eversource's policy that Project Managers work with project cost analysts to impede costs from exceeding the authorized budget? If not, why not? If yes, why was this policy not followed for this project? Given the monthly reports received by Management, why was Management not actively involved in controlling the cost escalation of this project?
d. Was the Substation Constructability Walk Down Checklist used for this project? If yes, please provide a copy.
e. Re: Attachment 12-045AS, Minutes 5/08/2018 at page 1: Provide the Lessons Learned attachment and the revised Supplement Justification referenced therein.

Response:
Clarifications and refinements to the scope and cost estimate in the normal evolution of the project are to be expected and do not constitute "omissions." Eversource Management is informed of such changes in the normal course of monthly project reporting. The preliminary engineering and original estimate did not "fail" to consider these items, nor were the items missed. The engineering and project-cost estimation process is iterative and involves graduated stages of information gathering, assessment, estimation and projections that are refined to a final pre-construction cost based on detailed project plans and detailed cost assessments. The cost estimates derived on the basis of conceptual-level engineering plans and preliminary cost projections are not intended to serve as the basis for final, pre-construction starting points for the project. Therefore, the premise that costs were "overlooked" is false.

a) Please refer to Attachment TS 2-053 for a general summary of the project life cycle and Eversource project funding and authorization process at the time of the project. This document

includes reference to a recent transition to a staged sanctioning process where full project funding authorization is not granted until sufficient engineering and procurement information is available to develop a full project estimate of sufficient accuracy to minimize the need for incremental authorizations during construction.

A project kickoff meeting was held on August 19, 2016 and included internal engineering, consultant engineering, site design consultant, operations and field engineering. A site visit was conducted after the meeting.

The original project estimate and authorization was for full project funding and was developed prior to engaging a permitting consultant and conducting a permit needs assessment. Upon completion of the assessment and background research, it became apparent that there was the potential for contaminated soils on the site, requiring soil testing and disposal of excess contaminated soils. The permit assessment also revealed the need for a sound study and visual mitigation measures as conditions of site plan approval.
Clarifications and refinements to the scope in the normal evolution of the project are to be expected and are not considered omissions. Eversource Management is informed of such changes in the normal course of monthly project reporting.

b) Eversource incurred an estimated $86,000 of costs due to the manufacturing deficiencies with the AZZ switchgear broken up as follows:

- Engineering – RLC Engineering $12,580
- Electrical Construction - ES Boulos $33,498
- Testing – Eaton Electric $20,528
- Commissioning – EIG $20,150

After negotiating this claim with AZZ, a refund of $68,000 was agreed upon and received from AZZ.

Refer to Attachment TS 2-053 for a general summary of the types and variability of indirect project costs.

The indirect cost variance is as follows:

	Original PAF, $k	Supplement, $k
Direct Cost	$2,255	$3,151
Indirect Cost	$458	$821
Aggregate Indirect Rate	20%	26%
AFUDC	$6	$15

The variance in indirect cost is driven primarily by an increase in direct cost of the project and to a lesser degree, increase in overhead rates.

c) At the time this project was in execution, it was Eversource's practice to assign dedicated cost analysts to support project managers with cost control, analysis and forecasting for major transmission projects. At the time of this project, cost analyst support for distribution-only

projects did not perform all of these functions and was transitioning this practice to fully support major distribution-only projects.

This project was reviewed monthly at the Distribution Capital Project Review meeting. Cost control measures employed by project managers included budget forecasting, weekly and monthly reviews of the project cost, change order review and negotiations with contractors as well as presenting project financials at the monthly Distribution Capital Review and Major Project Group meetings. Project forecast changes were presented and justified to management at these meetings. Impacts to the annual distribution budgets were discussed with respect to cash flow adjustments from year to year. Required cost controls included a requirement to request and secure supplemental funding to complete the project.

d) The Substation Constructability Walkdown Checklist, which was still in development at the time of this project and is still not in its final form, was not utilized on this project. The checklist formalizes the activities which are conducted as a process improvement initiative. The intended purpose of this checklist is to aid field construction resources in the transition of projects into the construction phase. The use of this checklist was an outcome of the Lessons Learned from a different project and was not in use on NH projects prior to that time.

e) The supplemental funding request approved May 9, 2019 and included in the referenced attachment has the lessons learned on page 8 in a section titled Actions to Prevent Recurrence.

funding_project	A16C09

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
9Z621551	**16-092: Circuit Tie - Relocate 3138**	Admin and Eng OH- Acct Use Only		2016	0	$ 16.17
				2017	0	$ (16.17)
		AFUDC Debt		2016	0	$ 0.86
				2017	0	$ (0.86)
		Engin and Super OH- Acct Use Only		2016	0	$ 210.96
				2017	0	$ (210.96)
		Labor Straight Time Exempt		2016	21	$ 912.76
				2017	-21	$ (912.76)
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 0.14
				2017	0	$ (0.14)
		Non Productive Time Loader- Acct Use Only		2016	0	$ 157.08
				2017	0	$ (157.08)
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 336.57
				2017	0	$ (336.57)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 96.12
				2017	0	$ (96.12)
9Z621551 Total					**0**	**$ -**
A16C0901	**BLAINE ST SS 34.5-12.47kV ADDITI**	Admin and Eng OH- Acct Use Only		2016	0	$ 568.41
				2017	0	$ 17,231.93
				2018	0	$ 10,789.51
				2019	0	$ 687.23
		AFUDC Debt		2016	0	$ 99.40
				2017	0	$ 3,105.38
				2018	0	$ 9,392.72
		AFUDC Equity		2016	0	$ 0.05
		Alloc- E+S OH Subst- Acct Use Only		2018	0	$ 28,312.65
				2019	0	$ 10,127.70
		Contractor Labor	**RANDSTAD U**	2018	8	$ 214.00
			RANDSTAD US LP	2017	140.5	$ 10,407.53
				2018	43	$ 944.55
		Contractor Materials	**E S BOULOS COMPANY**	2018	0	$ 61,800.00
		Contractor Services	**E S BOULOS**	2018	0	$ 145,800.00
			E S BOULOS COMPANY	2017	0	$ 436,185.00
				2018	0	$ 161,829.72
			E.S. BOULO	2018	0	$ 3,960.00
			E.S. BOULOS CO	2017	0	$ 3,960.00
				2018	0	$ (3,960.00)
			SECURITAS	2018	0	$ 11,934.00
			SECURITAS SECURITY SVCS USA IN	2017	0	$ 39,165.76
				2018	0	$ (11,232.00)
		Contractor Services- Other	**JCR CONSTR**	2018	0	$ 3,859.08
			JCR CONSTRUCTION CO INC	2018	0	$ -
		Contractor- Unit Price	**JCR CONSTRUCTION CO INC**	2018	0	$ 2,136.00
		Employee Expense Other		2018	0	$ 2.00
		Engin and Super OH- Acct Use Only		2016	0	$ 5,990.74
				2017	0	$ 197,290.49
				2018	0	$ 477,728.95
		Engineering Design Services		2017	0	$ -
			AZZ	2018	0	$ 3,804.00
			RLC ENGINEERING LLC	2017	9	$ 64,870.50
				2019	0	$ 7,944.28
			TF MORAN INC	2017	2	$ 3,422.18
		Environmental Outside Services	**MORAN ENVIRONMENTAL RECOVERY**	2017	0	$ 8,738.01
			TRC LOCKBOX	2017	0	$ 1,037.77
		Fees + Payments- Other	**CITY OF MANCHESTER**	2017	0	$ 50.00
				2018	0	$ -
			JP MORGAN CHASE BANK	2017	1	$ 1.50
		Fees and Payments	**APRIL 2017 PCARD**	2017	0	$ -
			JP MORGAN CHASE BANK	2017	11	$ 177.50
		Filing Fees	**JP MORGAN CHASE BANK**	2017	1	$ 26.00
		Gen Ser Co Benefit Loader- Acct Use Only		2016	0	$ 1,010.65
				2017	0	$ 4,238.62

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0901	BLAINE ST SS 34.5-12.47kV ADDITI	Gen Ser Co Benefit Loader- Acct Use Only		2018	0	$ 4,835.96
				2019	0	$ 882.31
		Labor Overtime Non-Exempt		2017	141.5	$ 10,465.50
				2018	153.25	$ 7,975.32
				2019	5	$ 307.73
		Labor Premium and Special Exempt		2019	0	$ 450.00
		Labor Straight Time Exempt		2016	407.5	$ 22,483.07
				2017	1138.75	$ 58,655.93
				2018	736.45	$ 38,358.35
				2019	80	$ 3,975.11
		Labor Straight Time Non-Exempt		2016	20	$ 603.78
				2017	51	$ 1,599.21
				2018	1025.25	$ 40,926.85
				2019	37.5	$ 1,386.88
		Licensing and Permitting		2017	0	$ -
			DAVID G LARIVEE	2017	0	$ 15,000.00
			GZA GEO ENVIRONMENTAL INC	2017	1	$ 19,483.27
			GZA GEOENV	2018	0	$ 704.72
			GZA GEOENVIRONMENTAL INC	2017	0	$ 21,975.86
				2018	0	$ (704.72)
		Material Salvage		2017	0	$ (845.04)
		Materials- Purchased	JP MORGAN	2018	2	$ 213.09
			JP MORGAN CHASE BANK	2018	14	$ 6,098.79
			NWN CORPORATION	2018	0	$ 10,226.21
			RLC ENGINEERING LLC	2016	5	$ 12,985.49
				2017	6	$ 18,860.67
			TF MORAN INC	2016	2	$ 1,668.40
				2017	4	$ 12,478.69
		Materials- Stores	ANCHOR, SINGLE HELIX, SOCKET DRIVE, 10 IN, 8000 LB	2018	8	$ 199.98
			ARM,DAVIT, 6 FT 6 IN LG, 65 KSI, 15 DEG, 6150 LB VERTICAL LOAD, 5000 L	2018	0	$ -
			ARRESTER, 25 PAIR PROTECTION BLOCK, FOR MODEM	2018	1	$ 273.00
			ARRESTER, LIGHTNING, 15 KV, FOR MODEM	2018	1	$ 268.00
			BOLT, DOUBLE ARMING, 5/8 IN, 20 IN LG, ROLLED THREAD, STEEL, HOT D	2017	9	$ 22.01
			BRACKET, 24 IN, AL, W/ SLOT, FOR CONDUIT STAND-OFF UP TO 6 IN CON	2017	8	$ 190.00
			BRACKET,CONDUIT, STANDOFF, 12 IN LG, AL, FOR RISER POLE	2017	4	$ 71.80
			COMPUTER,SYSTEM, HMI PC, UNO 2473G, WINDOWS 10 OS, 64 GB MSATA	2018	-1	$ (725.00)
			CUBE,POWER, TIME, OFF DELAY, 90-150 VAC/DC, 0.2-30 MIN, 8 PIN, PLUG	2018	4	$ 275.53
			MODEM, SHELF, 8 CARD	2018	1	$ 1,260.00
			MODEM,POWER SUPPLY, 120 VAC / 129 VDC I/P	2018	1	$ 541.00
			MONITOR,COMPUTER, 19 IN TFT, COLOR, W/ RESISTIVE TOUCH SCREEN	2018	0	$ -
			SIGN,DANGER, HARD HAT AREA, 10 X 14 IN, 0.125 IN POLYCARBONATE, R	2018	3	$ 72.79
			SIGN,DANGER, HIGH VOLTAGE KEEP OUT..., 10 IN H, 14 LG, POLYCARBON	2018	6	$ 127.54
			SIGN,DANGER, LOWER ANTENNA, 7 X 10 IN, 0.125 IN POLYCARBONATE W	2018	2	$ 34.67
			SIGN,IDENTIFICATION, PHASE 1, 4 X 4 IN, WHITE ON RED, 4 EYELETS	2018	2	$ 6.89
			SIGN,IDENTIFICATION, PHASE 2, 4 X 4 IN, BLUE ON WHITE, 4 HOLE	2018	2	$ 5.96
			SIGN,IDENTIFICATION, PHASE 3, 4 X 4 IN, WHITE ON BLUE, 4 HOLE	2018	2	$ 6.89
			SIGN,NOTICE, APPROVED FR CLOTHING REQUIRED FOR ENTRY..., 14 IN X	2018	3	$ 26.38
			SIGN,NOTICE, SUBSTATION USE, CALL THE APPROPRIATE..., EVERSOURC	2018	2	$ 25.94
			SIGN,WARNING, POSITIVELY NO TRESPASSING, EVERSOURCE LOGO, 10	2018	5	$ 108.30
			STATION,EYEWASH, FOR PURE FLOW 1000 EYEWASH STATION, SEE D204	2017	1	$ 270.37
			WASHER,FLAT, SQUARE, 3 IN X 3 IN X 1/4 IN SQ, 13/16 IN ID, GALV, FOR 5/8	2017	14	$ 19.49
		Meals		2017	0	$ 393.45
				2018	44	$ 934.10
				2019	1	$ 10.00
		Mileage		2016	24	$ 12.96
				2017	73	$ 39.06
				2018	58	$ 247.35
				2019	127	$ 73.66
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 450.12
				2017	0	$ 17,149.45
				2018	0	$ 44,210.64
				2019	0	$ 340.73
		Miscellaneous Accounting Adjustments		2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 3,975.77
				2017	0	$ 11,076.59

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0901	BLAINE ST SS 34.5-12.47kV ADDITI	Non Productive Time Loader- Acct Use Only		2018	0	$ 12,413.51
				2019	0	$ 919.67
		Other Outside Services		2017	0	$ -
			AZZ	2018	0	$ 551,226.00
			BURNS & MCDONNELL	2018	0	$ 1,587.95
			BURNS & MCDONNELL ENGINEERING	2018	0	$ 1,176.45
			E S BOULOS COMPANY	2019	0	$ 5,520.64
			EATON CORP	2018	0	$ 264,337.76
				2019	0	$ 1,476.84
			ENERGY INITIATIVES GROUP LLC	2018	0	$ 121,896.55
			GZA GEOENVIRONMENTAL INC	2017	0	$ 51,704.67
			RLC ENGINEERING LLC	2017	0	$ 125,565.82
				2018	0	$ 66,098.01
			TF MORAN INC	2017	0	$ 10,683.26
				2018	0	$ 11,876.75
				2019	0	$ -
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 8,000.85
				2017	0	$ 24,197.58
				2018	0	$ 31,688.69
				2019	0	$ 2,051.11
		Police Services and Traffic Control	NEW ENGLAND TRAFFIC CONTR SVCS	2017	0	$ 424.00
		Property Taxes		2017	0	$ 11,513.95
				2018	0	$ 45,582.41
		Scrap Electric Equipment	G & S MOTOR EQUIPMENT COMPANY	2017	0	$ 26,999.99
				2018	0	$ -
		Service Company Allocations- Acct Use Only		2016	0	$ 0.00
				2017	0	$ (0.00)
				2018	0	$ 0.00
				2019	0	$ -
		Spill Response and Disposal	CLEAN HARBORS ENV SERVICES INC	2017	3	$ 6,956.47
		Stores Loader- Acct Use Only		2017	0	$ 7,036.16
				2018	0	$ 6,374.83
		Stores over 25K	CIRCUIT BREAKER, VACUUM, 38 KV, 1200 A, 200 KV BIL, W/ 1200/5 C400 B(	2017	1	$ 27,446.00
			TRANSFORMER,POWER, 34.5-12.47 KV, 10/12.5 MVA , 65 DEG C RISE	2017	1	$ 447,720.40
		Travel		2017	0	$ 887.74
		UVL-Contractor Labor	0105510 - UVL - PSM00 - 00013	2016	0	$ 13,931.94
				2017	0	$ (13,931.94)
			0106377 - UVL - PSM00 - 00013	2017	0	$ -
			0107189 - UVL - ENG00 - 00083	2017	0	$ -
			0107189 - UVL - ENG00 - 00095	2017	0	$ -
			0107189 - UVL - ENG00 - 00104	2017	0	$ -
			0107189 - UVL - PSM00 - 00013	2017	0	$ -
			0108100 - UVL - ENG00 - 00083	2017	0	$ -
			0108100 - UVL - ENG00 - 00095	2017	0	$ -
			0108100 - UVL - ENG00 - 00104	2017	0	$ -
			0108711 - UVL - ENG00 - 00013	2017	0	$ -
			0108711 - UVL - ENG00 - 00083	2017	0	$ -
			0108711 - UVL - ENG00 - 00095	2017	0	$ -
			0108711 - UVL - ENG00 - 00104	2017	0	$ -
			0109645 - UVL - ENG00 - 00013	2017	0	$ -
			0109645 - UVL - ENG00 - 00083	2017	0	$ -
			0109645 - UVL - ENG00 - 00095	2017	0	$ -
			0109645 - UVL - ENG00 - 00104	2017	0	$ -
			0109645 - UVL - PSM00 - 00023	2017	0	$ -
			0110033 - UVL - ENG00 - 00013	2017	0	$ -
			0110033 - UVL - ENG00 - 00083	2017	0	$ -
			0110033 - UVL - ENG00 - 00095	2017	0	$ -
			0110033 - UVL - ENG00 - 00104	2017	0	$ -
			0110033 - UVL - PSM00 - 00023	2017	0	$ -
			0112386 - P&C ENGINEERING SUPPORT	2017	0	$ -
			0120888 - UNBILLED SERVICES	2018	0	$ -
			0121636 - UNRECORDED INVOICE	2018	0	$ -
			0131417 - UNBILLED SERVICES	2019	0	$ -
			0132302 - UNBILLED SERVICES	2019	0	$ -
			0133082 - UNBILLED SERVICES	2019	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0901	**BLAINE ST SS 34.5-12.47kV ADDITI**	UVL-Contractor Labor	**0133982 - UNBILLED SERVICES**	2019	0	$ -
			0135765 - UNBILLED SERVICES	2019	0	$ 4,722.00
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 132.29
				2017	0	$ 6,599.32
				2018	0	$ 7,629.04
				2019	0	$ 625.39
A16C0901 Total					**4455.7**	**$ 4,009,770.76**
Grand Total					**4455.7**	**$ 4,009,770.76**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A16C10 **Status** open **Revision** 6

Project Title JACKMAN - REPLACE OBSOLETE EQUIPMEN **Operating Unit**

Initiated By Randy Herk **Initiated Date** 03/15/2016 13:10:22

Description of Work The replacement of obsolete equipment at Jackman Substation.

Location G3252 : JACKMAN S/S

Project Schedule / Expenditures **Est Start Date :** 1/1/2016 **Est Complete Date :** 4/30/2018

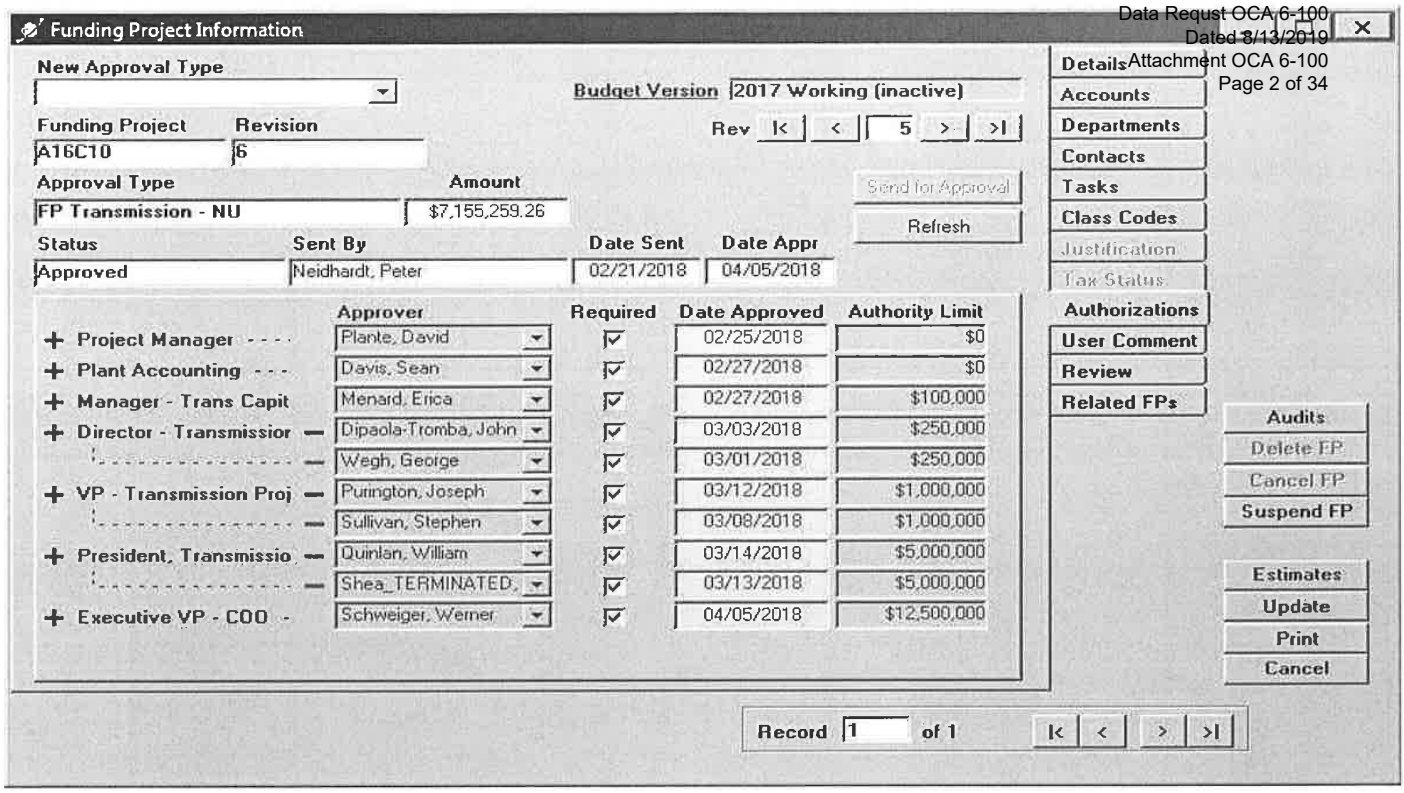
	2014	2015	2016	2017	2018	Future Years	Total
	$0.00	$0.00	$1,730,919.26	$3,669,289.00	$1,755,051.00	$0.00	$7,155,259
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$7,155,259	$0	$0	$0	$0	$7,155,259.26

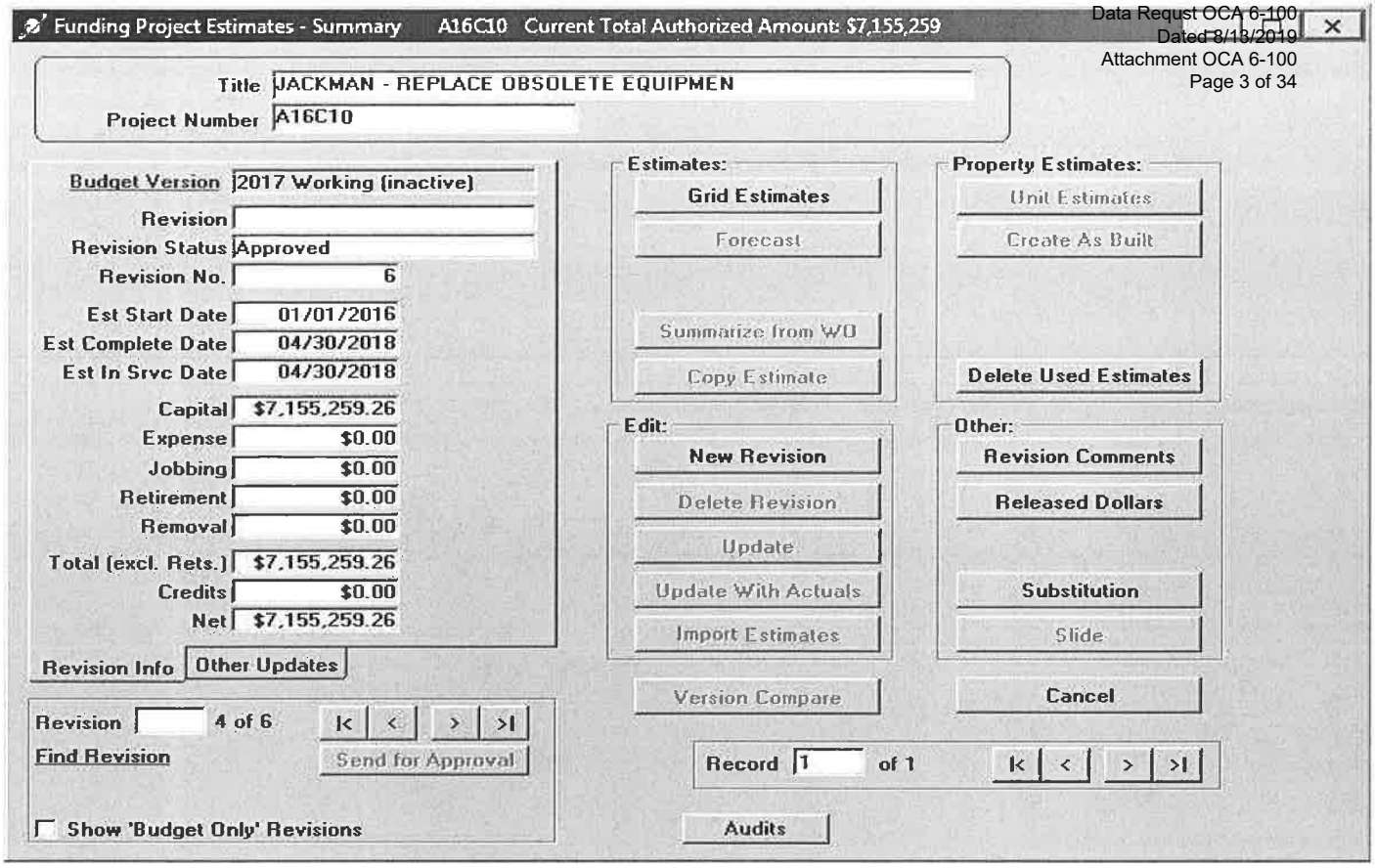
Reason For Work

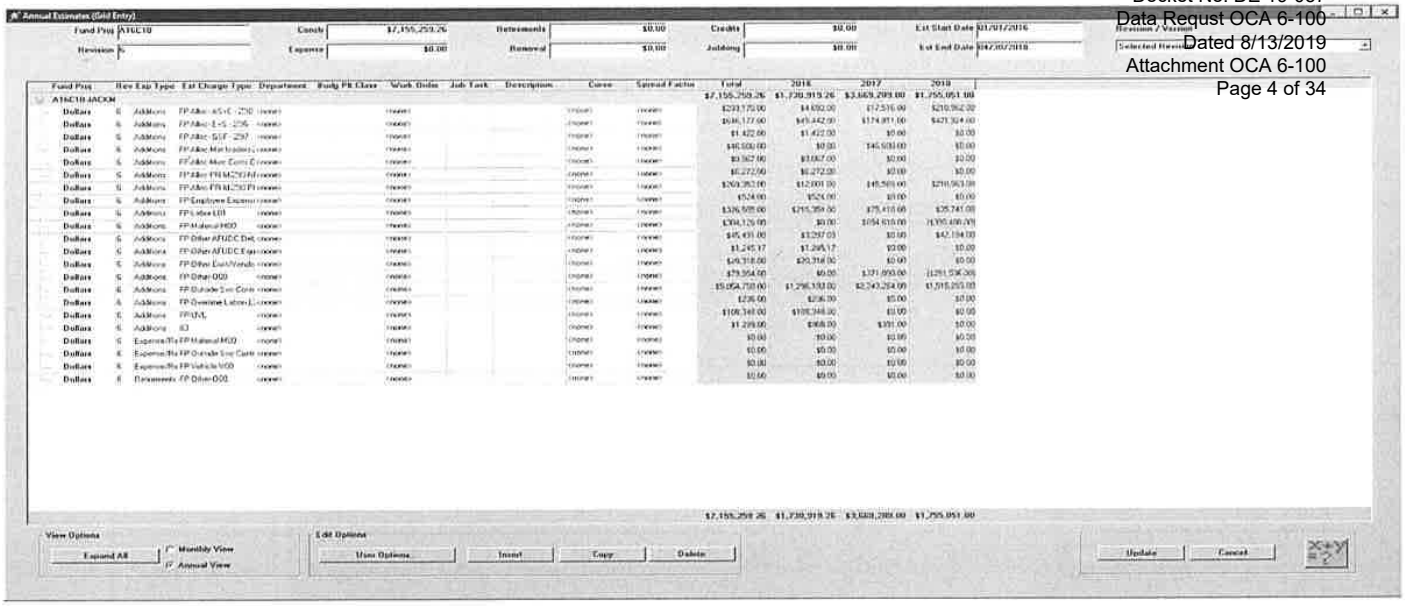
Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Plante, David	$0	02/25/2018
Plant Accounting	Davis, Sean	$0	02/27/2018
Manager - Trans Capital	Menard, Erica	$100,000	02/27/2018
Director - Transmission Pr	Dipaola-Tromba, John	$250,000	03/03/2018
Director - Transmission Pr	Wegh, George	$250,000	03/01/2018
VP - Transmission ProjEnc	Purington, Joseph	$1,000,000	03/12/2018
VP - Transmission ProjEnc	Sullivan, Stephen	$1,000,000	03/08/2018
President, Transmission	Quinlan, William	$5,000,000	03/14/2018
President, Transmission	Shea_TERMINATED, Kathleen	$5,000,000	03/13/2018
Executive VP - COO	Schweiger, Werner	$12,500,000	04/05/2018


Funding Project Information
New Approval Type
Budget Version 2017 Working (inactive)
Rev 5
Funding Project A16C10
Revision 6
Approval Type FP Transmission - NU
Amount $7,155,259.26
Send for Approval
Refresh
Status Approved
Sent By Neidhardt, Peter
Date Sent 02/21/2018
Date Appr 04/05/2018
Approver
Required
Date Approved
Authority Limit
Project Manager Plante, David 02/25/2018 $0
Plant Accounting Davis, Sean 02/27/2018 $0
Manager - Trans Capit Menard, Erica 02/27/2018 $100,000
Director - Transmissior Dipaola-Tromba, John 03/03/2018 $250,000
Wegh, George 03/01/2018 $250,000
VP - Transmission Proj Purington, Joseph 03/12/2018 $1,000,000
Sullivan, Stephen 03/08/2018 $1,000,000
President, Transmissio Quinlan, William 03/14/2018 $5,000,000
Shea_TERMINATED, 03/13/2018 $5,000,000
Executive VP - COO Schweiger, Werner 04/05/2018 $12,500,000
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1


Funding Project Estimates - Summary
A16C10 Current Total Authorized Amount: $7,155,259
Title JACKMAN - REPLACE OBSOLETE EQUIPMEN
Project Number A16C10
Budget Version 2017 Working (inactive)
Revision
Revision Status Approved
Revision No. 6
Est Start Date 01/01/2016
Est Complete Date 04/30/2018
Est In Srvc Date 04/30/2018
Capital $7,155,259.26
Expense $0.00
Jobbing $0.00
Retirement $0.00
Removal $0.00
Total (excl. Rets.) $7,155,259.26
Credits $0.00
Net $7,155,259.26
Revision Info
Other Updates
Revision 4 of 6
Find Revision
Send for Approval
Show 'Budget Only' Revisions
Estimates:
Grid Estimates
Forecast
Summarize from WO
Copy Estimate
Property Estimates:
Unit Estimates
Create As Built
Delete Used Estimates
Edit:
New Revision
Delete Revision
Update
Update With Actuals
Import Estimates
Other:
Revision Comments
Released Dollars
Substitution
Slide
Version Compare
Cancel
Record 1 of 1
Audits


Annual Estimates (Grid Entry)
Fund Proj ATEC10
Revision 5
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Retirements $0.00
Removal $0.00
Credits $0.00
Jobbing $0.00
Est Start Date 01/01/2016
Est End Date 04/30/2018
Revision / Version
Selected Revision
Fund Proj
Rev Exp Type
Est Charge Type
Department
Budg Plt Class
Work Order
Job Task
Description
Curve
Spread Factor
Total
2018
2017
2019
ATEC10 JACKM
$7,155,259.26 $1,730,915.26 $3,669,289.00 $1,755,051.00
$7,155,259.26 $1,730,915.26 $3,669,289.00 $1,755,051.00
View Options
Expand All
Monthly View
Annual View
Edit Options
User Options
Insert
Copy
Delete
Update
Cancel

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Request Form
Approved at February 14, 2018 EPAC
Link to Meeting Minutes

Date Prepared: February 8, 2018	**Project Title: Jackman Replace Obsolete Equipment**
Company/Companies: Eversource (NH)	**Project ID Number: A16C10 / A07X44B2**
Organization: NH Operations	**Plant Class/(F.P.Type): Distribution Substation**
Project Initiator: Thelma Brown	**Project Type: Specific**
Project Manager: Alan Roe	**Capital Investment Part of Original Operating Plan? Y**
Project Sponsor: James Eilenberger	**O&M Expenses Part of the Original Operating Plan? No**
Current Authorized Amount: $5,400k	**Estimated in service date(s): April 30, 2018**
Supplement Request: $1,755k	**Other:**
Total Request: $7,155k	

Supplement Justification

Background

The original Project Authorization Form ("PAF") for the Jackman Replace Obsolete Equipment project was approved in April 2016. At that time, the project was approved at a cost of $4,557k with an in-service date of June 2017. The project estimate was based on direct costs of $4,228k with indirect costs of $325k and AFUDC of $4k.

A supplemental Project Authorization Form was approved in April 2017 with an expected cost to complete the project of $5,400k (direct costs - $5,027; indirect costs - $369k and AFUDC - $4.5k). At that time the expected in-service date was November 2017.

Project Status

At this point, all 34.5kV circuit breakers have been replaced and all relaying, controls and metering have been transferred over to the new control house. The final installation and commissioning of the capacitor bank and cap-switcher will occur in April 2018 (the first available outage) along with all 'punch list' and site restoration activities.

This supplemental Project Authorization Form requests approval of $1,755K for a total request of $7,155k. Since April 2017, direct costs have increased by $869k and associated increases in Indirect costs are $844k. AFUDC has increased $43k. The reasons for these increases are explained below

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Cumulative effect of Changes since April 2017

	April 2017 (Current Authorized)	February 2018 (Total Request)	Difference (Supplement Request)
1. Eng./PM/Permitting	$850,007	$900,218	$50,212
2. Construction	$2,326,939	$3,533,898	$1,206,959
3. Testing & Commissioning	$493,000	$577,387	$84,387
4. Internal Labor / Exp.	$291,000	$326,741	$35,741
5. Eversource Supplied Material	$694,618	$304,128	($390,490)
6. Allowances / Contingency	$371,090	$0	($371,090)
7. Property Taxes	$0	$173,753	$173,753
8. Misc. Other	$0	$79,554	$79,554
Total Directs	$5,026,654	$5,895,662	$869,008
9. Indirect	$369,012	$1,212,861	$843,849
10. AFUDC	$4,542	$46,736	$42,194
Total	$5,400,208	$7,155,259	$1,755,051

Justification for Additional Resources

1. Engineering / Project Management / Permitting

To increase the supplier base of Engineering design vendors, Altran, based in New Jersey, was awarded the contract to design the Jackman project. Unfortunately, Altran were not sufficiently experienced to complete the project to the required quality, they had insufficient experience working with Eversource design standards and they lost several key resources to other vendors during the project.

Because of a lack of confidence in Altran, it was decided by the Project team to request Leidos to complete the as-built drawings for the project, this incurred an additional $48,606 which was not anticipated in April 2017. This plus minor forecasting changes result in an increase in Engineering / Project Management and Permitting of $50,212. The project manager will contact Procurement to discuss the possibility of recovering the additional as-built drawing costs from Altran.

Total Incremental Request for Engineering / Project Management and Permitting: $50,212

2. Construction

Because of Altran's lack of engineering design quality, a large amount of engineering in the field was required to meet the design intent and to comply with Eversource standards. This led to the installation contractor having to do additional work beyond what was included in their original scope. Construction costs also increased due to charges to the project that were not forecasted back in April 2017. Change orders, unforecasted charges and a difference in how materials were recorded resulted in an increase in Construction costs by $1,206,959 (See item #5 below for corresponding decrease in Eversource supplied material costs).

Total Incremental Request for Construction: $1,206,959

3. Testing and Commission

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APS 1 - Project Authorization Policy

Supplement Request Form

During construction, it was necessary to extend outages on transformer TB33 and to work several weekends because outages of the 34.5k bus were not granted due to loss of customer load concerns. Weekend and overtime working meant the project incurred additional labor costs from the testing contractor, and lead commissioning engineer.

Total Incremental Request for testing and commissioning: $84,387

4. Labor and Expenses

With the project delays, and additional effort needed to resolve issues with the Altran design, additional internal labor for engineering, site supervision and management was incurred. This includes time spent following one safety incident and one unwanted trip during construction.

Total Incremental Request for Labor and Expenses: $35,741

5. Eversource Supplied Material

As noted in #2 above, some of the increases in Construction charges is offset by a reduction in the Eversource supplied materials forecast. Originally the materials were forecast as Eversource supplied at a cost of $694,618 but much of this was supplied by the Construction contractor which is reflected in the increase in Construction costs above and a commensurate reduction in Eversource supplied materials.

Total Incremental Request for Materials: ($390,490)

6. Allowances / Contingency

The April 2017 forecast included allowances of $371,090 for weather related events, design uncertainty, unforeseen ground conditions and final site remediation costs. These allowances were used to offset the construction increases. The project team is now accounting for this spend in the construction category, so contingency amount in updated total forecast is now zero.

Total Incremental Request for Allowances / Contingency: ($371,090)

7. Property Taxes

The original project estimate and the April 2017 forecast did not include an allowance for property taxes. To the end of 2017, the project has incurred $119,753k in property taxes with an additional $54,000 forecast through April 2018.

Total Incremental Request for property taxes: $173,753

8. Miscellaneous Other

To the end of 2017, the project has incurred $76,554 in Miscellaneous Distribution Expenses Capitalized Overheads ("MDEC"). These additional miscellaneous charges were not forecast in April 2017. Based on charges to date and a rate of 0.015 an additional $3,000 is forecast until the end of April 2018.

Total Incremental Request for Miscellaneous Items: $79,554

9. Indirect costs

In the April 2017 forecast, indirect costs were forecast to be $369k based on the previous estimate in the April 2016 PAF of $325k. To date, the project has incurred $1,063k in adders and is expected to incur an additional $150k to the end of the project. Both the original PAF estimate in April 2016 and Supplemental

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Supplement Request Form

PAF estimate in April 2017 were low. Total increase in indirect costs for this supplement request is $843K

10. AFUDC

in April 2017, AFUDC charges for the project were forecast as $4k. Actual AFUDC charges incurred to date are $35k with an additional $12k forecast for the remainder of the project. Again it is clear that both the original AFUDC estimate and estimate in the April 2017 supplemental PAF were low. Total increase in ADUFC for this supplement request is $42.2k

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplemental Request	Total
Capital Additions – Direct	$5,027	$868	$5,896
Less Customer Contribution	$0	$0	$0
Removals net of Salvage____%	$0	$0	$0
Total Direct Spending	$5,027	$868	$5,896
Capital Additions – Indirect	$369	$843	$1,213
AFUDC	$4.5	$42.5	$47
O&M	$0	$0	$0
Total Request	$5,400	$1,755	$7,155

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	To Date	Year 2018	Year 2019	Total
Capital Additions – Direct	$5,322	$574	$0	$5,896
Less Customer Contribution	$0	$0	$0	$0
Removals net of Salvage____%	$0	$0	$0	$0
Total Direct Spending	$5,322	$574	$0	$5,896
Capital Additions – Indirect	$1,063	$150	$0	$1,213
AFUDC	$34	$12	$0	$47
O&M	$0	$0	$0	$0
Total Request	$6,419	$736	$0	$7,155

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Project Authorization Policy
Operations Project Authorization

Date Prepared: **January 31, 2017**	Project Title: **Jackman Replace Obsolete Equipment**
Company/Companies: **Eversource (NH)**	Project ID Number: **A16C10 / A07X44B2**
Organization: **NH Operations**	Plant Class/(F.P.Type): **Distribution**
Project Initiator: **Thelma Brown**	Project Type: ***Specific*** */ Annual / Prelim Project / Parent*
Project Owner/Manager: **Alan Roe**	Capital Investment Part of Original Operating Plan? **Y** / N
Project Sponsor: **James Eilenberger**	O&M Expenses Part of the Original Operating Plan? Y / N
Current Authorized Amount:**$4,557,000**	Estimated in service date(s): **November 30, 2017**
Supplement Request:**$843,154**	Other:
Total Request: **$5,400,154**	

Project Authorization Supplement Justification

The Project Authorization Form (PAF) for the Jackman Replace Obsolete Equipment project was approved in April 2016. At that time, the project was approved at a cost of $4,557,000 with an in-service date of June 2017. The total project cost was based on direct costs of $4,228,000 with indirect costs of $325,000 and AFUDC of $4,000.

The expected cost to complete the project is now $5,400,154 which is $843,154 above the approved project amount.

	PAF Approved Budget	Current Forecast
Direct	$4,228,000	$5,026,654
Indirect	$325,000	$369,012
AFUDC	$4,000	$4,542
Total	$4,557,000	$5,400,154
Difference	$843,154	

At this stage in the project, the majority of Contracts are in place, with only the following contracts to be awarded:

- electrical testing ($249,069 forecast based on best evaluated bid),
- installation and removal of the mobile substation ($75,000 forecast based on a recent similar installation), and
- site security ($82,000 forecast based on Securitas proposal)
- cost to complete includes $85,000 of specific risk allowances e.g. weather, design uncertainty, site remediation.

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Project Authorization Policy
Operations Project Authorization

Justification for Additional Resources

The project moved in to Construction at the beginning of January. Engineering design had a number of challenges (lack of available drawings, re-design of equipment, late changes to scope, etc.). Construction is also expected to be challenging due to the complexity of the project, the potential for buried equipment not shown on drawings, availability of outages, complex cut-over requirements, etc. The current planned in-service date is now November 2017 due to outage unavailability in the summer.

Explanation for Cost Increase

Materials - The main construction contract was awarded to ES Boulos as the best evaluated bidder following a formal bidding process. As is typical, construction pricing was requested based on the 70% design and bill of materials. Once the IFC drawings were issued a large difference between the bill of materials was identified.

Estimated Cost Increase $261,090

Lead Commissioning Engineer - During the development of the project, the project team requested that an independent Lead Commissioning Engineer be brought onboard. The cut-over sequence from the old control house is extremely complex and an experienced commissioning engineer was considered prudent. Commissioning was included in the forecast, but the use of an LCE was not included in the original PAF estimate. After an RFP process, the T&M contract was awarded to EIG as the best evaluated bidder but prices for the LCE services came in much higher than anticipated.

Estimated Cost Increase $150,000

Contaminated Soils - The main construction contract was awarded to ES Boulos as the best evaluated bidder following a formal bidding process. While the contract price was in-line with the anticipated cost an allowance of $25,000 was also included in the PO amount for the removal of contaminated soils. The removal cost for the soils is now estimated to be $40,000 ($35,000 for transportation and $5,000 for disposal).

Estimated Cost Increase $15,000

Site Security - During the previous Transmission project at Jackman, there were three incidents of thefts of material from site. To reduce the risk during this project it was proposed to use a security guard during nights and weekends. This activity was not specifically included in the PAF forecast. Securitas has submitted a proposal for $82,000 for this work. This contract is not yet awarded but is included in the current forecast. The risk of theft will be managed by securing material in locked Conex boxes and by arranging delivery of materials on a just-in-time basis.

Estimated Cost Increase $82,000

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Project Authorization Policy
Operations Project Authorization

Owner's Engineer - During the engineering design process, the P&C Engineering group requested that the services of an Owner's Engineer be contracted to review the P&C drawings due to a lack of internal resources. This work was directly awarded to one of the of-choice vendors (HDR). While the engineering reviews were included in the original direct labor costs the Owner's Engineer T&M contract increased the Outside Services element of the project.

Estimated Cost Increase $50,000

Mobile Substation - During the development of the project, it was realized that the installation and removal of the mobile substation would be required to support the TB61 and TB33 outages. The cost to tap-up and remove the mobile substation was not included in the original PAF estimate and although the contract has yet to be let $75,000 is forecast for this activity based on a similar recent installation at Whitefield. This is anticipated to be a fixed price contract.

Estimated Cost Increase $75,000

Additional Engineering – During the engineering design process, a number of additional owner directed tasks were assigned to the Engineering vendor (Altran). One of the changes related to the provision of new revenue metering to support generation divestiture. This was not included in the original scope of work or the PAF estimate. Additional tasks such as an analysis of the station lighting and lightning protection was also requested as these studies were not available. The two Altran change orders together were $77,150.

Estimated Cost Increase $77,150

Indirects / AFUDC - In addition to the increase in direct costs, Indirect and AFUDC charges have also been estimated to increase by $44,500 based on the ratio of direct and indirect costs in the original PAF estimate.

Estimated Cost Increase $44,500

Summary

Activity	Estimated Cost Increase
Materials	$261,090
Lead Commissioning Engineer	$150,000
Contaminated Soils	$15,000
Site Security	$82,000
Owner's Engineer	$50,000
Mobile Substation	$75,000
Additional Engineering	$77,100
Indirects / AFUDC	$44,500
Total	**$754,690**

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Project Authorization Policy
Operations Project Authorization

The $754,690 increase represents the worst case scenario at this stage. It assumes that:

- all additional materials cost is required;
- site security will be needed for the full duration of construction;
- HDR will charge to the full amount of their PO for design reviews;
- EIG will charge to the full amount of their PO for commissioning support;
- the mobile installation charges will be $75,000; and
- soil removal transportation and disposal costs are capped at 1,000 tons.

Project Authorization Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 4,228,000	$ 798,600	$ 5,026,600
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 4,228,000	$ 798,600	$ 5,026,600
Capital Additions - Indirect	325,000.00	44,012.00	369,012.00
AFUDC	4,000.00	542.00	4,542.00
Total Capital Request	$ 4,557,000	$ 843,154	$ 5,400,154
O&M	-	-	-
Total Request	**$ 4,557,000**	**$ 843,154**	**$ 5,400,154**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 798,600	$ -	$ -	$ 798,600
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 798,600	$ -	$ -	$ 798,600
Capital Additions - Indirect	44,012.00	-	-	44,012.00
AFUDC	542.00	-	-	542.00
Total Capital Request	$ 843,154	$ -	$ -	$ 843,154
O&M	-	-	-	-
Total Request	**$ 843,154**	**$ -**	**$ -**	**$ 843,154**

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: 02/18/2016	Project Title: Replace Jackman OCB
Company: Eversource NH	Project ID Number: A07X44A
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Thelma Brown	Project Category: Reliability
Project Owner/Manager: Alan Roe	Project Type: Specific
Project Sponsor: James Eilenberger	Project Purpose: part of regulatory tracked program? N
Estimated in service date: 06/1/2017	Capital Investment Part of Original Operating Plan? Y
If Transmission Project: PTF / Non-PTF / N/A	Supplement to Existing Authorization? Y
	O&M Expenses Part of the Original Operating Plan? N

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

This project addresses the replacement of obsolete equipment programs specifically replacing Oil Circuit Breakers (OCB). A total of ten (10) substation project work orders have been written under this project. Nine of the projects have been completed for $4,030,544. The last work order for this project is for Jackman Substation. When the Jackman work order was initiated in 2014 the plan was to replace four oil circuit breakers, a capacitor switch, and two relays at Jackman for $2,400,000.

In early 2015 the decision was made to divest from generation. Currently all relays and controls for the distribution equipment at Jackman SS is in the generation power house. Once divestiture was announced it was determined that the scope of the work at Jackman should be increased to include the removal of distribution relaying from the generation control house, replacement of electromechanical relays, reconfiguration of substation bus work, and building a new distribution control house.

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized*	Prior Spend*	2016	2017+	Totals	Supplemental Authorization*
Capital Additions - Direct	$	$	$3,303	$1,085	$4,388	$*
Customer Contribution	$	$	$0	$0	$0	$0
Removals net of Salvage	$	$	$33	$26	$59	$0
Total - Direct Spending	$	$	$3,337	$1,111	$4,448	$0
Capital Additions - Indirect	$	$	$703	$286	$989	$0
Subtotal Request	$	$	$4,040	$1,397	$5,437	$7,656
AFUDC	$	$	$0	$0	$0	$0
Total Request	$2,250 (1)	$4,469 (2)	$4,040	$1,397	$5,437	$7,656 (3)

(1) Only the total for the Prior Authorized amount is shown. The last approved revision for this project was for $2,250,447 which was the 2015 budget amount authorized on 3/24/15
(2) Only the total for the Prior Spend 2011 - 2015 amount is shown. The previous spending on this project was for ten separate work orders. A total of $4,469,449 has been spent at ten substations to date.
(3) Only the total request for the Supplemental Authorization is shown. This is the amount to complete the Jackman SS work order. The Total Request for the Supplemental Authorization is the amount spent and required for the Jackman work order above the amount approved in Power Plan 3/24/15.It is the amount above the currently authorized amount: $4,469 + $5,437 - $2,250 = $7,656

* to be completed if supplemental authorization is required

Summary Project Description

Circuit Breaker Replacement

At Jackman substation four existing 34.5kV oil circuit breakers (313, 3173, 311 & 3140) will be removed and replaced with Siemens type SDV7 vacuum breakers. The table below shows the ages of the circuit breakers along with their replacement priority out of 127 breakers on the system.

OCB	Age	Rank
Line Breaker 313	60	28
Line Breaker 3173	60	33
Line Breaker 311	45	65
Line Breaker 3140	41	91

To facilitate the future separation of generation and distribution assets, a new 34.5kV bay will be installed adjacent to the 313 line position and the 313 and 3173 line positions will each shift south one position. This shift will generate sufficient space to create a fenced compound for the existing GSU transformer.

Capacitor Switcher Replacement

In addition to the circuit breaker replacement, the existing C22 vacuum capacitor switcher will be removed, relocated and replaced with a new Southern States Cap-switcher along with two sets of new current transformers (CTs). The existing capacitor vacuum switcher outdoor relays and

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Accounting Policy Statement No. 2
Operations Project Authorization

outdoor relay cabinet will be removed and new protection equipment will be installed inside a new control house (see below). To provide better access to the site, the existing C22 cap bank will also be removed and relocated so that the existing overhead strain bus that feeds it can be removed. A replacement 5.4MVAR capacitor bank mounted on a 10.8MVAR rack will be installed.

The vacuum capacitor switch is part of a targeted program for replacement. Additionally, to separate the Distribution assets from generation assets the capacitor switch and bank need to be relocated. This relocation has the added benefit of opening up access to the yard on the north side of the substation.

To allow for the installation of a future bus tie breaker, the existing station service transformer will also be relocated to the ends of the 34.5kV bus.

Construction of Control House
With the need to update the control equipment associated with the circuit breaker and capacitor switcher replacements and the need to provide new directional phase and ground overcurrent protection on line positions 313, 3173, 311 and 3140 it was decided that with the impending physical separation of the Eversource distribution and transmission equipment from the generation equipment that a new control house should be constructed.

The protection and control cabinets for the 313, 3713, 311 and 3140 feeder breakers, transformer TB33 & TB61, circuit switchers J33 & J61 and capacitor switcher C22 will be added in the new control house. The GSU transformer breaker TB9 protection and control cabinet will also be added in the new control house.

To accommodate the new control house, the existing TB61 34.5kV strain bus will be relocated using a new underground feed (2-1000kcmil Al).

A new annunciator/communication cabinet, GPS clock, Teletone line sharing switch, dial-up modem and communication processor will also be included in the new control house. A new GE type D20MX RTU cabinet will be installed to control the Distribution equipment, the existing RTU in the hydro control house will remain to control the hydro generation equipment.

Project Authorization

Approver	Approver Name	Approver Signature	Date
Project Initiator	Thelma Brown		
Project Manager	Alan Roe		
Plant Accounting	Frank Errato, Jr.		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

Overall Justification

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Accounting Policy Statement No. 2
Operations Project Authorization

This project will address the replacement of targeted obsolete equipment – OCBs, electromechanical relays, and capacitor switchers. It is also required to address the divestiture of generation and separation from generation assets.

Project Scope

Replace 4 Oil Circuit Breakers, electromechanical relays and capacitor switcher. Construct a new control house and reconfigure for separation of generation assets. Reconfiguration includes relocating one breaker and capacitor bank, including steel structure additions and removals.

Project Objectives

Replace obsolete equipment, facilitate the segregation of generation assets, maintain reliability to customers. Reduce the amount of oil on site adjacent to the river.

Business Process and / or Technical Improvements:

Targeted obsolete equipment replacement programs. Remove 4 of the 127 34.5kV oil circuit breakers on the system identified to be replaced.
Generation divestiture. Separation of distribution assets from generation assets is targeted to be complete by the completion of divestiture in 2017.

Assumptions

It is assumed that the proposed control house can be constructed by undergrounding the existing strain bus and extending the existing fence line. It is assumed that only local permitting is required and these permits will be readily granted.

Alternatives Considered

There is a transmission control house that was built in 2008. Adding distribution relay and control equipment in the transmission control house was considered but this would require expansion of the control house. The transmission control house is situated alongside the river and there is insufficient room to expand plus the Transmission control house is located inside the 500 year flood zone. For these reasons it was decided to build a new distribution control house outside of the flood zone.

Only replace the OCB as a part of the targeted program. This would leave all relay and control functions in the generation control house. Additionally, the generation control house is small and crowded. Leaving Eversource equipment where it can be operated or damaged by the new generation owner is not preferred.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Engineering RFP	02/01/16
Engineering Award	03/29/16
Engineering Complete	08/29/16
Construction Start	09/01/16
In-service date	06/01/17

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Accounting Policy Statement No. 2
Operations Project Authorization

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$106	$81	$0	$187
Overtime Labor	$0	$0	$0	$0
Outside Services	$2,501	$1,020	$0	$3,522
Materials	$550	$0	$0	
Other, including contingency amounts (describe)	$179	$10	$0	$186
Total	$3,337	$1,111	$0	$4,448

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)	$703	$286	$0	$989
Capitalized interest or AFUDC, if any	0	0	$0	$0
Total	$703	$286	$0	$989

Total Capital Costs	$4,040	$1,397	$0	$5,437
Total O&M Costs	0	0	$0	$0
Total Project Costs	$4,040	$1,397	$0	5,437

Note: Explain unique payment provisions, if applicable

Regulatory Approvals

Anticipated Permits:

- NHDES - Shoreland Permit
- Town of Hillsborough Planning Board - Site Plan Approval
- NH Public Utilities Commission - License to Construct and Maintain Electric Line over Public Waters

Risks and Risk Mitigation Plans

There is a risk that local planning board approval is not forthcoming. To mitigate this risk we have engaged TF Moran to facilitate all of the permitting activities on behalf of Eversource.

The site is congested with little room for establishing site cabins, material laydown areas, etc. It is hoped that existing generation land could be used but in the event this is not available other local property may need to be leased for the duration of the project.

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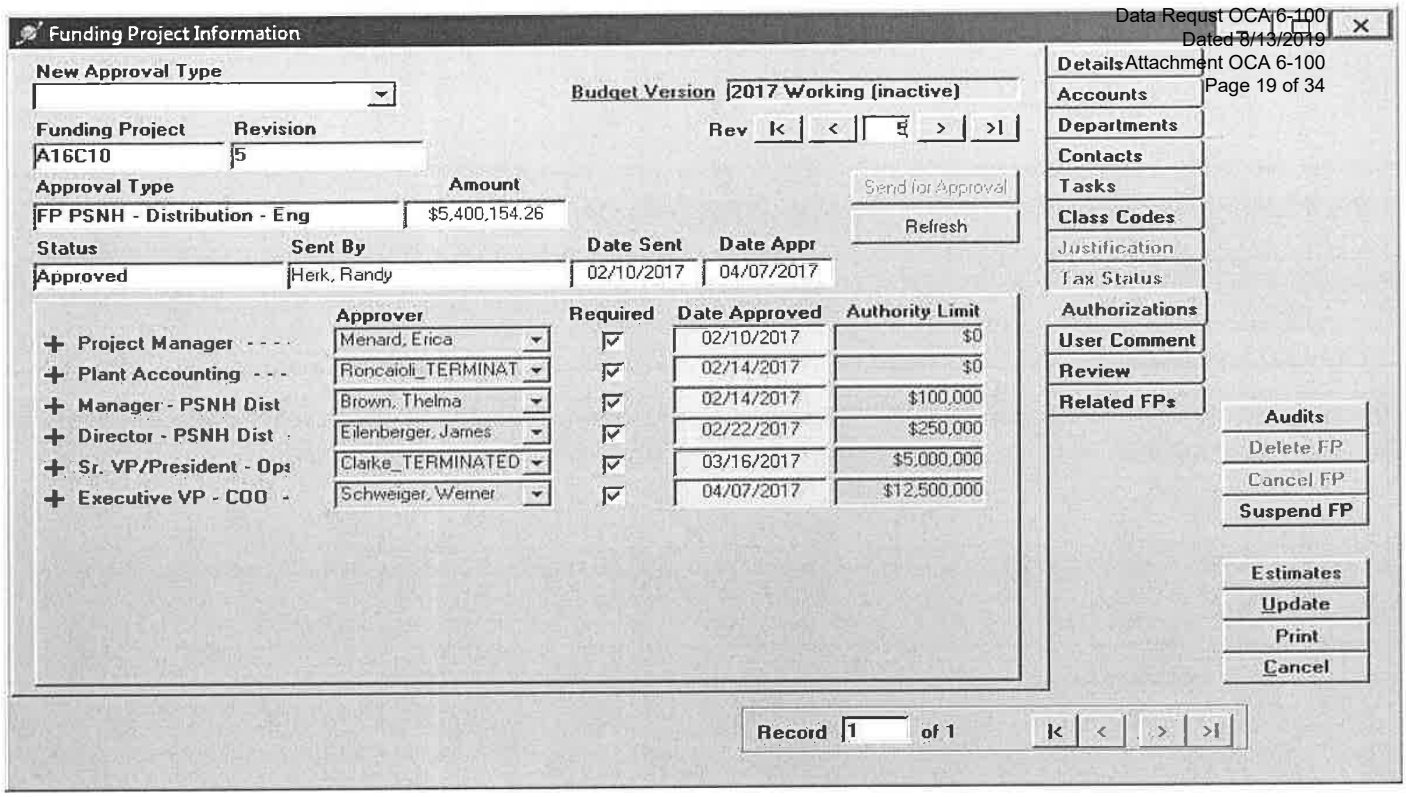
Accounting Policy Statement No. 2
Operations Project Authorization

The project timescales are short, any delays to the engineering design or review cycles may impact on the ability to meet the construction schedule. Regular project team meetings will track progress against milestones and the schedule or resources will be adjusted to meet schedule dates.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A16C10
Revision
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Date Sent
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Date Appr
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Brown, Thelma
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Director - PSNH Dist
Eilenberger, James
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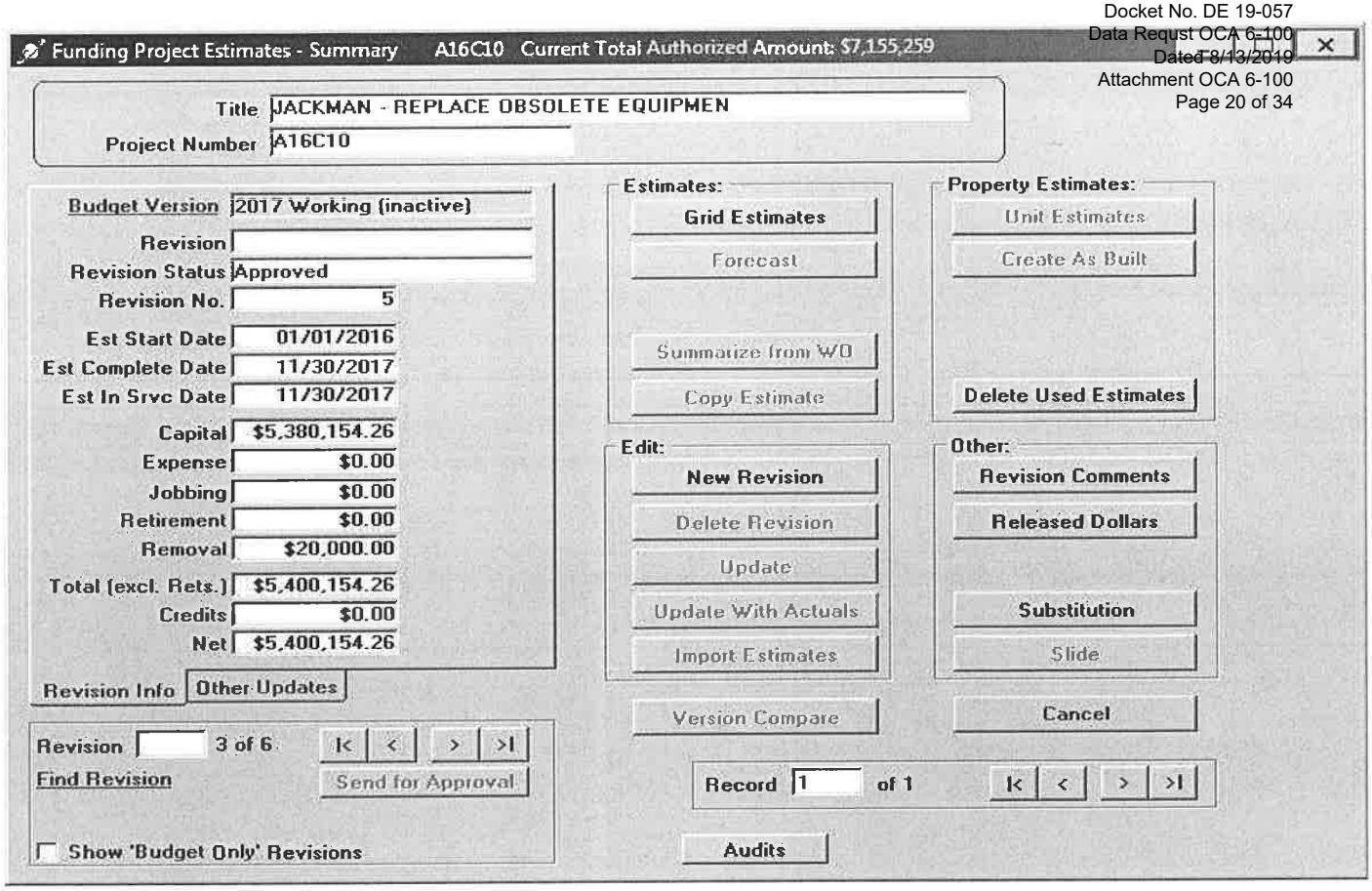
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Project Number A16C10
Budget Version 2017 Working (inactive)
Revision
Revision Status Approved
Revision No. 5
Est Start Date 01/01/2016
Est Complete Date 11/30/2017
Est In Srvc Date 11/30/2017
Capital $5,380,154.26
Expense $0.00
Jobbing $0.00
Retirement $0.00
Removal $20,000.00
Total (excl. Rets.) $5,400,154.26
Credits $0.00
Net $5,400,154.26
Revision Info
Other Updates
Revision 3 of 6
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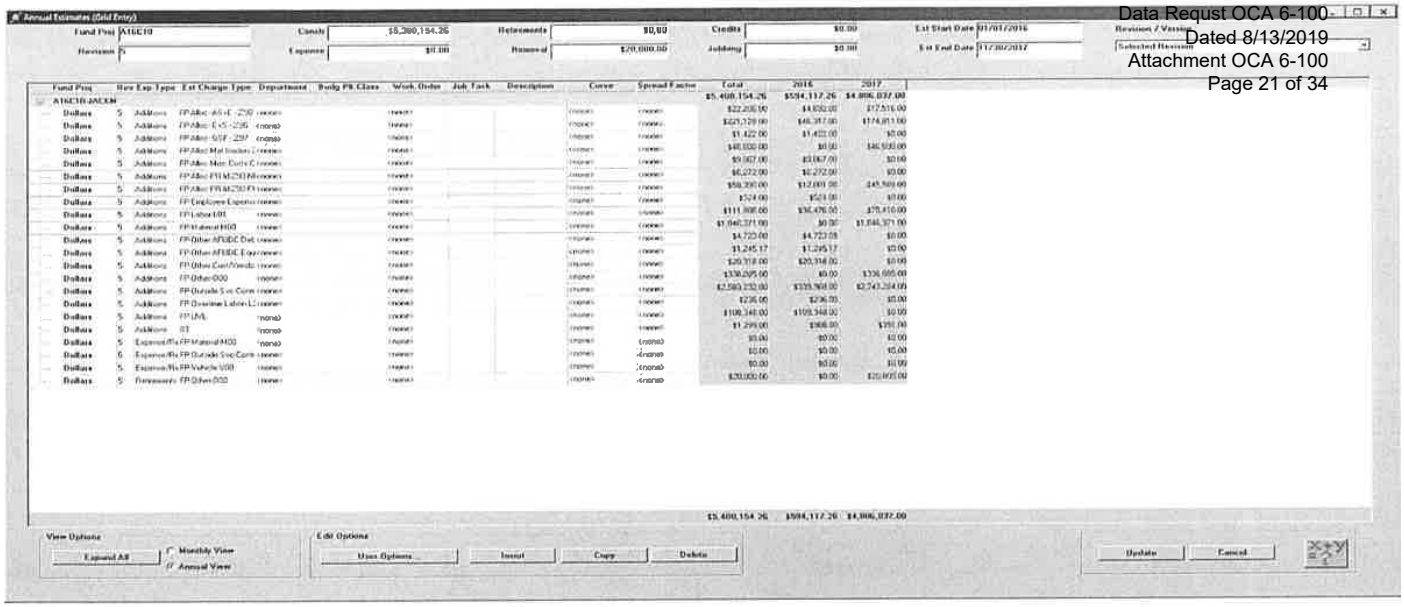
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2017
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Annual View
Edit Options
User Options
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Copy
Delete
Update
Cancel

Date Prepared: **February 9, 2017**	Project Title: **Jackman Replace Obsolete Equipment**
Company/Companies: **Eversource (NH)**	Project ID Number: **A16C10 / A07X44B2**
Organization: **NH Operations**	Plant Class/(F.P.Type): **Distribution**
Project Initiator: **Thelma Brown**	Project Type: ***Specific*** */ Annual / Prelim Project / Parent*
Project Owner/Manager: **Alan Roe**	Capital Investment Part of Original Operating Plan? **Y** / N
Project Sponsor: **James Eilenberger**	O&M Expenses Part of the Original Operating Plan? Y / N
Current Authorized Amount:**$4,557,000**	Estimated in service date(s): **November 30, 2017**
Supplement Request:**$843,154**	Other:
Total Request: **$5,400,154**	

Project Authorization Supplement Justification

The Project Authorization Form ("PAF") for the Jackman Replace Obsolete Equipment project was approved in April 2016. At that time, the project was approved at a cost of $4,557,000 with an in-service date of June 2017. The project estimate was based on direct costs of $4,228,000 with indirect costs of $325,000 and AFUDC of $4,000.

The expected cost to complete the project is now $5,400,154 which is $843,154 above the approved project amount.

$,000	PAF Approved Budget	Current Forecast
Direct	$4,228	$5,027
Indirect	$325	$369
AFUDC	$4	$4.5
Total	$4,557	$5,400
Difference	$843	

At this stage in the project, the majority of Contracts are in place, with only the following contracts to be awarded:

- electrical testing ($249,069 forecast based on best evaluated bid),
- installation and removal of the mobile substation ($75,000 forecast based on a recent similar installation), and
- site security ($82,000 forecast based on Securitas proposal)

Justification for Additional Resources

The project moved in to Construction at the beginning of January. Engineering design had a number of challenges (lack of available drawings, re-design of equipment, late changes to scope, etc.). Construction is also expected to be challenging due to the complexity of the project, the potential for buried equipment not shown on drawings, availability of outages, complex cut-over requirements, etc. The current planned in-service date is now November 2017 due to outage unavailability in the summer.

Explanation for Cost Increase

Materials & Labor - The main construction contract was awarded to ES Boulos as the best evaluated bidder following a formal bidding process. As is typical, construction pricing was requested based on the 70% design and bill of materials. Once the Issued for Construction ("IFC") drawings were issued a large difference between the bill of materials was identified leading to an increase in both material and installation costs (material $93,454; installation $167,636).

Estimated Cost Increase $261,090

Lead Commissioning Engineer - During the development of the project, the project team requested that an independent Lead Commissioning Engineer be brought onboard. The cut-over sequence from the old control house is extremely complex and an experienced commissioning engineer was considered prudent. Commissioning was included in the forecast, but the use of an LCE was not included in the original PAF estimate. After an RFP process, the T&M contract was awarded to EIG as the best evaluated bidder but prices for the LCE services came in much higher than anticipated.

Estimated Cost Increase $150,000

Contaminated Soils - The main construction contract was awarded to ES Boulos as the best evaluated bidder following a formal bidding process. While the contract price was in-line with the anticipated cost, an allowance of $25,000 was also included in the PO amount for the removal of contaminated soils. The removal cost for the soils is now estimated to be $40,000 ($35,000 for transportation and $5,000 for disposal).

Estimated Cost Increase $15,000

Site Security - During the previous Transmission project at Jackman, there were three incidents of thefts of material from site. To reduce the risk during this project it was proposed to use a security guard during nights and weekends. This activity was not specifically included in the PAF forecast. Securitas has submitted a proposal for $82,000 for this work. This contract is not yet awarded but is included in the current forecast. The risk of theft will be managed by securing material in locked Conex boxes and by arranging delivery of materials on a just-in-time basis.

Estimated Cost Increase $82,000

Owner's Engineer - During the engineering design process, the P&C Engineering group requested that the services of an Owner's Engineer be contracted to review the P&C drawings due to a lack of internal resources. This work was directly awarded to one of the of-choice vendors (HDR). While the engineering reviews were included in the original direct labor costs the Owner's Engineer T&M contract increased the Outside Services element of the project.

Estimated Cost Increase $50,000

Mobile Substation - During the development of the project, it was realized that the installation and removal of the mobile substation would be required to support the TB61 and TB33 outages. The cost to tap-up and remove the mobile substation was not included

in the original PAF estimate and although the contract has yet to be let $75,000 is forecast for this activity based on a similar recent installation at Whitefield. This is anticipated to be a fixed price contract.

Estimated Cost Increase $75,000

Additional Engineering – During the engineering design process, a number of additional owner directed tasks were assigned to the Engineering vendor (Altran). One of the changes related to the provision of new revenue metering to support generation divestiture. This was not included in the original scope of work or the PAF estimate. Additional tasks such as an analysis of the station lighting and lightning protection was also requested as these studies were not available. The two Altran change orders together were $77,150

Estimated Cost Increase $77,150

Miscellaneous – A small amount of contingency was included in the electrical / civil installation contract to cover foreseeable risks such as adverse weather, site remediation, design changes, etc.

Estimated Cost Increase $88,454

Indirects / AFUDC - In addition to the increase in direct costs, Indirect and AFUDC charges have also been estimated to increase by $44,500 based on the ratio of direct and indirect costs in the original PAF estimate.

Estimated Cost Increase $44,500

Summary

Activity	Estimated Cost Increase
Materials	$261,090
Lead Commissioning Engineer	$150,000
Contaminated Soils	$15,000
Site Security	$82,000
Owner's Engineer	$50,000
Mobile Substation	$75,000
Additional Engineering	$77,100
Miscellaneous	$88,454
Indirects / AFUDC	$44,500
Total	**$843,154**

The $843,154 increase represents the worst case scenario at this stage. It assumes that:

- all additional material and installation costs are required;
- site security will be needed for the full duration of construction;
- HDR will charge to the full amount of their PO for design reviews;
- EIG will charge to the full amount of their PO for commissioning support;
- the mobile installation charges will be $75,000; and
- soil removal transportation and disposal costs are capped at 1,000 tons.

Project Authorization Supplement Cost Summary

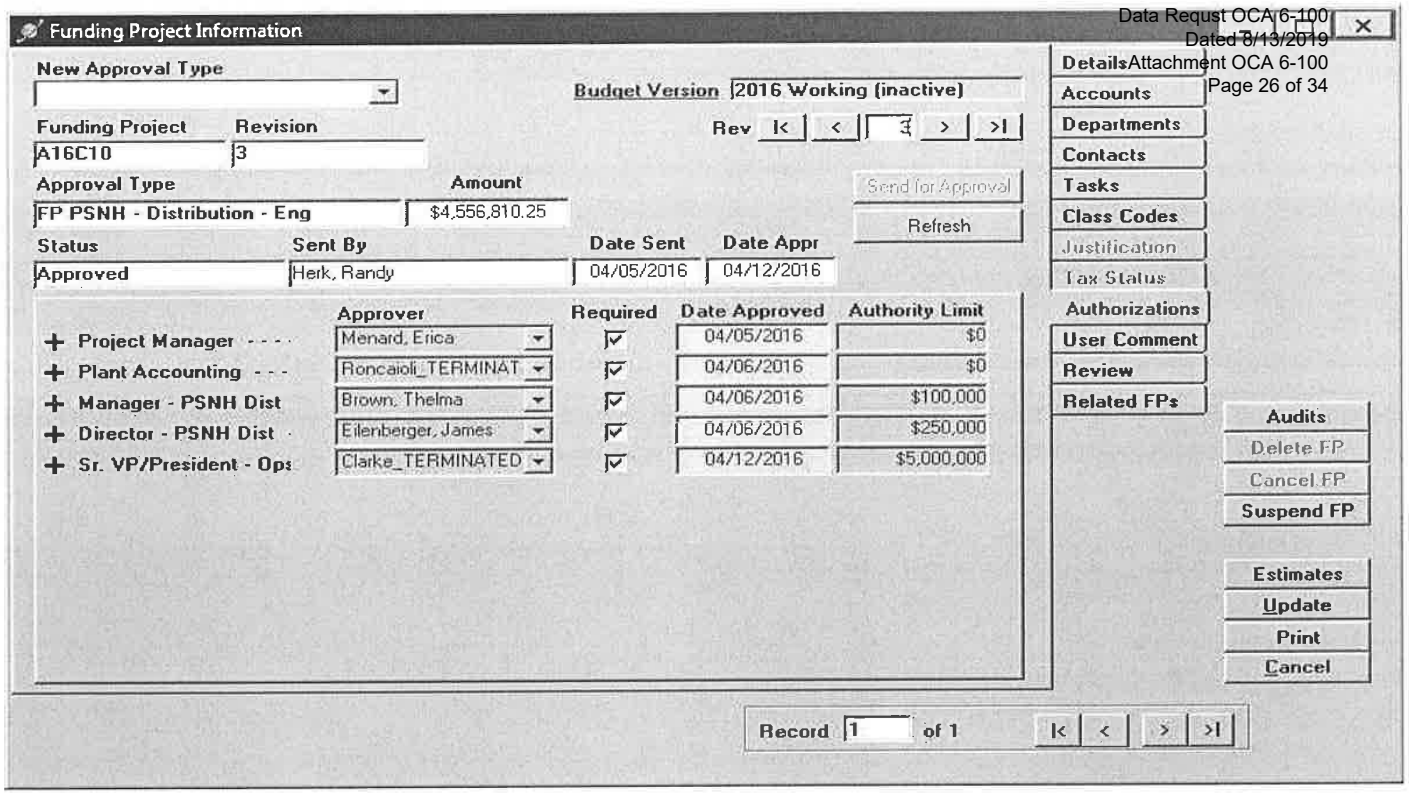
Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 4,228	$ 799	$ 5,027
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 4,228	$ 799	$ 5,027
Capital Additions - Indirect	325.00	44.00	369.00
AFUDC	4.00	0.54	4.54
Total Capital Request	$ 4,557	$ 843	$ 5,400
O&M	-	-	-
Total Request	**$ 4,557**	**$ 843**	**$ 5,400**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 799	$ -	$ -	$ 799
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 799	$ -	$ -	$ 799
Capital Additions - Indirect	44.00	-	-	44.00
AFUDC	0.54	-	-	0.54
Total Capital Request	$ 843	$ -	$ -	$ 843
O&M	-	-	-	-
Total Request	**$ 843**	**$ -**	**$ -**	**$ 843**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Budget Version 2016 Working (inactive)
Rev
Funding Project
A16C10
Revision
3
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FP PSNH - Distribution - Eng
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Send for Approval
Refresh
Status
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Sent By
Herk, Randy
Date Sent
04/05/2016
Date Appr
04/12/2016
Approver
Required
Date Approved
Authority Limit
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Menard, Erica
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Brown, Thelma
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Eilenberger, James
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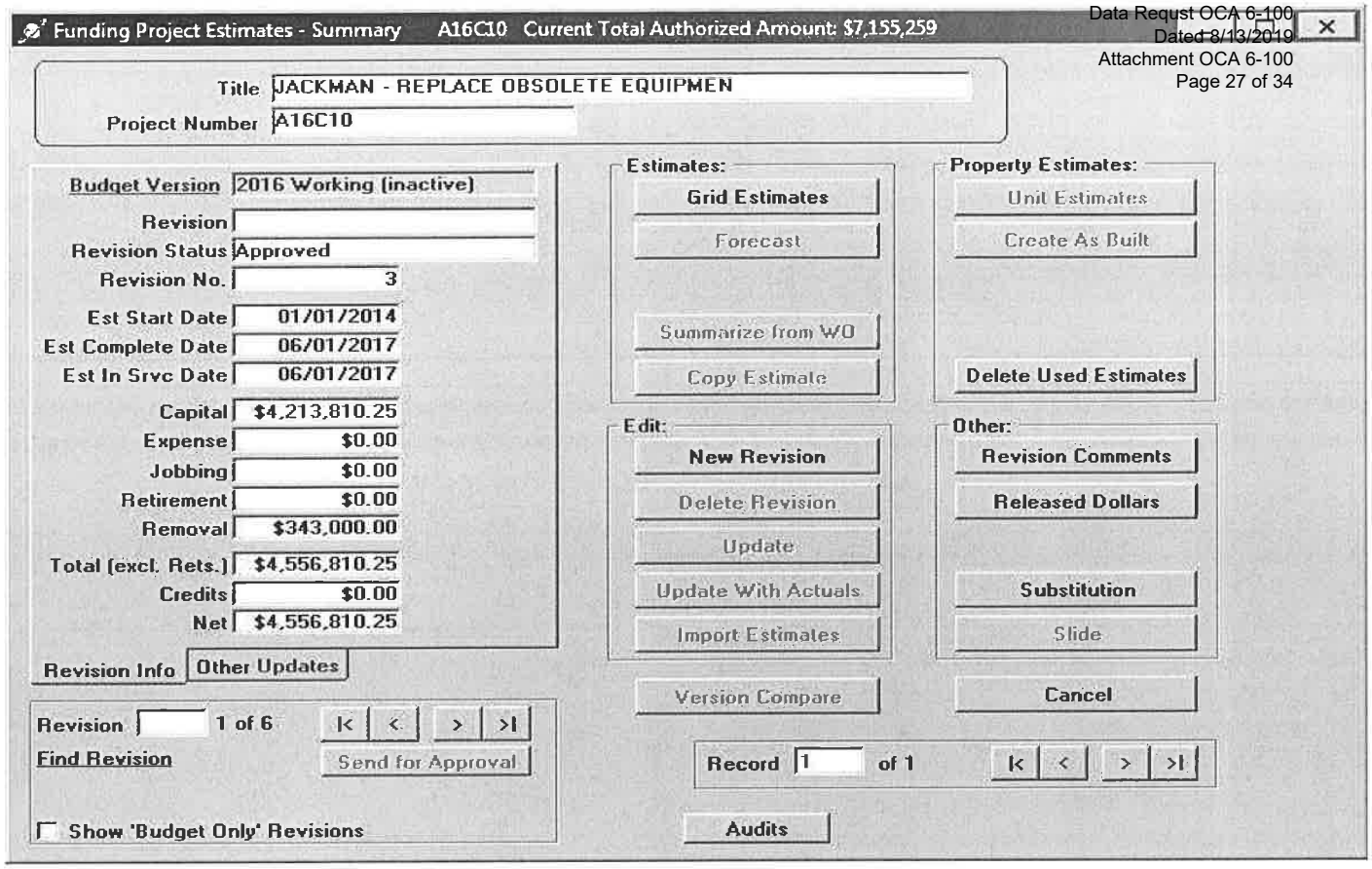
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Project Number A16C10
Budget Version 2016 Working (inactive)
Revision
Revision Status Approved
Revision No. 3
Est Start Date 01/01/2014
Est Complete Date 06/01/2017
Est In Srvc Date 06/01/2017
Capital $4,213,810.25
Expense $0.00
Jobbing $0.00
Retirement $0.00
Removal $343,000.00
Total (excl. Rets.) $4,556,810.25
Credits $0.00
Net $4,556,810.25
Revision Info
Other Updates
Revision 1 of 6
Find Revision
Send for Approval
Show 'Budget Only' Revisions
Estimates:
Grid Estimates
Forecast
Summarize from WO
Copy Estimate
Property Estimates:
Unit Estimates
Create As Built
Delete Used Estimates
Edit:
New Revision
Delete Revision
Update
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Import Estimates
Other:
Revision Comments
Released Dollars
Substitution
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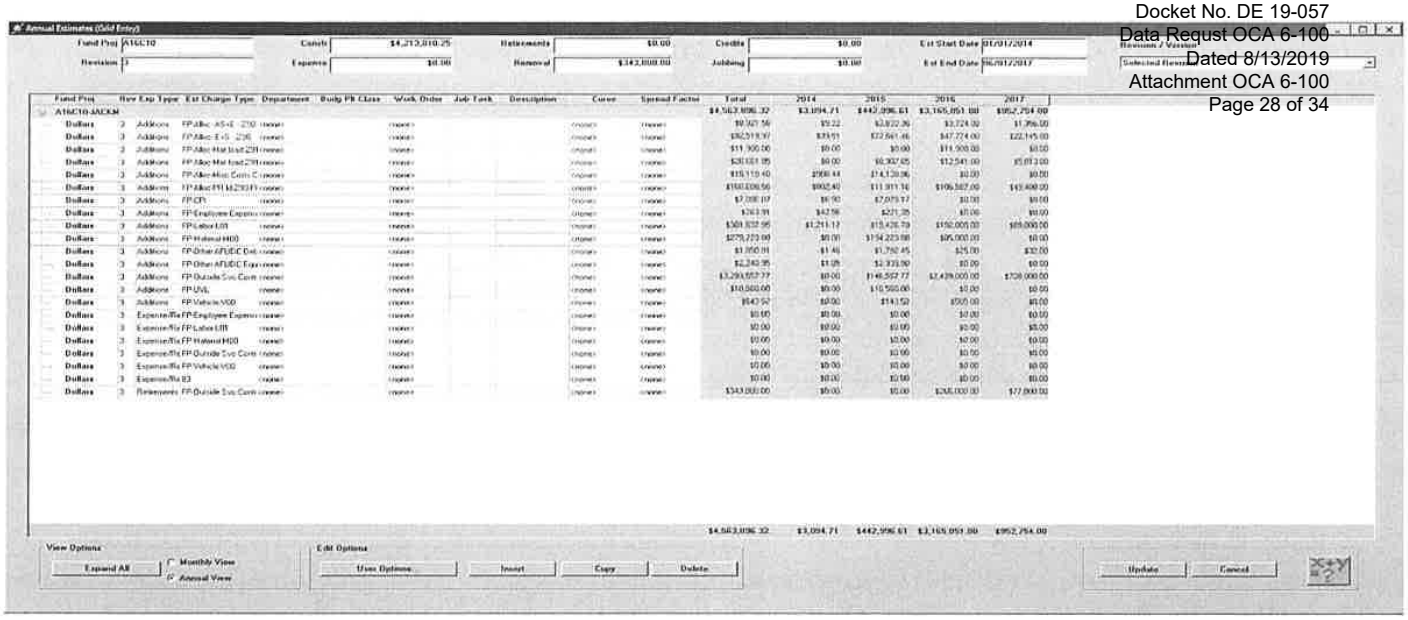
Version Compare
Cancel
Record 1 of 1
Audits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Revision 3
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Expenses $0.00
Retirements $0.00
Removal $342,000.00
Credits $0.00
Jobbing $0.00
Est Start Date 01/01/2014
Est End Date 06/01/2017
Revisions / Version
Selected Revision
Fund Proj
New Exp Type
Est Charge Type
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Budg Plt Class
Work Order
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Description
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2016
2017
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Dollars
Additions
Retirements
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FP Labor Util
FP Material H00
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FP Vehicle V00
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Monthly View
Annual View
Edit Options
View Options
Insert
Copy
Delete
Update
Cancel

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: 03/30/2016	Project Title: Jackman – Replace Obsolete Equipment
Company: Eversource NH	Project ID Number: A16C10
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Thelma Brown	Project Category: Reliability
Project Owner/Manager: Alan Roe	Project Type: Specific
Project Sponsor: James Eilenberger	Project Purpose: Part of Regulatory Tracked Program? N
Estimated in service date: 06/1/2017	Capital Investment Part of Original Operating Plan? Y
If Transmission Project: N/A	Supplement to Existing Authorization? Y
	O&M Expenses Part of the Original Operating Plan? N

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

This project addresses Generation Divestiture issues and the replacement of obsolete equipment at Jackman S/S. When the Jackman S/S work order was originally initiated in 2014, the plan was to replace four oil circuit breakers under the annual OCB Breaker Replacement Project A07X44A for $1,615,000 of direct charges. The replacement of a capacitor switch and two relays was also included as they are part of targeted obsolete equipment programs.

In early 2015 the decision was made to divest from generation. Currently all relays and controls for the distribution equipment at Jackman S/S are in the generation power house. Once divestiture was announced it was determined that the scope of the work at Jackman S/S should be increased to include the removal of distribution relaying from the generation control house, replacement of electromechanical relays, reconfiguration of some substation bus work and building a new distribution control house which will provide the desired physical separation between the generation facilities and distribution facilities. This additional work increased the cost of the project to $4,557,000.

This project is being initiated in order to make the Jackman S/S project a stand-alone project and remove it from the annual OCB Breaker Replacement Project. Spending prior to 2016 ($439K) was for preliminary engineering and materials (Circuit breakers) and was transferred to this new specific Project Number (A16C10).

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized*	Prior Spend*	2016	2017+	Totals	Supplemental Authorization*
Capital Additions - Direct	$	$ 372	$2,716	$797	$3,885	$0
Customer Contribution	$	$	$0	$0	$0	$0
Removals net of Salvage	$	$	$266	$77	$343	$0
Total - Direct Spending	$1,615	$ 372	$2,982	$874	$4,228	$3,205
Capital Additions - Indirect	$	$ 63	$183	$79	$325	$0
Subtotal Request	$	$ 435	$3,165	$953	$4,553	$0
AFUDC	$	$ 4	$0	$0	$4	$0
Total Request	$	$439	$3,165	$953	$4,557	$0

* to be completed if supplemental authorization is required

Summary Project Description

Circuit Breaker Replacement

At Jackman S/S four existing 34.5kV oil circuit breakers (313, 3173, 311 & 3140) will be removed and replaced with Siemens type SDV7 vacuum breakers. The table below shows the ages of the circuit breakers along with their replacement priority out of 127 breakers left on the system.

OCB	Age	Rank
Line Breaker 313	60	28
Line Breaker 3173	60	33
Line Breaker 311	45	65
Line Breaker 3140	41	91

To facilitate the future separation of generation and distribution assets, a new 34.5kV bay will be installed adjacent to the 313 line position and the 313 and 3173 line positions will each shift south one position. This shift will generate sufficient space to create a fenced compound for the existing GSU transformer.

Capacitor Switcher Replacement

The vacuum capacitor switch is part of a targeted program for replacement. Additionally, to separate the Distribution assets from generation assets the capacitor switch and bank need to be relocated. This relocation has the added benefit of opening up access to the yard on the north side of the substation. Therefore, the existing C22 vacuum capacitor switcher (Allis Chalmers VSC-34) will be removed, relocated and replaced with a new Southern States Cap-switcher along with two sets of new current transformers (CTs). The existing capacitor vacuum switcher outdoor relays and outdoor relay cabinet will be removed and new protection equipment will be installed inside a new control house (see below). Another reason the existing C22 cap bank needs to be removed and relocated is so that the existing overhead strain bus that feeds it can be removed. A replacement 5.4MVAR capacitor bank will be installed.

To allow for the installation of a future bus tie breaker, the existing station service transformer will also be relocated to the ends of the 34.5kV bus.

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Accounting Policy Statement No. 2
Operations Project Authorization

Construction of Control House

With the need to update the control equipment associated with the circuit breaker, capacitor switcher replacements and the need to provide new directional phase and ground overcurrent protection on line positions 313, 3173, 311 and 3140, it was decided that with the impending physical separation of the Eversource distribution and transmission equipment from the generation equipment that a new control house should be constructed.

The protection and control cabinets for the 313, 3713, 311 and 3140 feeder breakers, transformer TB33 & TB61, circuit switchers J33 & J61 and capacitor switcher C22 will be added in the new control house. The GSU transformer breaker TB9 protection and control cabinet will also be added in the new control house.

To accommodate the new control house, the existing TB61 34.5kV strain bus will be relocated using a new underground feed (2-1000kcmil Al).

A new annunciator/communication cabinet, GPS clock, Teletone line sharing switch, dial-up modem and communication processor will also be included in the new control house. A new GE type D20MX RTU cabinet will be installed to control the Distribution equipment, the existing RTU in the hydro control house will remain to control the hydro generation equipment.

Summary Project Description Table

($000)	Total Project Costs	Amount in Operating Plan	Difference
Capital	$4,557	$5,437	($880)
O&M	$0	$0	$0
Total	$4,557	$5,437	($880)

The $5,437K amount in the operating plan was for project #A07X44A, the annual OCB Breaker Replacement Project. This new project A16C10 reflects the funding for A07X44A being transferred in addition to the $430K that was spent on the Jackman S/S work order prior to 2016.

Project Authorization

Approver	Approver Name	Approver Signature	Date
Project Initiator	Thelma Brown		
Project Manager	Alan Roe		
Plant Accounting	Michele Roncaioli		
Manager- S/S Design	Thelma Brown		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

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Accounting Policy Statement No. 2
Operations Project Authorization

Overall Justification

This project addresses the replacement of targeted obsolete equipment including OCBs, electromechanical relays, and capacitor switchers. It is also required to address the divestiture of generation and separation of distribution and generation assets.

Project Scope

Replace 4 Oil Circuit Breakers, electromechanical relays and capacitor switcher. Construct a new control house and reconfigure for separation of generation assets. Reconfiguration includes relocating one breaker and capacitor bank, including steel structure additions and removals.

Project Objectives

Replace obsolete equipment, facilitate the segregation of generation assets, maintain reliability to customers. Reduce the amount of oil on site adjacent to the river.

Business Process and / or Technical Improvements

Targeted obsolete equipment replacement programs- Remove 4 of the 127 34.5kV oil circuit breakers left on the system identified to be replaced and other obsolete equipment such as electro mechanical relays.
Generation divestiture- Separation of distribution assets from generation assets is targeted to be complete by the completion of divestiture in 2017.

Assumptions

It is assumed that only local permitting is required and these permits will be readily granted.

Alternatives Considered

1. There is a transmission control house that was built in 2008. Adding distribution relay and control equipment in the transmission control house was considered but this would require expansion of the control house. The transmission control house is situated alongside the river and there is insufficient room to expand plus the Transmission control house is located inside the 500 year flood zone. For these reasons it was decided to build a new distribution control house outside of the flood zone.

2. Only replace the OCB as a part of the targeted program. This would leave all relay and control functions in the generation control house. Additionally, the generation control house is small and crowded. Leaving Eversource equipment where it can be operated or damaged by the new generation owner is not preferred.

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Engineering RFP	03/01/16
Engineering Award	03/29/16
Engineering Complete	08/29/16
Construction Start	09/01/16
In-service date	06/01/17

Financial Evaluation

Direct Capital Costs ($000)	Prior	2016	2017	Total
Straight Time Labor	$21	$192	$89	$302
Overtime Labor	$0	$0	$0	$0
Outside Services	$147	$2,705	$785	$3,637
Materials	$194	$85	$0	$279
Other, including contingency amounts (describe)	$10	$0	$0	$10
Total	$372	$2,982	$874	$4,228

Indirect Capital Costs ($000)	Prior	2016	2017	Total
Indirects/Overheads (including benefits)	$63	$183	$79	$325
Capitalized interest or AFUDC, if any	4	0	$0	$4
Total	$67	$183	$79	$329

Total Capital Costs	$439	$3,165	$953	$4,557
Total O&M Costs	0	0	$0	$0
Total Project Costs	$439	$3,165	$953	4,557

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Regulatory Approvals

Anticipated Permits:

- NHDES - Shoreland Permit
- Town of Hillsborough Planning Board - Site Plan Approval
- NH Public Utilities Commission - License to Construct and Maintain Electric Line over Public Waters

Risks and Risk Mitigation Plans

There is a risk that local planning board approval is not forthcoming. To mitigate this risk we have engaged TF Moran to facilitate all of the permitting activities on behalf of Eversource.

The site is congested with little room for establishing site cabins, material laydown areas, etc. It is hoped that existing generation land could be used but in the event this is not available other local property may need to be leased for the duration of the project.

The project timescales are short, any delays to the engineering design or review cycles may impact on the ability to meet the construction schedule. Regular project team meetings will track progress against milestones and the schedule or resources will be adjusted to meet schedule dates.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/18/2019**
Request No. TS 2-054 **Page 1 of 2**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Jackman-Replace Obsolete Equipment, #A16C10, OCA 6-100. Please provide the following information for this project:

a. Re: Justification for Additional Resources at pages 6-8 and pages 10-12: Did Eversource engineers conduct a site visit and site assessment during the initial scoping and designing of the project? If not, why not? Given the referenced complexity of the project, why did Eversource choose a new and inexperienced engineering vendor Altran as opposed to a known and experienced vendor? At what point during construction was Altran's inexperience discovered? Were some or all costs recovered from Altran? Why was the need for a Lead Commissioning Engineer unforeseen during the scoping and estimating process?
b. Re: Justification for Additional Resources at pages 6-8 and pages 10-12 (continued): Explain why each of the cost items referenced were overlooked during the original scoping and estimating of the project? What specifically drove the indirect cost increase of $843,000? Were the design/scoping engineers interviewed by Management to determine the root cause for these omissions? If not, why not? If yes, what were the results of those discussions?
c. Please provide an itemized breakout of overheads, AFUDC, and other costs leading up to the variance.
d. At any time did Project Managers work with project cost analysts to control cost escalation for this project? If not, why not? If yes, what were the results? Given the monthly reports received by Management, was Management actively involved in controlling the cost escalation of this project? If not why not? If yes, were cost controls put into place?

Response:
Clarifications and refinements to the scope and cost estimate in the normal evolution of the project are to be expected and do not constitute "omissions." Eversource Management is informed of such changes in the normal course of monthly project reporting. The preliminary engineering and original estimate did not "fail" to consider these items, nor were the items missed. The engineering and project-cost estimation process is iterative and involves graduated stages of information gathering, assessment, estimation and projections that are refined to a final pre-construction cost based on detailed project plans and detailed cost assessments. The cost estimates derived on the basis of conceptual-level engineering plans and preliminary cost projections are not intended to serve as the basis for final, pre-construction starting points for the project. Therefore, the premise that costs were "overlooked" is false.

a) Eversource Engineers conducted many site visits during the initial scoping phase and prior to starting the detailed engineering design. Site visits took place with Leidos (engineering consultant)

prior to the original engineering design when the scope of the project was limited to the replacement of the 34.5kV circuit breakers. Once the scope of the project changed to include the Generation Divestiture scope, that design work was cancelled, and the engineering work was re-bid. Site visits were conducted during the re-bidding process and during the detailed engineering phase.

Eversource substation and civil engineers also visited the site to look at relocating the TB61 strain bus and mobile connection needed to relocate the Control House prior to bidding the engineering. During that visit, the Engineers also looked at removing/restructuring the 34.5kV structure near the gate closest to the Hydro building to gain access to all the structures. Eversource transmission line Engineers also conducted a site walk to determine what needed to happen to the structures across the river due to the shifting of conductor alignment.

A pre-bid meeting was held at the Pats Peak Banquet Center on November 16, 2016 (see Attachment TS 2-054 A for Jackman Pre Bid Notes dated 11/16/16) followed by a site visit prior to issuing the Construction contract. Eversource Engineers also visited site during construction as specific issues arose. Some of these visits include:

- TF Moran(site engineering consultant) and representatives from Eversource civil and substation engineering met on site on 2/3/16 to review the conceptual site layout and grading plan prior to submission to the Hillsborough Planning Board on 3/16/16.

- Once the project was handed over to Project Management, a site visit and project kick-off meeting was held on May 26, 2016 (see Attachment TS 2-054 B for the kick off meeting Minutes dated 05/26/16). Representatives from Eversource's Civil, Substation and P&C Engineering groups were present at that meeting along with representatives from Altran. A follow-up site visit with the Eversource engineers and Altran took place in June 2016.

- Eversource transmission line engineering met with TF Moran on 10/20/16 to discuss sag data and survey information needed to complete the river crossing license application.

Eversource had worked with Altran on a previous project in 2014 to install 30 pole top Viper recloser switches. Altran performed well on that project and there was no concern over their capabilities, which is why Altran was invited to participate in the Request for Proposals for the Jackman project.

A technical specification for the Engineering design (see Attachment TS 2-054 C for the Jackman Distribution 2016 Design Scope_Rev3 dated 11/20/15) was issued to potential bidders in 2016 and six proposals were returned. Each of these proposals was evaluated on their technical merits by members of the project teams and given a score between 1 (does not meet expectations) through 5 (exceed expectations). The four bidders with the lowest prices were also evaluated using a similar scale on their past-experience, ability to meet schedule, proposed team and quality of their execution plan. Altran were chosen because they were the lowest priced, technically qualified bidder (refer to Attachment TS 2-054 D for the Altran MR Exec. Summary and Attachment TS 2-054 E for the Altran MR Request). Altran is a large, full-service Engineering design company that provides expertise in aerospace, automotive, defense, energy, finance, life sciences, railway and telecommunications. Altran employs some 47,000 employees in more than 30 countries. One of

the perceived benefits of using Altran was to increase the supplier base and increase competitive tension amongst engineering design vendors.

Altran's relative inexperience on Eversource projects was known from the outset. However, the project team proposed by Altran contained experienced individuals with strong resumes. As the Jackman project progressed several Altran individuals left the Company and joined Sargent & Lundy following the move of a senior manager from Altran to Sargent & Lundy. Towards the end of the project there were so few original Altran team members remaining from the original team that Eversource did not have confidence in Altran's ability to complete the as-built drawings to the required quality. That portion of Altran's original scope of work was subsequently awarded to TRC.

No cost recovery was sought from Altran. Altran was involved in the Jackman project all the way through engineering design, construction and commissioning. The only activity that was removed from their original scope of work was the production of the final as-built drawings. Based on Altran's bid form, their price for this work was $3,864 and contractually that would have been the only sum we would be able to recover. It would not be cost effective to try and recover such a small sum (see Attachment TS 2-054 F for the Altran bid form for Jackman and Attachment TS 2-054 G for the Supplemental Approval Form, Section 1. Engineering / Project Management / Permitting).

During the Jackman project, Eversource introduced a change in the way commissioning was managed during capital projects to minimize human performance errors. The change included the requirement to include a Lead Commissioning Engineer ("LCE") on all major projects. The LCE acts as an agent for Eversource and has responsibility for writing commissioning plans, test energization plans and job sequence instructions for electrical Contractors responsible for installation, testing and commissioning activities in accordance with Transmission Acceptance Testing Procedure SUB 202. This requirement was introduced following several inadvertent trips during testing. Since this change, there has been a significant reduction in the number of inadvertent trips during the testing and commissioning of major capital projects.

b) Refer to Attachment TS 2-054 H for a general summary of the project life cycle and Eversource project funding and authorization process at the time of the project. This document includes reference to a recent transition to a staged sanctioning process where full project funding authorization is not granted until sufficient engineering and procurement information is available to develop a full project estimate of sufficient accuracy to minimize the need for incremental authorizations during construction.

Construction – some of the designs that Altran created, while electrically sound and safe, did not conform to Eversource's standards or accepted custom and practice with regard to design quality. In those cases, an amount of re-work was done in the field. Examples include the installation of a larger cable pull-box to allow proper access, installation of additional parts to the exhaust fans and modifications to the Bus PT primary connections.

Testing and Commissioning – work on an integrated Transmission and Distribution system is always subject to the availability of outages. There are clear operational guidelines on when outages can be provided considering system operating conditions and the likelihood of loss of Customer load. It is not possible to identify which outages will and will not be available when

estimating the project. In the case of Jackman, the only available outages in some cases were on weekends which was outside of the planned Monday through Friday work schedule and hence overtime costs were incurred.

Labor and Expenses – the safety incident which occurred on March 3, 2017 in which a Contractor was injured and an inadvertent trip which occurred on May 31, 2017 both led to a suspension of work on site. Additional labor was incurred during the incident investigations and to recover the schedule. It is not practical to make allowances for this kind of incident during the initial project cost estimating.

Eversource Supplied material – this change is a reallocation of costs from one line-item to another with no overall change.

Allowances / Contingency – the original estimate included a line item of $371,090 for specific contingency items i.e. weather-related events, design uncertainty, unforeseen ground conditions and final site remediation costs. As the project moved into Construction, the contingency amounts were allocated to the Construction line item as the contingency amounts were incurred.

Property Taxes – Company property taxes are allocated to projects on an overall company basis. This is a relatively new method of accounting for property tax assessments, so individual project estimates have not historically included that potential allocation.

Miscellaneous / Other – During any project, there can be minor miscellaneous charges that are incurred that cannot be forecast ahead of time. For example, in the case of the Jackman project, the need for pest control services. In addition, there are Miscellaneous Distribution Expenses Capitalized ("MDEC") overheads that are also allocated to every distribution project. In the case of Jackman, these MDEC charges were included in the original project cost estimate but when the project budget was re-authorized in 2017 this line item was not included in the revised estimate.

Indirect Costs – All Eversource projects are assessed indirect costs from several overhead categories. These include, but are not limited to:

- Internal labor overheads (benefits, etc.)
- Stores (applied to materials ordered through our stock room)
- Engineering and Supervision (E&S)
- Administrative (AS&E)
- AFUDC (cost of money)

Each of these overheads is assessed at a rate defined by the corporation and is applied to the appropriate category of direct costs charged to the project. These rates vary over time and are adjusted with some frequency. Indirect costs are included in each type of project estimate and are based upon the rates at that time and the categories of direct costs anticipated at that time.

Variations in the value of indirect costs can come from four basic sources:

- Variation in overhead rate – generally more of an influence on long duration projects
- Increase (or decrease) in direct project costs – seen as the project scope becomes more well defined and direct costs are known. This can be the result of increase in project scope or higher than expected contract service costs due to market conditions.

- Change from internal resources to contracted (external) resources or vice versa – this would impact the internal labor overheads which are significant, but often comes with an increase or decrease to the direct cost for external labor, ie. true cost of internal labor shows up as a direct labor cost and a labor loader, whereas external labor does not get a labor loader (we are billed a "loaded" rate by vendors). Both will be assessed other applicable overheads such as E&S and AS&E.
- Change from owner furnished to contractor furnished materials – contractor furnished materials will not be assessed the Stores overhead, though usually include a contractor markup. Again, not a large overall difference in project cost, but potentially a noticeable variation in indirect costs.

Though variations (increases) in indirect project costs do not drive the need to secure additional project funding for distribution projects, they do contribute to overall project cost and are included in monthly project forecasting and reporting. The E&S rate tends to be the most volatile and can result in variations in overall indirect cost.

The majority of the contributors to the increase in cost are not related to initial scope development. Since clarifications and refinements to the execution plan or recovery from unplanned project events are not considered omissions.

c) Refer to Attachment TS 2-054 H for a general summary of the types and variability of indirect project costs.

The indirect cost variance is as follows:

	March 2015 Initial Estimate $	**February 2016 Full Funding $**	**February 2017 Supplemental $**	**February 2018 Supplemental $**
Direct Cost	1,737,000	4,228,000	5,026,654	5,895,662
Indirect Cost	435,302	325,000	369,012	1,212,861
Aggregate Indirect Rate	25%	8%	7%	21%
AFUDC	13,469	$4,000	4,542	46,736

The variance in indirect cost from full funding authorization to final Supplemental authorization is driven primarily by an increase in overhead rates and to a lesser degree, increase in direct project cost. When compared to the initial estimate prepared in March 2015, the final indirect costs are more proportional to the direct project cost.

d) The Project Manager works with all members of the project team including vendors to control the project cost, maintain schedule and ensure the quality of the project. The PM and Cost Analyst formally discuss all projects monthly and have regular on-going informal discussions as project forecasts change. Each invoice submitted is confirmed by the Project Manager, Construction Representative or Engineering as appropriate to confirm that the work is complete. The Cost Analyst confirms if the invoice is valid compared to the original PO amount or subsequent PO

amount following approved change orders. If the invoice is not valid, the invoice is rejected, corrected by the Contractor and re-submitted and reviewed a second time (or third, etc.) prior to approval for payment. Likewise, any change order request is either at the request of Eversource or where it is at the request of the Contractor the change order is reviewed to confirm it is valid and appropriate. When necessary, change order requests are rejected and/or renegotiated prior to approval.

This project was reviewed monthly at the Distribution Capital Project Review meeting. Cost control measures employed by project managers included budget forecasting, weekly and monthly reviews of the project cost, change order review and negotiations with contractors as well as presenting project financials at the monthly Distribution Capital Review and Major Project Group meetings. Project forecast changes were presented and justified to management at these meetings. Impacts to the annual distribution budgets were discussed with respect to cash flow adjustments from year to year. Required cost controls included a requirement to request and secure supplemental funding to complete the project.

funding_project	A16C10

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
A07X44B2	**Jackman Brkr & Capacitor Switch R**	Admin and Eng OH- Acct Use Only		2014	0	$ 9.22
				2015	0	$ 3,832.36
				2016	0	$ 4,691.67
				2017	0	$ 74,848.76
				2018	0	$ 4,355.18
				2019	0	$ 410.30
		AFUDC Debt		2014	0	$ 1.46
				2015	0	$ 1,792.45
				2016	0	$ 4,723.09
				2017	0	$ 24,333.36
				2018	0	$ 22,485.47
		AFUDC Equity		2014	0	$ 1.05
				2015	0	$ 2,339.90
				2016	0	$ 1,245.17
		Alloc- E+S OH Subst- Acct Use Only		2018	0	$ 6,412.54
				2019	0	$ 3,715.08
		Contractor Labor		2017	0	$ -
			COMENSURA INC	2015	-26	$ 523.44
				2017	61.5	$ 5,156.46
			J P PEST SERVICES INC	2017	0	$ 84.00
			PRN #911111020656	2017	0	$ -
			PRN-911111020656	2017	0	$ (2,737.26)
			RANDSTAD US LP	2017	414	$ 60,884.79
		Contractor Materials		2017	0	$ -
			E S BOULOS COMPANY	2017	2.08	$ 719,446.16
			EMPIRE SHEET METAL INC	2017	2	$ 48,038.00
		Contractor Services	**CITY OF LEBANON**	2017	0	$ 9,006.75
			E S BOULOS COMPANY	2017	2.24	$ 661,438.93
				2018	0	$ 142,506.99
			ENERGY INITIATIVES GROUP LLC	2017	0	$ 11,180.00
			I C REED &	2018	0	$ 7,029.86
			I C REED & SONS INC	2015	1	$ 1,878.36
				2017	2	$ 51,070.77
				2018	0	$ (3,321.00)
				2019	0	$ 7,074.96
			JOE BRIGHAM INC	2018	0	$ 4,628.25
			LOUIS P COTE INC	2017	1	$ 1,222.25
			VERMONT RECREATIONAL SURFACING & FENCING INC	2017	2	$ 21,639.00
				2018	0	$ 27,588.00
			WAVEGUIDE INC	2017	1	$ 3,518.04
		Contractor Services- Other	**JOE BRIGHA**	2018	0	$ 3,628.28
			JOE BRIGHAM INC	2017	0	$ 3,628.28
				2018	0	$ (3,628.28)
		Contractor- Unit Price	**E S BOULOS**	2018	0	$ 25,000.00
			E S BOULOS COMPANY	2017	1.68	$ 1,342,954.14
				2018	0	$ 58,336.03
			ENVIRONMENTAL SYSTEMS CORP	2018	0	$ 30,422.76
		Employee Expense Other		2015	0	$ 4.00
				2016	0	$ 9.00
				2017	0	$ 410.13
				2018	0	$ 14.00
		Engin and Super OH- Acct Use Only		2014	0	$ 39.51
				2015	0	$ 22,561.46
				2016	0	$ 46,316.53
				2017	0	$ 688,257.27
				2018	0	$ 116,110.75
		Engineering Design Services		2017	0	$ -
			0110168 - JACKMAN - SURVEY SVCS	2017	0	$ -
			ALTRAN SOLUTIONS CORP	2016	5	$ 256,038.25
				2017	2	$ 110,548.57
			AMERICAN E	2018	0	$ 9,816.68
			AMERICAN ELECTRICAL TESTING CO	2017	0	$ 248,397.72

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A07X44B2	Jackman Brkr & Capacitor Switch R	Engineering Design Services	AMERICAN ELECTRICAL TESTING CO	2018	0	$ (9,210.05)
			EATON CORP	2017	1	$ 8,302.42
			EMPIRE SHEET METAL INC	2017	0	$ -
			ENERGY INITIATIVES GROUP LLC	2015	8	$ 10,921.41
				2016	12	$ 40,524.51
				2017	5	$ 63,732.11
			HDR ENGINEERING INC	2017	5	$ 108,840.08
				2018	0	$ 11,595.88
			JACKMAN S/S - REBUILD PROJECT	2017	0	$ 17,245.75
			JACKMAN S/S PHASE 2 STRUCTURAL STEEL	2017	0	$ 4,977.00
			LEIDOS ENG	2018	0	$ 831.98
			LEIDOS ENGINEERING LLC	2015	7	$ 133,093.56
				2017	0	$ 11,106.00
				2018	0	$ 65,560.90
			MIDSUN GROUP INC	2017	0	$ -
			TF MORAN INC	2016	9	$ 43,405.48
				2017	11	$ 38,758.70
				2018	0	$ 2,964.00
			TRC LOCKBOX	2015	0.01	$ 141.00
		Exempt Hours Beyond Schedule-Unpaid		2016	3	$ 145.12
		Gen Ser Co Benefit Loader- Acct Use Only		2015	0	$ 72.25
				2016	0	$ 1,422.22
				2017	0	$ 6,406.67
				2018	0	$ 685.49
				2019	0	$ 177.49
		Labor Overtime Non-Exempt		2016	4.5	$ 236.33
				2017	928.75	$ 50,894.34
				2018	114.75	$ 6,373.79
		Labor Premium and Special Exempt		2017	6	$ 750.00
		Labor Straight Time Exempt		2014	24	$ 1,211.17
				2015	334.5	$ 17,849.96
				2016	596	$ 34,140.45
				2017	1856.58	$ 93,390.15
				2018	432.5	$ 22,171.23
				2019	14.5	$ 830.91
		Labor Straight Time Non-Exempt		2015	49.75	$ 1,576.82
				2016	77	$ 2,190.85
				2017	3169.25	$ 116,416.73
				2018	812.5	$ 29,161.53
				2019	24.5	$ 698.75
		Materials- Purchased	DATA COMM FOR BUSINESS INC	2018	0	$ 59.26
			DCB 3440 Channel Bank to Support Telecom Backhaul	2018	1	$ 14,520.28
			JP MORGAN	2018	4	$ 530.50
			JP MORGAN CHASE BANK	2015	3	$ 284.87
				2017	13	$ 3,174.06
				2018	1	$ 320.00
			SONET NODE	2018	1	$ 13,437.00
			W B MASON CO INC	2017	7	$ 101.05
		Materials- Stores	ANCHOR, SINGLE HELIX, 10,000#, 12 IN	2017	2	$ 81.05
			BALL, CLEVIS, Y, HOT LINE TYPE, LONG, GALV STEEL, 30000 LB	2017	6	$ 81.40
			BOLT, MACHINE, 3/4 IN, 14 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2017	9	$ 14.65
			BOLT, MACHINE, 3/4 IN, 16 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2017	6	$ 11.86
			BOLT, MACHINE, 3/4 IN, 18 IN L, GALV STEEL, W/SQ NUT	2017	3	$ 6.53
			BOLT,MACHINE, 7/8 IN, 14 IN LG, GALV, W/ SQUARE NUT	2017	2	$ 9.12
			BREAKER, CIRCUIT, VACUUM TYPE, 38KV, 1200A, 200KV BIL, 1200/5 C400	2015	4	$ 109,784.00
			CABINET, 48 FIBER, 4 RU SPLICE/TERM PATCH PANEL, W /SC CONN	2017	1	$ 784.39
			CABLE, BARE, 19-#10 AWG, 27M, 19 STR, 3400 FT LG, ALUMOWELD	2017	737	$ 438.43
				2018	-450	$ (278.66)
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN	2017	50	$ 22.25
			CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAD ST	2017	125	$ 47.29
			CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAD ST	2017	0	$ 0.08
			CABLE, COVERED, 62.5 MILS, POLYETHYLENE, SD COPPER, 4/0, (37 STR),	2017	70	$ 234.08
			CABLE, COVERED, DIST, EPR, 115 MIL, SD CU, 4/0 AWG, COMPRESSED 37	2017	525	$ 1,625.67
			CABLE, INSULATED, 1 PH, TRXLPE, 35 KV, AL, 1000 KCMIL, W/CONCENTRI	2017	2116	$ 14,150.04
			CABLE, INSULATED, CONTROL, 4C, #10 AWG, 7 STR, 600 V, IPCEA METHO	2017	320	$ 499.80

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A07X44B2	Jackman Brkr & Capacitor Switch R	Materials- Stores	CLAMP, QUADRANT, ALUMINUM, 3/0 - 795 ACSR, .50 TO 1.20, W/ SOCKET	2017	6	$ 345.33
			CLAMP,STRAIN, QUADRANT, 7/16 IN, 0.25-0.57 IN DIA, AL, FOR EHS STATIC	2017	2	$ 26.74
			CLEVIS, DEADEND EYELET, GALV, 1-1/2 IN X 3/4 IN	2017	3	$ 25.85
			COMPUTER,SYSTEM, HMI PC, UNO 2473G, WINDOWS 10 OS, 64 GB MSATA	2017	1	$ 725.00
			CONNECTOR, WEDGE TAP, SHELL DRIVEN, 556 AAC/ACSR OR 477 ACSR I	2017	3	$ 38.01
			CONNECTOR,TEE, 4/0 TO 1113 MCM RUN, BOLTED, AL	2017	6	$ 382.71
			CONNECTOR,TEE, 45 DEG, 4 HOLE 4 IN NEMA PAD, 4/0 TO 1113 ACSR, AL	2017	6	$ 316.44
			CONNECTOR,TEE, 477 TO 795 ACSR MAIN, 477 TO 795 ACSR TAP, BOLTEI	2017	9	$ 552.87
			CONNECTOR,WEDGE TAP, RUN 795 AAC COVERED, TAP 795 AAC COVERI	2017	3	$ 95.53
			CONVERTER MODULE, 9-PIN, RS-232 TO RS-485, W/ TRIPLE ISOLATION	2017	4	$ 735.81
			COVER, CABLE/BUS, ANIMAL PROTECTION SUBSTATION, 1 INCH INSIDE I	2017	50	$ 269.50
			DEADEND, AUTOMATIC, LONG BAIL, FOR 7/16" STRAND, GALVANIZED ST	2017	4	$ 90.98
			DEADEND, AUTOMATIC, SHORT BAIL, FOR 7/16" STRAND GALVANIZED ST	2017	4	$ 77.65
			GUARD, ANIMAL, BUSHING, SILICONE RUBBER, LARGE	2017	24	$ 1,321.99
			GUARD, ANIMAL, FOR TRANSFORMERS OR TERMINATORS, HOT STICKAB	2017	15	$ 68.62
			GUARD,BIRD, DISC STYLE, 2.5 -5 ID X 16 -24 OD, GRAY, UV RESISTANT P	2018	30	$ 2,965.50
			INSULATOR, POST, (PINEAPPLE), TIE TOP, POLYETHYLENE, 35KV	2017	9	$ 377.13
			INSULATOR, STRAIN, FIBERGLASS, 78 IN, LT GRAY OR GREEN, ROLLER/C	2017	3	$ 56.91
			INSULATOR, SUSPENSION, DEADEND, POLY, 23 IN LONG, 34.5 KV, 378 KV	2017	6	$ 293.65
			LABEL, REFLECTIVE, SELF-ADHESIVE, NUMBER 1, 2-7/8 X 1-3/4 IN, YELLO	2018	1	$ 0.50
			LINK, STRAIGHT, GALV STEEL, 5/8 IN, 40,000 LB	2017	12	$ 57.52
			LOCKNUT, 7/8 IN	2017	2	$ 1.04
			LUG,COMPRESSION, 5/16 IN STUD, 1/0 AWG STRANDED, 5/16 IN BOLT SIZI	2017	10	$ 9.52
			MARKER, GUY, FULL ROUND, PLASTIC, 8 FT L, YELLOW, SPIRAL PIGTAIL	2017	6	$ 17.49
			PIN, INSULATOR, LINE POST, 3/4" X 7" SHANK, 8-1/2" OVERALL LENGTH, S	2017	9	$ 38.76
			PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16 IN. LAG HOLE, WITH C	2017	15	$ 90.08
			RESISTOR, WIRE WOUND, TUBULAR, 25 W, 10 OHM, 5 TOLERANCE,	2018	3	$ 15.22
			ROD, ANCHOR, GALVANIZED STEEL, 1 IN DIA, 7 FT LG, TRIPLE STRAND E	2017	2	$ 44.83
			SHACKLE, ANCHOR, 5/8 IN, BOLT/ NUT / KEY, GALV, SCREW PIN, 30,000 LI	2017	9	$ 57.27
			SHACKLE,ANCHOR, SCREW PIN, 5/8 IN NOMINAL SIZE, STEEL, GALV, 3000	2017	2	$ 13.13
			SIGN, IDENTIFICATION, PHASE, 1, 4 X 4 IN, WHITE ON RED, 4 EYELETS	2017	2	$ 14.68
			SIGN, IDENTIFICATION, PHASE, 2, 4 X 4 IN, BLUE ON WHITE, 4 HOLE	2017	2	$ 14.68
			SIGN, IDENTIFICATION, PHASE, 3, 4 X 4 IN, WHITE ON BLUE, 4 HOLE	2017	2	$ 14.68
			SPEAKER, AMPLIFIED, 10 W, 12 VDC, 8 OHM	2017	2	$ 94.71
				2018	4	$ 189.40
			SPEAKER,COMMUNICATION, EXTERNAL	2017	1	$ 22.60
			SWITCH, CAPSWITCHER, WITH CURRENT TRANSFORMERS AND STEEL, 7	2015	1	$ 84,155.01
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.741-0.814 IN DIA, 35 KV,	2017	3	$ 2,146.72
			SWITCH,DISCONNECT, IN LINE, 900 A CONTINUOUS, 35 KV, 200 KV BIL , 33	2017	3	$ 2,066.28
			TAPE, INSULATING, TAPE, SILICONE, 2.5 IN W, 36 IN L, 30 MILS, GRAY	2017	10	$ 361.40
			TEE, MOUNTING DEADEND, CURVED BASE, FOR ROUND WOOD	2017	1	$ 21.84
			TERMINAL, 4 HOLE NEMA PAD, 477 TO 795 ACSR MAIN TO 4 IN, BOLTED, (	2017	48	$ 1,853.75
			TERMINATOR, CABLE, COLD SHRINK, 1000 MCM, 1.31-2.10 IN D, 35 KV, 2 H	2017	15	$ 2,307.68
			TRANSFORMER, STATION SERVICE, CONVENTIONAL, 50KVA, HV, 34500GI	2017	6	$ 14,154.00
			WASHER, COIL SPRING, GALV STEEL, 3/4 IN	2017	12	$ 3.68
			WASHER, SQUARE, CURVED, GALVANIZED, 3 IN X 3 IN X 1/4 IN F/ 5/8 OR 3/	2017	3	$ 1.60
			WASHER, SQUARE, FLAT 3 X 3 IN X 1/4 IN, GALVANIZED, 13/16 IN HOLE FO	2017	9	$ 11.49
			WASHER,SPRING, DOUBLE COIL, W-1, 7/8 IN, GALV, NU STD #MAT W-1	2017	2	$ 1.26
			WASHER,SQUARE, CURVED, 7/8 IN BOLT, 4 IN X 4 IN X 1/4 IN SQ, GALV	2017	2	$ 3.08
		Meals		2016	0	$ 33.54
				2017	123	$ 2,980.19
				2018	7	$ 120.00
		Mileage		2014	0	$ 42.56
				2015	0	$ 217.35
				2016	693	$ 481.14
				2017	943	$ 504.53
				2018	557	$ 382.03
				2019	62	$ 35.96
		Misc Dist Exp Capitalized OH-Acct Use Only		2014	0	$ 980.44
				2015	0	$ 14,138.96
				2016	0	$ 9,866.77
				2017	0	$ 51,568.07
				2018	0	$ 11,959.92
				2019	0	$ 140.75
		Non Productive Time Loader- Acct Use Only		2014	0	$ 183.37

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A07X44B2	**Jackman Brkr & Capacitor Switch R**	Non Productive Time Loader- Acct Use Only		2015	0	$ 3,062.46
				2016	0	$ 6,271.73
				2017	0	$ 42,494.97
				2018	0	$ 8,089.13
				2019	0	$ 221.16
		Other Costs	**CONTEST ANALYTICAL LABORATORY**	2017	0	$ 49.63
		Other Outside Services		2017	0	$ -
			AERIAL SITE COMMUNICATIONS INC	2018	0	$ 4,710.00
			AMERICAN E	2018	0	$ 21,748.20
			AMERICAN ELECTRICAL TESTING CO	2017	0	$ 35,924.53
				2018	0	$ 3,416.41
			BURNS & MCDONNELL	2018	0	$ 48.86
			BURNS & MCDONNELL ENGINEERING	2018	0	$ 153.45
			CITY OF LEBANON	2017	0	$ 2,744.00
			CON-TEST ANALYTICAL LABORATORY	2017	1	$ 40.53
			EN ENGINEERING LLC	2019	0	$ 8,745.06
			ENERGY INI	2018	0	$ 27,782.94
			ENERGY INITIATIVES GROUP LLC	2017	4	$ 212,122.20
				2018	0	$ 58,791.82
				2019	0	$ 1,054.68
			I C REED & SONS INC	2018	0	$ 2,299.11
			NWN CORPORATION	2017	0	$ 16,055.30
			PHOENIX COMMUNICATIONS INC	2018	0	$ 2,960.35
			TRC ENGINEERS LLC	2019	0	$ 5,414.00
			VERMONT RECREATIONAL SURFACING & FENCING INC	2018	0	$ 7,077.00
			WILLIAMS-SCOTSMAN	2018	0	$ 716.32
		Other Outside Services- Other	**ENERGY INITIATIVES GROUP LLC**	2015	0	$ -
				2016	0	$ -
				2017	0	$ -
			LEIDOS ENGINEERING LLC	2015	0	$ -
			TCI OF NY LLC	2017	0	$ 7,200.00
				2018	0	$ 7,200.00
		Payroll Benefit Loader- Acct Use Only		2014	0	$ 619.03
				2015	0	$ 8,676.45
				2016	0	$ 12,800.89
				2017	0	$ 94,463.56
				2018	0	$ 22,182.62
				2019	0	$ 545.25
		Property Taxes		2016	0	$ 20,318.00
				2017	0	$ 99,435.28
				2018	0	$ 88,866.26
		Refuse Removal and Recycling	**G & S MOTOR EQUIPMENT COMPANY**	2018	0	$ 15,900.00
		Service Company Allocations- Acct Use Only		2015	0	$ -
				2016	0	$ (0.00)
				2017	0	$ 0.00
				2018	0	$ (0.00)
				2019	0	$ 0.00
		Stores Loader- Acct Use Only		2015	0	$ 8,307.85
				2017	0	$ 3,945.94
				2018	0	$ 192.43
		Stores over 25K	**CAPACITOR, DISTRIBUTION, BANK, 35KV, 9.960KV, 125% OVERVOLTAGE (**	2017	1	$ 42,300.00
		Unvouchered Liablities	**0089213 - JACKMAN DIST.PROJ.MANAG.**	2015	0	$ -
			0101459 - UNBILLED SERVICES	2016	0	$ -
			0102216 - UNBILLED SERVICES	2016	0	$ -
			0103191 - UNBILLED SERVICES	2016	0	$ -
			0103894 - UNBILLED SERVICES	2016	0	$ -
			0104582 - UNBILLED SERVICES	2016	0	$ -
			0105270 - UNBILLED SERVICES	2016	0	$ 118,908.00
				2017	0	$ (118,908.00)
			0106403 - UNBILLED SERVICES	2017	0	$ -
			0107261 - UNBILLED SERVICES	2017	0	$ -
		UVL-Contractor Labor	**0089901 - JACKMAN DIST.PROJ.MANAG.**	2015	0	$ -
			0090465 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0091111 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0091966 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -

Docket No. DE 19-057
Data Request STAFF 16-009
Dated 3/20/2020
Attachment STAFF 16-009 L
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accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A07X44B2	Jackman Brkr & Capacitor Switch R	UVL-Contractor Labor	0092483 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0093186 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0093903 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0094464 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0095295 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ -
			0096990 - JACKMAN DIST.PROJ.MANAG.	2015	0	$ 5,280.00
				2016	0	$ (5,280.00)
			0097426 - JACKMAN DIST.PROJ.MANAG.	2016	0	$ -
			0097426 - JACKMAN S/S	2016	0	$ -
			0106167 - JACKMAN S/S PHASE 1 STRUCTURAL	2017	0	$ -
			0107000 - P&CE SETTINGS	2017	0	$ -
			0109398 - P&C ENGINEERING SUPPORT	2017	0	$ -
			0109610 - UVL - ENG00 - 00009	2017	0	$ -
			0110006 - UVL - CST00 - 00000	2017	0	$ -
			0110006 - UVL - ENG00 - 00009	2017	0	$ -
			0110006 - UVL - ENG00 - 00039	2017	0	$ -
			0112386 - JACKMAN PHASE 2 STRUCTURAL STE	2017	0	$ -
			0115414 - UNBILLED SERVICES	2017	0	$ 205,457.00
				2018	0	$ (205,457.00)
			0116276 - UNBILLED SERVICES	2018	0	$ -
			0117218 - UNBILLED SERVICES	2018	0	$ -
			0118162 - UNBILLED SERVICES	2018	0	$ -
			0119068 - UNBILLED SERVICES	2018	0	$ -
			0120094 - UNBILLED SERVICES	2018	0	$ -
			0120888 - UNBILLED SERVICES	2018	0	$ -
			0121636 - UNBILLED SERVICES	2018	0	$ -
			0123946 - UNBILLED SERVICES	2018	0	$ -
			0125814 - UNBILLED SERVICES	2018	0	$ 12,000.00
				2019	0	$ (12,000.00)
			0126558 - UNBILLED SERVICES	2019	0	$ -
			0127280 - UNBILLED SERVICES	2019	0	$ -
			0128354 - UNBILLED SERVICES	2019	0	$ -
			0129219 - UNBILLED SERVICES	2019	0	$ -
			0129830 - UNBILLED SERVICES	2019	0	$ -
			0130692 - UNBILLED SERVICES	2019	0	$ -
			0131417 - UNBILLED SERVICES	2019	0	$ -
			0132302 - UNBILLED SERVICES	2019	0	$ -
			0133082 - UNBILLED SERVICES	2019	0	$ -
			0133982 - UNBILLED SERVICES	2019	0	$ -
			0134634 - UNBILLED SERVICES	2019	0	$ -
			0135765 - UNBILLED SERVICES	2019	0	$ 1,933.00
			Jackman Dist.Proj.Manag.	2015	0	$ 5,280.00
				2016	0	$ (5,280.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 794.05
				2017	0	$ 32,783.37
				2018	0	$ 9,505.04
				2019	0	$ 1.41
		Vehicles-Class 2		2015	16	$ 143.52
		Vehicles-Class 3		2016	6	$ 114.36
A07X44B2 Total					**15333.59**	**$ 7,151,858.72**
Grand Total					**15333.59**	**$ 7,151,858.72**

Docket No. DE 19-057
Data Request STAFF 12-045
Dated 9/20/2019
Attachment STAFF 12-045 AU
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Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A16E06 **Status** in service **Revision** 18

Project Title West Rye S/S Re-build **Operating Unit**

Initiated By Lynne Godbout **Initiated Date** 11/30/2015 09:35:37

Description of Work West Rye Re-build. Build a new 34-12kV S/S where the 4kV West Rye S/S is now. Use VIPERs for the high and low side protection (Three VIPERs total, one for high side protection and one for each of the two circuits that would be fed out of the new sub).

Location DIST SUBS - NEW HAMPSHIRE

Project Schedule / Expenditures **Est Start Date :** 1/1/2016 **Est Complete Date :** 3/31/2018

	2016	2017	2018	2019	2020	Future Years	Total
	$9,162.28	$1,556,838.00	$1,100,118.00	$0.00	$0.00	$0.00	$2,666,118
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$2,616,118	$0	$50,000	$0	$0	$2,666,118.28

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Brown, Thelma	$0	9/12/2018
Plant Accounting	Salbinski, Chris	$0	9/12/2018
Manager - Investment Pla	Menard, Erica	$50,000	9/13/2018
Director - EPAC Chair	Dipaola-Tromba, John	$250,000	9/14/2018
Director - EPAC Chair	Wegh, George	$250,000	9/14/2018
Vice President - Electric Pl	Purington, Joseph	$1,000,000	9/16/2018
Sr. VP Electric Engineerin	Khan, Aftab	$5,000,000	9/28/2018
Sr. VP/President - Ops	Quinlan, William	$5,000,000	9/28/2018

Docket No. DE 19-057
Data Request STAFF 12-045
Dated 9/20/2019
Attachment STAFF 12-045 AU
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EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Request Form
Approved at August 29, 2018 EPAC
Link to Meeting Minutes

Date Prepared: August 10th, 2018	Project Title: West Rye Substation Re-build
Company/Companies: Eversource, NH	Project ID Number: A16E06
Organization: NH Operations	Plant Class/(F.P.Type): Substation
Project Initiator: Charles Christensen, PE	Project Type: *Specific*
Project Manager: Thelma Brown/Natacha Morales	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N/A
Current Authorized Amount: $2,302,118	In service date(s): 2/14/2018
Supplement Request: $364,000	Other:
Total Request: $2,666,118	

Supplement Justification

This project is to replace the existing 1950's vintage 3MVA 34.5 – 4.16kV substation with a 10/12MVA 34.5 – 12.47kV substation. The substation was put in service in February 2018.

The latest supplement was approved in PowerPlan on 2/28 which brought the authorized budget to $2,302,118,. As of end of June, the project has spent $2,298,342. The last supplemental did not include the IC Reed's change order due to different factors:

1. The supplement was submitted for the first time in November. There were a couple of iterations to the document between EPAC and the Project team. The supplemental was approved on January 17th and approved in PowerPlan on February 28th.
2. IC Reed's change order was not submitted until February right before the substation went in service.
3. The change order had to be reviewed by the project team, procurement, steel fabricator, and outside engineering to understand the charges. These reviews were time consuming and were necessary to pursue any kind of refund from outside vendors that caused some of these charges in the change order.

During the last months of construction (Mid-December through February), there were significant issues with the steel for the substation (transformers and other equipment), materials ordered that had different specification from the prints, materials poor handling, and internal/external design. The following factors contributed to the issues mentioned above:

1. Engineering deficiencies both internal and external ($138,000)
    a. Switches on high side had unacceptable clearance.
    b. Steel racks were not designed to hold the pole mounted reclosers.
    c. Bus was not at correct elevation.
    d. Poor design/review of the runs from riser to riser.
    e. Pad design was based on wrong information from transformer vendor.

2. Poor fit of fabricated structural steel by vendor ($23,000)

3. Installation of animal protection coverage, which was not part of the original scope of work. This directive was a late addition to the project by Operations Management ($23,000)

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

4. Discrepancies in stock coded materials ordered for the project resulting in parts delivered that were different than expected ($11,500). Some of these materials include:
    a. Connectors for reclosers.
    b. Connectors for the bus switch taps.
    c. Lightning arresters.
    d. Station service Transformer.

5. Wiring discrepancies in pre-wired junction boxes ordered by Eversource. These junction boxes were ordered pre-wired to the original Eversource drawings which were subsequently redesigned. ($11,500).

6. True up of P&C construction cost from bid docs to IFC scope, including re – IFC of P&C. The original contract was issued as fixed price for civil and electrical construction. After the IFC's were issued, there were additions to the P&C scope of work which resulted in a re – IFC of the P&C two (2) months later, extending the construction duration and delaying the completion of the project ($75,000).

    The following scope items were not included in the original proposal request:
    a. Installation of the fiber patch panel for communication.
    b. Antenna for radio communications.
    c. Re-wiring of reclosers for the 67W1 and 67W2 lines.
    d. Configuration of the auto – man – remote switch as well as voltage reduction.
    e. Configuration of the station monitoring system.
    f. Animal protection.

All of which were remedied during construction by the construction vendor.

The team and procurement have short paid the engineering firm to compensate for their deficient performance and the engineering firm has re-IFC'd at no cost. Materials management has been notified of the issue of multiple non-identical parts associated with the same stock code and how this can adversely affect project design and construction.

To remedy all the issues mentioned above, extra materials were procured by the contractor ($26,890).
- Substation: Sheet metal, nuts, washers, pipe, bus support, animal protection.
- P&C: Wall mounted enclosure and latch, panels, couplings, channels, data cable, nylon cable, plastic bushings, conduit, galvanized steel, lighting.

Construction	• Above grade construction ($207,000) • P&C extra construction ($75,000) • Materials ($26,890)	$308,890
Loaders		$55,110
Total		**$364,000**

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,973	$ 309	$ 2,282
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	50		50
Total Direct Spending	$ 2,023	$ 309	$ 2,332
Capital Additions - Indirect	276	55	331
AFUDC	3		3
Total Capital Request	$ 2,302	$ 364	$ 2,666
O&M	-	-	-
Total Request	**$ 2,302**	**$ 364**	**$ 2,666**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 2018	Year 20__+	Total
Capital Additions - Direct		$ 309		$ 309
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%		-		50
Total Direct Spending	$ -	$ 309	$ -	$ 309
Capital Additions - Indirect		55		55
AFUDC		-		-
Total Capital Request		$ 364	$ -	$ 364
O&M	-	-	-	-
Total Request	**$ -**	**$ 364**	**$ -**	**$ 364**

Actions to prevent recurrence:

The importance of monitoring the status of planned project spend and comparing against the authorized budget is reinforced to all project management staff at weekly staff meetings. Project Managers need to work with project cost analysts on a regular basis to impede projects from exceeding authorized budgets. A proactive approach in controlling project costs is imperative.
Management receives reports on a regular basis to identify projects that are approaching authorized spend amounts to facilitate a proactive approach to controlling project costs. Some steps to improve on this:

1. Project Manager to be involved in the estimating process along with Engineering.
2. All DR's must be approved by the Project Manager.
3. Cost Analyst to make sure that overheads and loaders are up to date.
4. Contractors to provide UVL's and invoice in a timely manner.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

5. Project Manager to request supplemental funds before approving any field changes that have not been budgeted in the approved estimate.

Project Manager will be more involved in the estimates created by Engineering as well as the scope of work for projects. Project costs and spend projections will be closely monitored, particularly once updated to include construction bids, bill of materials, and other vendor costs including permitting, environmental, monitoring, testing and commissioning. This will facilitate a more accurate budget for the project. Project Managers need to identify potential budgetary issues and resolve by appropriate means as early as possible. Project Manager will also be more involved in the "In Service Date" proposal with engineering, there needs to be a discussion when the project is in its early stages to discuss the availability of resources, weather, outages, etc. This will avoid having to rush the project deliverables and construction to meet the ISD.

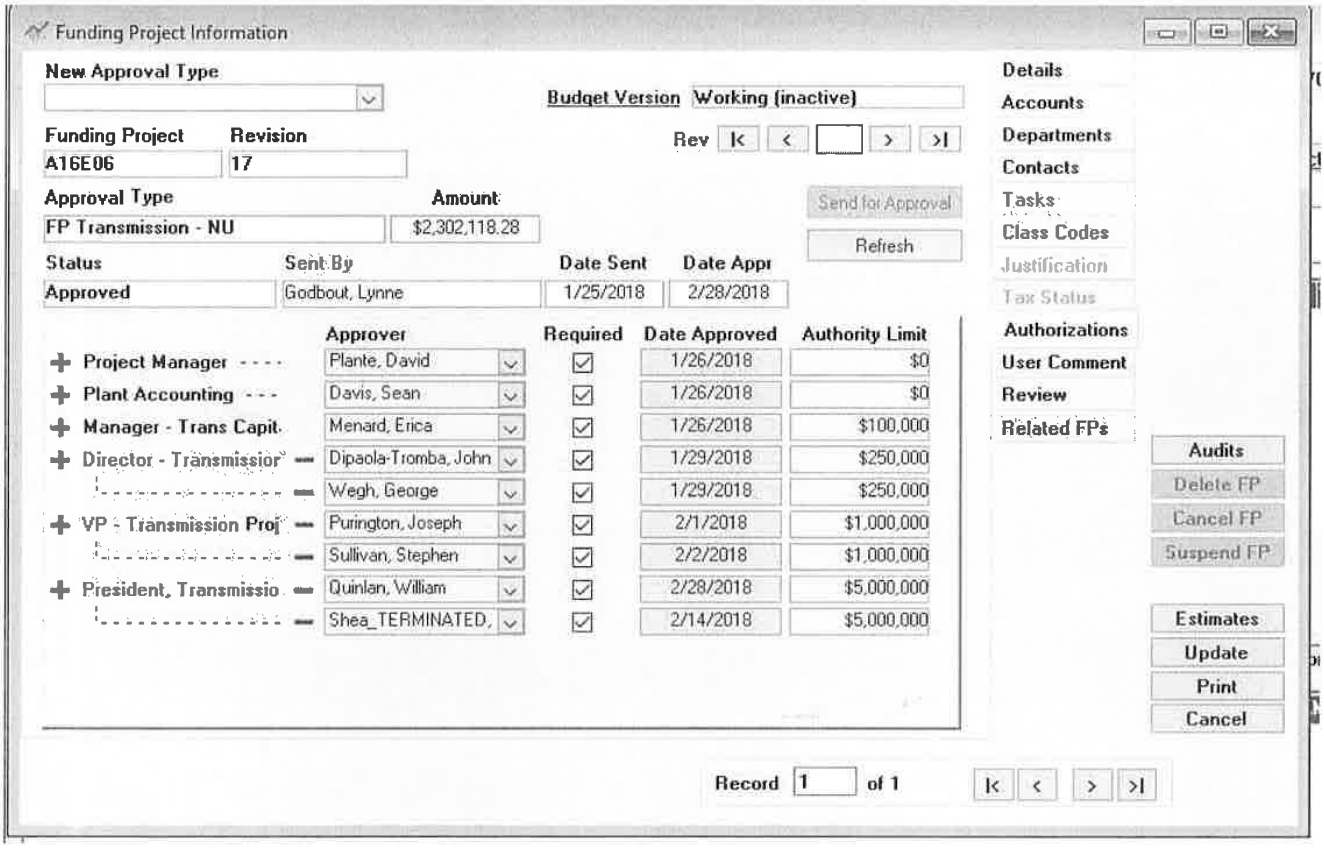
Minutes
08-29-2018 Meeting

19. A16E06 – West Rye Substation Re-build – N. Morales – APPROVED FOR $2,666,118 WITHOUT COMMENTS

Attendance

EPAC Role	Required Members	In-Person	Phone	Voting Designee
Co-Chair	George Wegh	☐	☐	Ray Gagnon
Co-Chair	John Dipaola-Tromba	☒	☐	
EPAC Administrator	Farah Omokaro	☒	☐	
Projects	Tim Revellese	☐	☐	Joe Mayall
	Alexis Ané	☒	☐	
Project Controls	Raymond Gagnon	☒	☐	
Engineering	James Eilenberger	☐	☐	
	John Case	☐	☒	
	John Zicko	☐	☒	
	Robert Andrew	☐	☐	
	Rod Kalbfleisch	☐	☐	
	Swapan Dey	☐	☐	
Siting & Compliance	Robert Clarke	☐	☐	Kate Shanley
Investment Planning	Leanne Landry	☐	☐	Peter Neidhardt
Integrated Planning & Scheduling	Diana Mahoney	☐	☐	
Compliance	Vicki O'Leary	☐	☒	
Transmission /System Ops	Barry R. Bruun	☐	☐	
	Brian Dickie	☐	☐	
Field Ops & Field Engineering	Anthony A. Anzalone	☐	☐	
	Rob Bouthiller	☐	☐	Joe Nesdale
	Wayne Gagnon	☐	☐	
	Marc Geaumont	☐	☒	
	Mark Blanchard	☐	☐	
	Saurabh Sahni	☐	☐	

EPAC Role	Required Attendees	In-Person	Phone
Siting	Kate Shanley	☐	☒
Siting & Construction Services	Michelle Gallicchio	☐	☐
Licensing & Permitting	Mark Gardella	☐	☐
Procurement	Craig Dikeman	☐	☐
	Fran O'Keefe	☐	☐
Substation Engineering	Daniel Foley	☐	☒
	Paul Melzen	☐	☐
	Thelma Brown	☐	☒
Protection & Controls	Dennis Western	☐	☐
	John Babu	☐	☒
	Stuart Hollis	☐	☐
T Line & Civil Engineering	Chris Soderman	☒	☐
	Mohsen Sahirad	☐	☐
	Jim Bodkin	☐	☐
	Jamil Abdullah	☐	☐
	Donald Dibuono	☐	☒
Transmission Capital Program	Glenn Herman	☒	☐
Budget & Investment	Peter Neidhardt	☒	☐
Outage & Ops Planning	Oswaldo Ortega	☐	☐
	David Cloutier	☐	☒
Standards	Jen Hebsch	☐	☐


Funding Project Information
New Approval Type
Budget Version Working (inactive)
Rev
Funding Project
A16E06
Revision
17
Approval Type
FP Transmission - NU
Amount
$2,302,118.28
Send for Approval
Refresh
Status
Approved
Sent By
Godbout, Lynne
Date Sent
1/25/2018
Date Appr
2/28/2018
Approver
Required
Date Approved
Authority Limit
Project Manager
Plante, David
1/26/2018
$0
Plant Accounting
Davis, Sean
1/26/2018
$0
Manager - Trans Capit
Menard, Erica
1/26/2018
$100,000
Director - Transmissior
Dipaola-Tromba, John
1/29/2018
$250,000
Wegh, George
1/29/2018
$250,000
VP - Transmission Proj
Purington, Joseph
2/1/2018
$1,000,000
Sullivan, Stephen
2/2/2018
$1,000,000
President, Transmissio
Quinlan, William
2/28/2018
$5,000,000
Shea_TERMINATED,
2/14/2018
$5,000,000
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

Docket No. DE 19-057
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Dated 9/20/2019
Attachment STAFF 12-045 AU
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EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Request Form
Approved at January 17, 2018 EPAC
Link to Meeting Minutes

Date Prepared: November 28th, 2017	Project Title: West Rye Substation Re-build
Company/Companies: Eversource, NH	Project ID Number: A16E06
Organization: NH Operations	Plant Class/(F.P.Type): Distribution Substation
Project Initiator: Charles Christensen, PE	Project Type: *Specific*
Project Manager: Thelma Brown/Natacha Morales	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N/A
Current Authorized Amount: $1,590,000	Estimated in service date(s): 2/1/2018
Supplement Request: $712,385	Other:
Total Request: $2,302,385	

Supplement Justification

This project is to replace the existing 1950's vintage 3MVA 34.5 – 4.16kV substation with a 10/12MVA 34.5 – 12.47kV substation.

The PAF for this project was approved in Powerplan in April 2016 for $1,304,000. The original PAF is attached as well as the first supplemental which was approved in Powerplan in July of 2017 for a supplement request of $286,000 and a new total request of $1,590,000. The expected cost to complete the project is now $2,302,385 which is $712,385 above the approved project amount.

Since the first supplemental approval, there have been some engineering changes, construction contract was competitively bid and properly awarded and proposals for testing and commissioning have been received. Construction estimates (electrical, substation, P&C) were significantly low in the first supplemental (about $500,000). Other projects with the same scope of work have averaged construction contracts between $600,000 – $750,000, the estimate for the first supplemental only had $177,009. This was the most significant oversight on the first supplemental and the estimate did not include enough funding for test and commissioning ($19,990).

ROW clearing and environmental monitoring were not accounted for in the previous supplemental. Please see table below for a breakdown of additional expenses from the first supplemental request.

The first supplemental was presented and written by someone other than the Project Manager and these oversights were not caught during the meeting, which resulted in this additional funding request.

As of the end of November, engineering is complete, major materials were received and the substation is under construction. The substation will be wired and ready for test and commissioning by the end of December. The ISD has been pushed out to the middle of February due to delays related to the 10/30 wind storm restoration and construction issues including steel delivery, transformer delivery, materials being altered in the field, parts of the transformer being replaced, and some wiring re-configurations.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

	Cost Summary for Supplemental Request	Change
Engineering (Internal)	Design of tap poles to S/S.	$30,801
Engineering (contractor)	• Modification of GA elevations to include the 3105X line. (not in original scope of work) • Additional strain bus off the 12kV mobile connection to provide a tap to the 12kV bus (not in original scope of work). • Change of conductor specs. • Relocation of reclosers. • Additional conduits for powering reclosers (not in original scope of work). • Modification of grounding. • Equipment vendor information not available. • Drawing modifications due to existing field conditions not being accurate on Eversource provided drawings.	$31,650
Trimming & ROW clearing		$9,000
Construction	Construction left out of the original estimate and underestimated in the first supplemental	$304,981
Soil and sound testing		$41,000
Permitting & environmental monitoring		$29,000
Surveying		$7,500
Testing and commissioning	Estimate significantly higher than previous estimate	$240,100
Loaders		$72,034
Materials		($24,079)
PM		($4,069)
Contingency		($25,853)
Total Supplemental Request		**$712,065**

Justification for Additional Resources

After engineering was completed and proposals received for construction, test and commissioning, it was apparent that the previous estimate significantly underestimated the value for these services.

Explanation for Cost Increase

Labor – Most of the increase in labor was for construction as well as test and commissioning. The construction contract went through a competitive bidding process and it was awarded to IC Reed for a total amount of $481,990. The first supplemental estimated construction to be $177,009. The award is about $304,981 more than estimated. Test and commissioning proposals total $260,000. The cost for other outside services including tree clearing, ROW mowing, surveying and environmental monitoring was increased by $86,500. Project Manager and support as well as contingency reduced by approximately $30,000. After the start of construction, there were some changes in engineering which increased the

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

engineering cost to approximately $62,000. This covers both internal and external engineering. There were some field conditions that were not captured prior to issuing the IFCs.

Materials – This cost was decreased by $24,000.

Indirects/AFUDC – Indirects and AFUDC have also increased by $72,034. This increase is associated with direct labor and material stock which has overhead costs.

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,385	$ 588	$ 1,973
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	50.00	50.00
Total Direct Spending	$ 1,385	$ 638	$ 2,023
Capital Additions - Indirect	204.00	72.00	276.00
AFUDC	1.00	1.60	2.60
Total Capital Request	$ 1,590	$ 712	$ 2,302
O&M	-	-	-
Total Request	**$ 1,590**	**$ 712**	**$ 2,302**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct		$ 588		$ 588
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	50.00	-		50.00
Total Direct Spending	$ -	$ 638	$ -	$ 638
Capital Additions - Indirect		72.00		72.00
AFUDC		1.60		1.60
Total Capital Request	$ -	$ 712	$ -	$ 712
O&M	-	-	-	-
Total Request	**$ -**	**$ 712**	**$ -**	**$ 712**

ESTIMATE SUMMARY
PSNH

Project Title: West Rye Substation 70H1 & 70H2Transformer Replacement
Estimate By: MPD

Project Mgr/Lead: Natacha Morales
Date of Estimate: 11/07/17

Project Number: A16E06
ISD: 12/31/17

TAF # XYZ
Estimate # P17-040 Rev 1

ESTIMATE SUMMARY

ESTIMATE TYPE: Engineering

	TOTAL	Prior	2017	2018	2019	2020	2021 and FUTURE
CONSTRUCTION	$568,490	$282,349	$286,141	$0	$0	$0	$0
ENGINEERING/DESIGN	$323,509	$323,509	$0	$0	$0	$0	$0
LAND	$0	$0	$0	$0	$0	$0	$0
MATERIAL	$760,709	$154,709	$606,000	$0	$0	$0	$0
PROJECT MGR & SUPPORT	$60,642	$60,642	$0	$0	$0	$0	$0
REMOVAL	$50,000	$0	$50,000	$0	$0	$0	$0
TEST	$260,000	$0	$260,000	$0	$0	$0	$0
CONTINGENCY	$0	$0	$0	$0	$0	$0	$0
ESCALATION	$0	$0	$0	$0	$0	$0	$0
INDIRECTS	$276,367	$190,928	$85,439	$0	$0	$0	$0
AFUDC	$2,667	$1,080	$1,587	$0	$0	$0	$0
Total Cost	**$2,302,385**	**$1,013,218**	**$1,289,167**	**$0**	**$0**	**$0**	**$0**

	-10%	10%
Engineering Range	**$2,072,146**	**$2,532,623**

COMMENTS:

Project Scope:

Revision 1: Revised estimate for additional costs the result of higher costs than originall yestimated for Construction, Testing, Commissioning and indirects.
Testing primarily with the addition of a Commissioning engineer inreased $240k from original estimate.
Construction with the addition of ROW-trimming, clearing and environmental monitoring and mitigation increased by $390k above original estimate.
The indirect costs due to these increases are $64k.

The West Rye Substation Rebuild project is being constructed in support of the recommendations presented from the Rye Area Distribution System Study dated March 01, 2013.

The existing West Rye substation currently referred to as #70 will be renamed to West Rye #67 due to a naming conflict with another 34.5-12.47kV substation currently called #70. The two 12.47kV lines emitting from West Rye substation will be named 67W1 & 67W2.

The existing configuration of West Rye substation consisting of two separate 34.5–4.16kV transformers will be replaced with a single 34.5–12.47kV 10/12.5 MVA transformer. The two existing 34.5kV taps of the 3105 line feeding the existing transformers will be removed and a single tap of the **3105X** will feed the new transformer.

The station service for the substation will be provided from a single phase 34.5kV-120/240V pole mount transformer tapped to the 34.5kV bus.

Assumptions:
Engineering to be outsourced with in-house review, construction to be outsourced.
This estimate is based on Actual costs to date and bid costs from outside source contractors, engineers and testing and commissioning , actual quantities may vary during detailed engineering.
Material estimates based on actuals and vendor quotes..
Labor estimates based on actuals to date and vendor cost estimate quotes.
All new equipment will be installed within the confines of the existing fenced yard or ROW
No additional allowances have been added for aggressive outage recall times.
Estimate includes an average of 0% contingency on Construction direct costs which equates to 0% contingency of total cost.

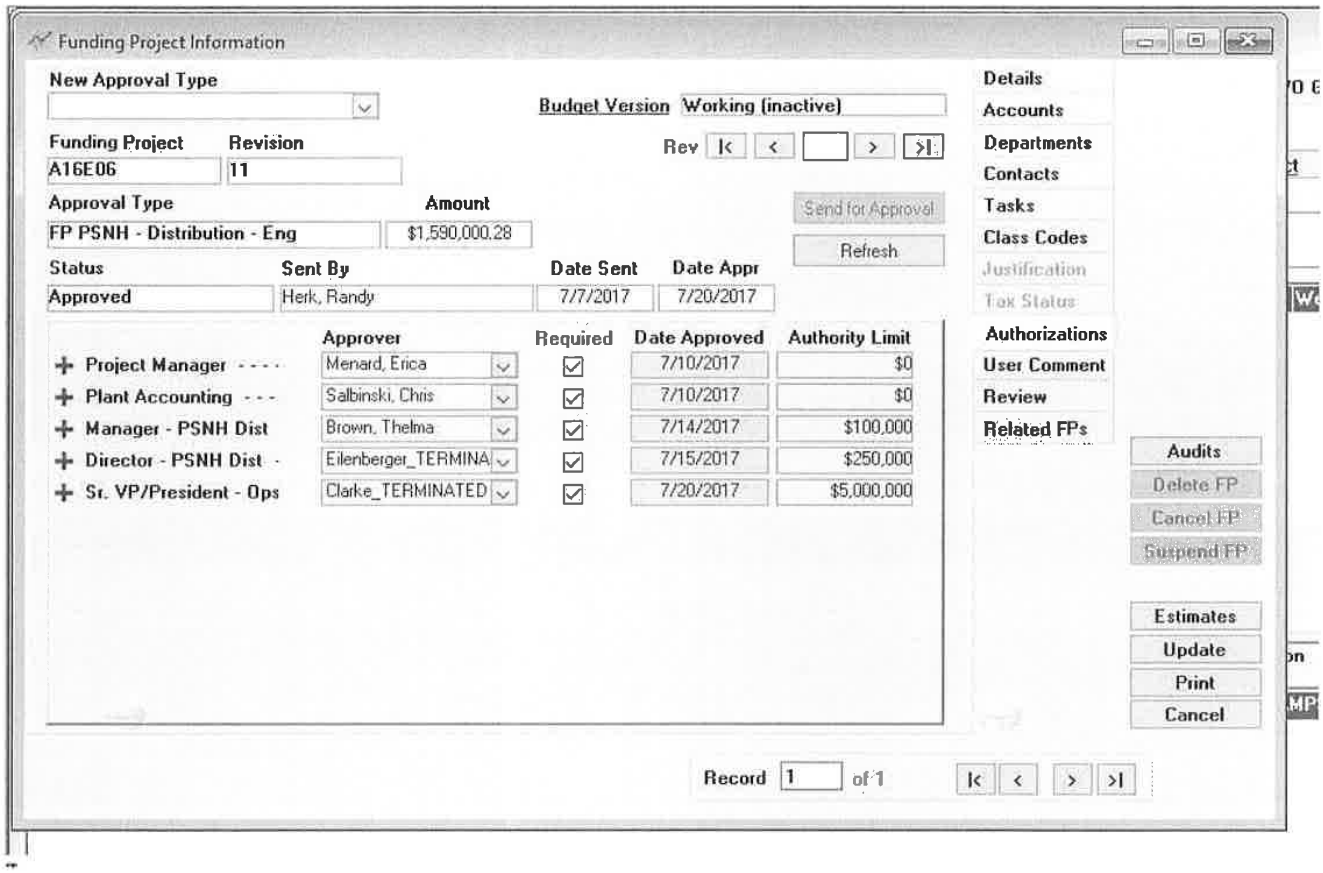
Minutes
01-17-2018

11. West Rye Substation – N. Morales – APPROVED FOR $712,385 (SUPPLEMENT) WITH COMMENTS
    - Table on first page needs a title “Cost summary for Supplemental Request.

Attendance

EPAC Role	Required Members	In-Person	Phone	Voting Designee
Co-Chair	George Wegh	☐	☒	
Co-Chair	John Dipaola-Tromba	☒	☐	
EPAC Administrator	Farah Omokaro	☒	☐	
Projects	Tim Revellese	☐	☒	
Engineering	James Eilenberger	☐	☒	
	John Case	☒	☐	
	John Zicko	☐	☒	
	Robert Andrew	☐	☐	
	Rod Kalbfleisch	☐	☒	
	Swapan Dey	☐	☐	
Siting & Compliance	Robert Clarke	☐	☐	
Investment Planning	Leanne Landry	☐	☐	Glenn Herman
Integrated Planning & Scheduling	Diana Mahoney	☐	☐	
Compliance	Vicki O'Leary	☐	☒	
Transmission /System Ops	Barry R. Bruun	☐	☐	Oswaldo Ortega
	Brian Dickie	☐	☐	Dave Cloutier
Field Ops & Field Engineering	Anthony A. Anzalone	☐	☐	
	Charles Fontenault	☐	☒	
	Donald Boudreau	☐	☐	
	Marc Geaumont	☐	☐	Carol Burke
	Mark Blanchard	☐	☐	
	Saurabh Sahni	☐	☒	

EPAC Role	Required Attendees	In-Person	Phone	Designee
Siting	Kate Shanley	☐	☒	
Siting & Construction Services	Michelle Gallicchio	☐	☐	Patrice Tyrie
Licensing & Permitting	Mark Gardella	☐	☐	
Procurement	Craig Dikeman	☐	☐	
	Fran O'Keefe	☐	☐	
Substation Engineering	Daniel Foley	☐	☐	
	Mark Bellandese	☐	☐	
	Thelma Brown	☐	☒	
Protection & Controls	Dennis Western	☐	☒	
	John Babu	☐	☐	Dominick Fontana
	Stuart Hollis	☐	☐	
T Line & Civil Engineering	Chris Soderman	☒	☐	
	Mohsen Sahirad	☐	☒	
	Jim Bodkin	☐	☒	
	Jamil Abdullah	☐	☒	
	Donald Dibuono	☐	☐	
Transmission Capital Program	Glenn Herman	☒	☐	
Budget & Investment	Peter Neidhardt	☒	☐	
Outage & Ops Planning	Oswaldo Ortega	☐	☒	
	David Cloutier	☐	☒	
Standards	Jen Hebsch	☐	☒	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Budget Version Working (inactive)
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A16E06
Revision
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Status
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Sent By
Herk, Randy
Date Sent
7/7/2017
Date Appr
7/20/2017
Approver
Required
Date Approved
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Plant Accounting - - -
Salbinski, Chris
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Manager - PSNH Dist
Brown, Thelma
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Director - PSNH Dist -
Eilenberger_TERMINA
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Sr. VP/President - Ops
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User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Supplement Request Form

Date Prepared: July 3, 2017	Project Title: West Rye SS Rebuild
Company/Companies: Eversource NH	Project ID Number: A16E06
Organization: NH Operations	Plant Class/(F.P.Type):Substation
Project Initiator: Charles Christensen, PE	Project Type: Specific
Project Manager: Thelma Brown	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N/A
Current Authorized Amount:$1,304,000	Estimated in service date(s): 12/31/17
Supplement Request: $286,000	Other:
Total Request: $1,590,000	

Supplement Justification

This project is to replace the existing 1950's vintage 3MVA 34.5-4.16kV substation with a 10/12MVA 34.5-12.47kV substation

The PAF for this project was approved in Powerplan in April 2016 for $1,304,000. The original PAF is attached. Removal and Addition one-lines are attached which confirm the scope of the project is the same but much more detail and engineering is complete.

The expected cost to complete the project is now $1,590,000 which is $286,000 above the approved project amount.

	PAF Approved Budget	Current Forecast
Direct	$1,040,000	$1,395,000
Indirect	$246,000	$204,000
AFUDC	$18,000	$1,000
Total	$1,304,000	$1,590,000
Difference	$286,000	

The approved direct costs for this project were $1,040,000. It is estimated that the final direct costs associated with this project will be $1,395,000 or 134% of the approved estimate. This increase in direct costs are based on increased internal and external labor and higher than planned material costs.

Justification for Additional Resources

The cost estimate for this project originally was based on all engineering in-house and minor changes to the site from what exists today. Engineering design has been completed by a contractor which is higher than the labor costs originally forecast. The site design went through several iterations and which also increased the amount of engineering contractor labor. The actual material costs are higher than originally budgeted. All major items were identified but many items such as steel and foundations were not in the original estimate.

Docket No. DE 19-057
Data Request STAFF 12-045
Dated 9/20/2019
Attachment STAFF 12-045 AU
Page 18 of 29

Project Number: A16E06

UNESCALATED LINE ITEM DOLLAI

Project Title: West Rye Substation 70H1 & 70H2Transformer Replacement

Escalation Rate 3% Rate $ .416

			Prior		2017		2018		2019		2020		2021 and FUTURE		TOTAL	
			0		1		2		3		4					
CSTXX-CONSTRUCTION	R		MDYS	DOLLARS	MDYS	DOLLARS	MDYS	DOLLARS	MDYS	DOLLARS	MDYS	DOLLARS	MDYS	DOLLARS	MDYS	DOLLARS
Electrical Construction	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
General Construction	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Transmission Automation	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Construction Reps	LT		0	$2,168	20	$8,329	0	$0	0	$0	0	$0	0	$0	20	$10,497
Support Switch/Tag	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
LT Total			0	$2,168	20	$8,329	0	$0	0	$0	0	$0	0	$0	20	$10,497
Employee Expenses	AE	5%		$134		$416		$0		$0		$0		$0		$550
Construction Purchased Material	AM	1%		$0		$2,730		$0		$0		$0		$0		$2,730
Construction Vendor	AQ			$279,112		$273,000		$0		$0		$0		$0		$552,112
Vehicles	AV	20%		$937		$1,666		$0		$0		$0		$0		$2,603
Fees and Payments	BF			$0		$0		$0		$0		$0		$0		$0
Rents and Leases	BR			$0		$0		$0		$0		$0		$0		$0
CSTXX Total			0	$282,349	20	$286,141	0	$0	0	$0	0	$0	0	$0		$568,490
ENRXX-TG ENGINEERING/DESIGN																
Project Services/Drafting	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Transmission Engineering/Design	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Civil Engineering/Design	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Substation Engineering/Design	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Distribution SS Engineering/Design	LT		0	$63,287	0	$0	0	$0	0	$0	0	$0	0	$0	0	$63,287
Protection & Controls Engineering	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Survey Engineering	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Telecom Engineering	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
LT Total			0	$63,287	0	$0	0	$0	0	$0	0	$0	0	$0	0	$63,287
Employee Expenses	AE	5%		$622		$0		$0		$0		$0		$0		$622
Contractor Engineering	AQ			$256,402		$0		$0		$0		$0		$0		$256,402
Vehicles	AV	3%		$3,190		$0		$0		$0		$0		$0		$3,190
ENRXX Total			0	$323,500	0	$0	0	$0	0	$0	0	$0	0	$0		$323,500
LNDXX-TG LAND																
Real Estate	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Employee Expenses	AE	5%		$0		$0		$0		$0		$0		$0		$0
Purchase Land	AM			$0		$0		$0		$0		$0		$0		$0
Vehicles	AV	3%		$0		$0		$0		$0		$0		$0		$0
Fees and Payments	BF			$0		$0		$0		$0		$0		$0		$0
LNDXX Total			0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		$0
MATXX-TG MATERIAL																
See attached	AM			$142,309		$600,000		$0		$0		$0		$0		$742,309
	AM			$0		$0		$0		$0		$0		$0		$0
	AM			$0		$0		$0		$0		$0		$0		$0
Freight		0%		$0		$0		$0		$0		$0		$0		$0
Sales Tax		0%		$0		$0		$0		$0		$0		$0		$0
Stores Expense Allocation (ZC)		1%		$12,400		$6,000		$0		$0		$0		$0		$18,400
MATXX Total				$154,709		$606,000		$0		$0		$0		$0		$760,709
PSMXX-PROJECT MANAGER & SUPPORT																
Project Planning	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Management	LT		0	$10,408	0	$0	0	$0	0	$0	0	$0	0	$0	0	$10,408
Contracts/Purchasing	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Legal	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Transmission Planning	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Environmental	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
LT Total				$10,408		$0		$0		$0		$0		$0	0	$10,408
Employee Expenses	AE	5%		$318		$0		$0		$0		$0		$0		$318
Legal Vendor	AV	0%		$0		$0		$0		$0		$0		$0		$0
Project Support Vendor Inc Sales Tax	AQ			$44,794		$0		$0		$0		$0		$0		$44,794
Vehicles	AV			$1,198		$0		$0		$0		$0		$0		$1,198
Include allowance for Property tax large proj	AM			$3,665		$0		$0		$0		$0		$0		$3,665
Fees and Payments	BF			$259		$0		$0		$0		$0		$0		$259
PSMXX Total				$60,642		$0		$0		$0		$0		$0	0	$60,642
REMXX-TG REMOVAL																
Engineering/Design	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
General Construction	LT			$0		$0		$0		$0		$0		$0		$0
LT Total			0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Employee Expenses	AE	15%		$0		$0		$0		$0		$0		$0		$0
Outside Services	AO			$0		$0		$0		$0		$0		$0		$0
Contractor Labor	AQ			$0		$50,000		$0		$0		$0		$0		$50,000
Vehicles	AV	20%		$0		$0		$0		$0		$0		$0		$0
Rents and Leases	BR			$0		$0		$0		$0		$0		$0		$0
REMXX Total				$0		$50,000		$0		$0		$0		$0		$50,000
TSTXX-TG TEST																
Test Labor-In House	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Employee Expense	AE	10%		$0		$0		$0		$0		$0		$0		$0
Contractor Test & Commissioning Labor	AQ			$0		$260,000		$0		$0		$0		$0		$260,000
Vehicles	AV	10%		$0		$0		$0		$0		$0		$0		$0
TSTXX Total				$0		$260,000		$0		$0		$0		$0		$260,000
Project Escalation				$0		$0		$0		$0		$0		$0	0	$0
Project Contingency				$0		$0		$0		$0		$0		$0		$0
TOTAL PROJECT DIRECT COST				$821,209		$1,202,141		$0		$0		$0		$0		$2,023,350
INDIRECTS																
Non-Productive Time Allocation (ZB)		17%		$12,657		$1,391		$0		$0		$0		$0		$14,048
Payroll Benefits Allocation (ZE)		32%		$26,373		$0		$0		$0		$0		$0		$26,373
Gen SVC CO OVRHD ALLOC (ZF)		3%		$22,073		$292		$0		$0		$0		$0		$22,365
E&S Allocations (ZI) (25%<20M<3%)		12%		$114,553		$71,008		$0		$0		$0		$0		$185,561
AS&E Allocations (ZJ)		1%		$15,272		$12,748		$0		$0		$0		$0		$28,020
AFUDC (ZK)		0%		$1,080		$1,587		$0		$0		$0		$0	0	$2,667
Indirects Subtotal				$192,008		$87,026		$0		$0		$0		$0		$279,034
TOTAL PROJECT COST				$1,013,218		$1,289,167		$0		$0		$0		$0	0	$2,302,385

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APS 1 - Project Authorization Policy

Supplement Request Form

The 34.5kV ROW work has also been added to the scope of the project. This includes building 4 new poles and associated equipment for a mobile SS high side connection.

Explanation for Cost Increase

Labor – A consultant was utilized for all engineering and design. This costs more than utilizing internal engineering. Several site iterations also increased engineering, siting, and permitting costs. Internal labor did decrease by $95,000. Outside services, including the contingency budget increased by $245,000

Estimated Cost Increase $150,000

Material – Major material was included in the original estimate but costs for the transformer, reclosers, and switches is higher than the $589,000 budgeted. Station service, PTs, site expansion, fencing, grounding, and stoning was not included in the original estimate. Many of these items were identified throughout the design process

Estimated Cost Increase $196,000

Indirects / AFUDC - Indirect and AFUDC charges have are estimated to decrease. Some of the decrease in indirects associated with direct labor. Material stock indirects decreased because of the direct material order items that are limited for overhead costs. Other decreases may be accounted for by calculations in the Powerplan system

Estimated Cost Decrease $59,000

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,040	$ 345	$ 1,385
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 1,040	$ 345	$ 1,385
Capital Additions - Indirect	246	(42)	204
AFUDC	18	(17)	1
Total Capital Request	$ 1,304	$ 286	$ 1,590
O&M	-	-	-
Total Request	**$ 1,304**	**$ 286**	**$ 1,590**

Note: Dollar values are in thousands:

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APS 1 - Project Authorization Policy

Supplement Request Form

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 345	$ -		$ 345
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 345	$ -	$ -	$ 345
Capital Additions - Indirect	(42)	-		(42)
AFUDC	(17)	-		(17)
Total Capital Request	$ 286	$ -	$ -	$ 286
O&M	-	-	-	-
Total Request	**$ 286**	**$ -**	**$ -**	**$ 286**

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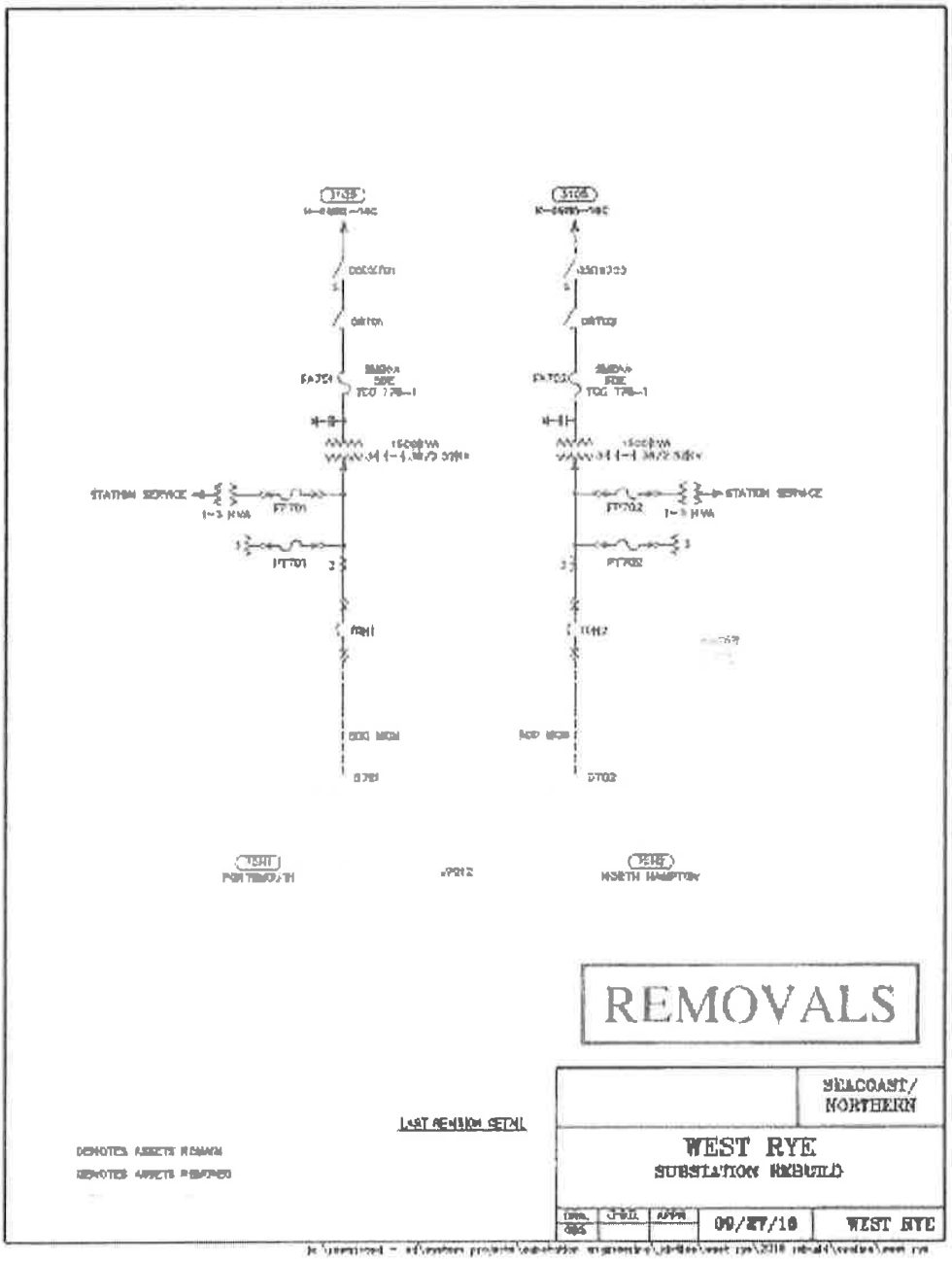
APS 1 - Project Authorization Policy

Supplement Request Form



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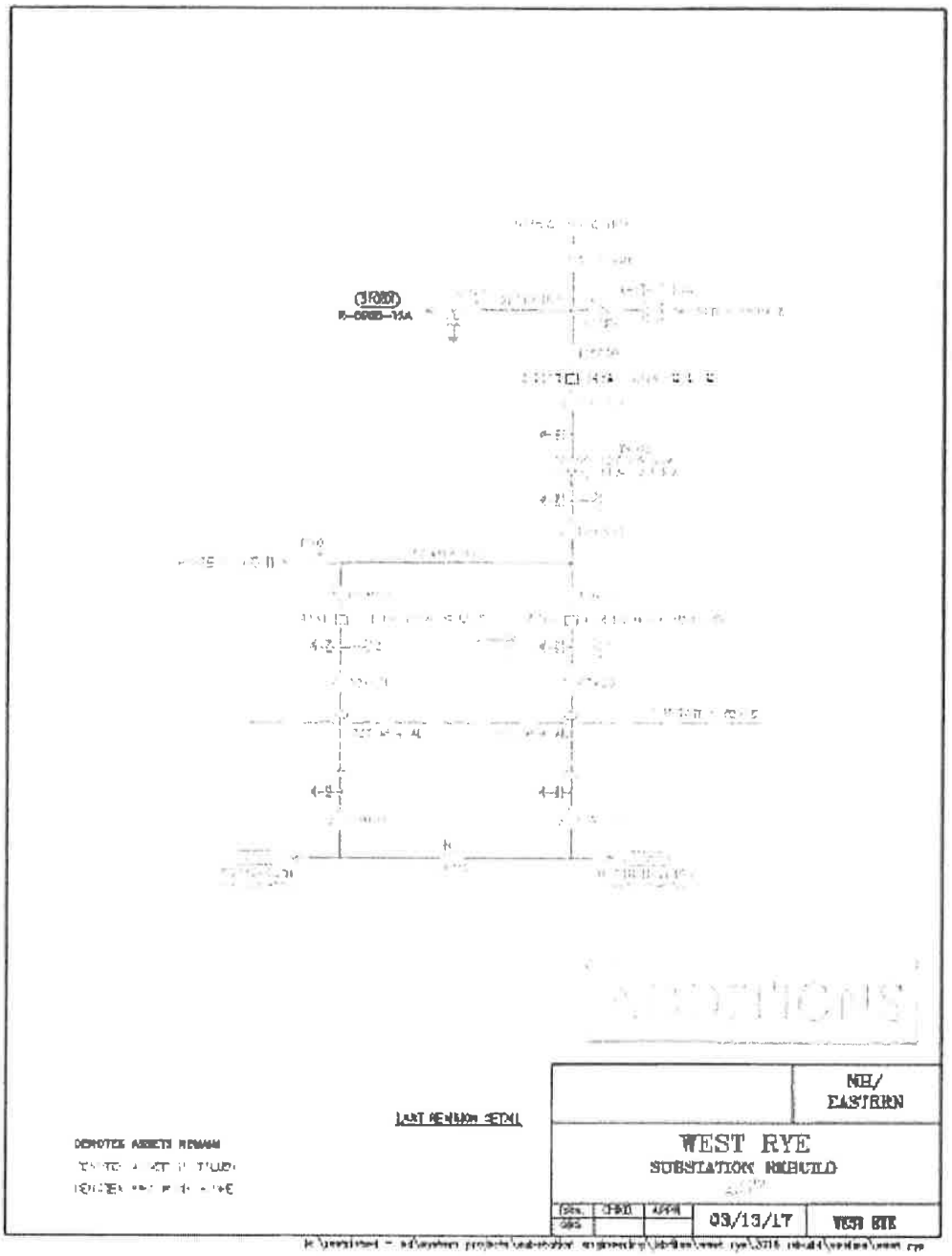
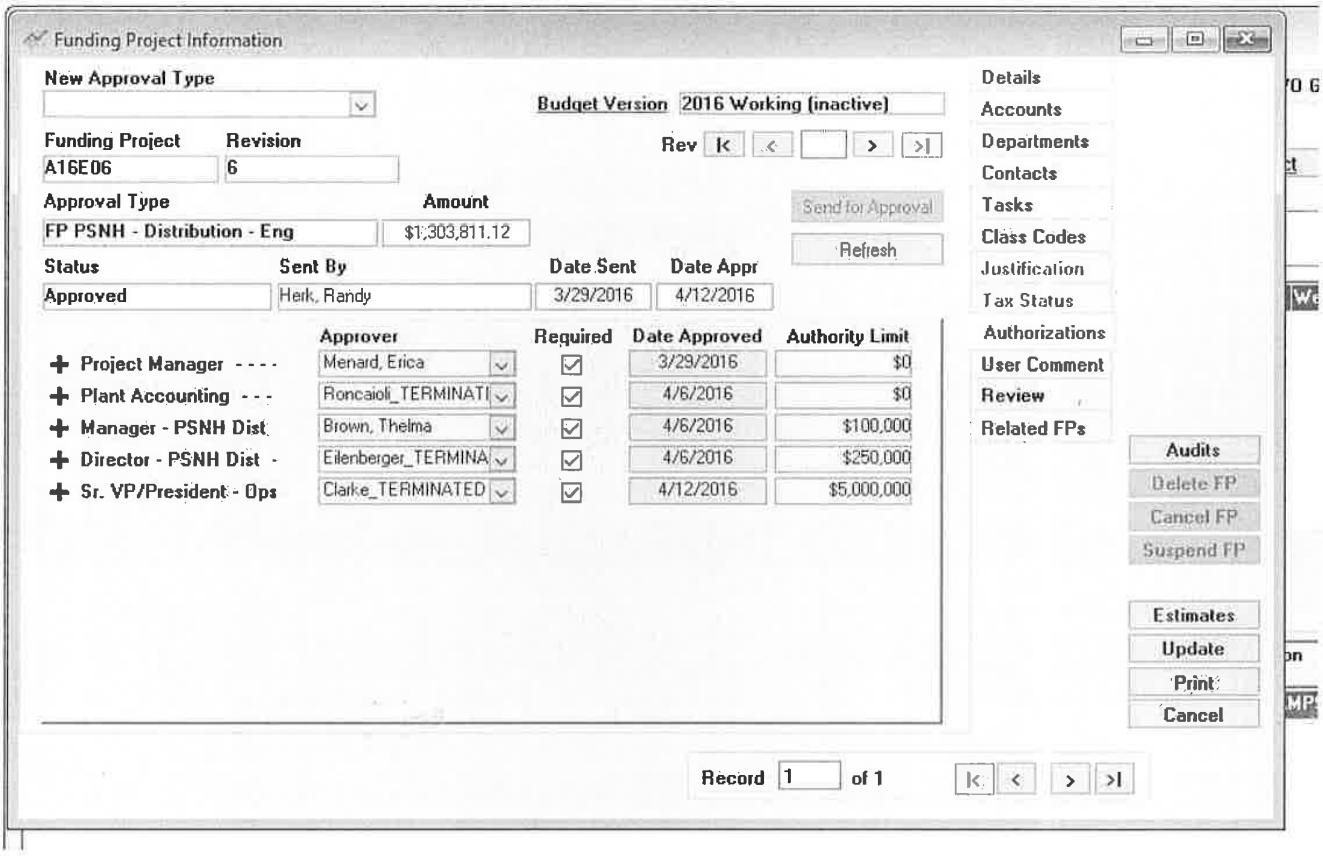
APS 1 - Project Authorization Policy

Supplement Request Form




Funding Project Information
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Revision
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Approver
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Brown, Thelma
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Clarke_TERMINATED
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Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

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Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: 02/26/16	Project Title: West Rye S/S Rebuild
Company: Eversource - NH	Project ID Number: A16E06
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Mike Busby	Project Category: Reliability
Project Owner/Manager: Celine Bilodeau	Project Purpose: part of regulatory tracked program? No
Project Sponsor: Jim Eilenberger	Project Type: Specific
Estimated in service date: 12/31/17	Capital Investment Part of Original Operating Plan? Yes
If Transmission Project: No	Supplement to Existing Authorization? No
	O&M Expenses Part of the Original Operating Plan? No

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

The existing West Rye substation was built in the late 1950's and is a 34.5kV to 4kV substation with two 1.5MVA transformers and switchgear equipment that have exceeded their life expectancy. Replacement parts for the switchgear air breakers are no longer available. The 1.5MVA transformers have exceeded the 85% of maximum load (TFRAT) ratings and test indicate that gas has been generated within the transformers.

A study was completed for the area in March 2013 (Rye Area Study) which identified the area having loading, low voltage and coordination issues. In order to improve the reliability and voltage issues for the area the substation will be converted to a 34.5kV to 12kV substation. Converting from 4kV to 12kV increases the ability to provide contingent coverage for adjacent circuits. The study looked at maintaining the 4kV system but this was eliminated due to the cost of getting right-of-ways in this affluent area.

The scope of work includes installing a 10MVA transformer and three reclosers. One recloser will be installed on the high side of the transformer providing protection and fault isolation. Two reclosers will be installed on each outgoing 12kV circuit. The scope includes installing a RTU for Distribution Automation.

This PAF covers the substation potion of the overall project. A second PAF (A16E01) has been submitted to cover the line portion of the conversion for $1,261,108.

ESTIMATE SUMMARY
PSNH

Project Title: West Rye Substation 70H1 & 70H2Transformer Replacement
Project Mgr/Lead: Natacha Morales
Project Number: A16E06
TAF # XYZ

Estimate By: MPD
Date of Estimate: 7/4/17
ISD: 12/31/17
Estimate # P17-040

ESTIMATE SUMMARY

ESTIMATE TYPE: Engineering

	TOTAL	Prior to 6/1/17	2017 after 5/31/17	2018	2019	2020	2021 and FUTURE
CONSTRUCTION	$177,009	$2,398	$174,611	$0	$0	$0	$0
ENGINEERING/DESIGN	$261,058	$239,166	$21,892	$0	$0	$0	$0
LAND	$0	$0	$0	$0	$0	$0	$0
MATERIAL	$784,788	$117,410	$667,378	$0	$0	$0	$0
PROJECT MGR & SUPPORT	$64,711	$46,467	$18,244	$0	$0	$0	$0
REMOVAL	$50,000	$0	$50,000	$0	$0	$0	$0
TEST	$19,990	$0	$19,990	$0	$0	$0	$0
CONTINGENCY	$25,853	$0	$25,853	$0	$0	$0	$0
ESCALATION	$0	$0	$0	$0	$0	$0	$0
INDIRECTS	$204,333	$79,015	$125,318	$0	$0	$0	$0
AFUDC	$1,209	$216	$993	$0	$0	$0	$0
Total Cost	**$1,588,952**	**$484,672**	**$1,104,279**	**$0**	**$0**	**$0**	**$0**
	-10%	10%					
Engineering Range	**$1,430,056**	**$1,747,847**					

COMMENTS:

Project Scope:

The West Rye Substation Rebuild project is being constructed in support of the recommendations presented from the Rye Area Distribution System Study dated March 01, 2013.

The existing West Rye substation currently referred to as #70 will be renamed to West Rye #67 due to a naming conflict with another 34.5-12.47kV substation currently called #70. The two 12.47kV lines emitting from West Rye substation will be named 67W1 & 67W2.

The existing configuration of West Rye substation consisting of two separate 34.5–4.16kV transformers will be replaced with a single 34.5–12.47kV 10/12.5 MVA transformer. The two existing 34.5kV taps of the 3105 line feeding the existing transformers will be removed and a single tap of the **3105X** will feed the new transformer.

The station service for the substation will be provided from a single phase 34.5kV-120/240V pole mount transformer tapped to the 34.5kV bus.

Assumptions:

Engineering to be outsourced with in-house review, construction to be outsourced.
This estimate is based on Project Scope Document only, actual quantities may vary during detailed engineering.
Material estimates based on previous work, vendor quotes, and RS Means.
Labor estimates based on previous work, J. Bifulco S/S labor units, R.S. Means, and NECA labor units.
All new equipment will be installed within the confines of the existing fenced yard or ROW
No additional allowances have been added for aggressive outage recall times.
Estimate includes an average of 15% contingency on Construction direct costs which equates to 1.5% contingency of total cost.

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

Cost ($000)	Prior Authorized*	2016	2017	2018 +	Totals
Capital Additions - Direct		69	921		990
Customer Contribution Removals net of Salvage			50		50
Total - Direct Spending	$ -	69	971		1,040
Capital Additions - Indirect		13	233		246
Subtotal Request	$ -	81	1,204		1,285
AFUDC (half-year convention)		1	18		18
Total Request	$ -	82	1,222		1,304

Summary Project Description

The reason for the work at West Rye is to remove the existing obsolete equipment, address the growth, improve the low voltage and reliability. The area will be converted from 4kV to 12kV in the footprint of the existing substation. The two 1.5MVA transformers will be replaced with a single 10/12 MVA transformer. Three (3) Reclosers will be installed; one for the high side transformer protection and one on each (renamed 70W1 & 70W2) 12kV circuits along with a RTU for Distribution Automation.

Cost ($000)	Total Project Costs	Amount in Operating Plan	Difference
Capital	$ 1,304	$1,304	$0
O&M	$	$0	$
Total	$1,304	$1,304	$0

Project Authorization

Project authorization below must be in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

Approver	Approver Name	Approver Signature	Date
Project initiator	Mike Busby		
Project manager	Celine Bilodeau		
Plant Accounting	Michelle Roncaioli		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

Overall Justification

The West Rye S/S is a 1955 vintage 34.5kV to 4.16kV nominal substation. The transformers, 70H1 & 70H2, at West Rye are loaded to 109.3% and 94.7% of their nameplate rating. The load exceeds the TFRAT threshold of 85% to 96% and 92% respectively. Both transformers have been generating gas within the transformers for a number of years.

70H1 (1955 Transformer's vintage) shows a sharp jump of carbon monoxide, & methane and high levels of ethane. Possibly due to a thermal fault of 300 to 700C.

70H2 (1955 Transformer's vintage) shows high levels of Ethylene, Acetylene, Nitrogen and Oxygen; possibly from contact heating.

These gas-in-oil results indicate both transformers potentially have internal concerns that may lead to failure. Based on the age, gassing and loading the transformers should be replaced.

The circuits in the area have been experiencing low voltages. The rebuilt substation will be 34.5kV to 12.47kV. Between the larger transformer and voltage conversion, the voltage issues will be addressed. This project removes obsolete equipment, converts the area to 12kV and adds Distribution Automation.

Project Scope

Remove two (2) 1.5MVA, 34.4-4.36kV transformers
Remove two (2) 4kV breakers
Install one (1) 10/12 MVA, 34.5-12kV transformer
Install three (3) Reclosers
Install Distribution Automation

Project Objectives

Increase capacity at the West Rye S/S
Convert the substation from 4kV to 12kV
Improve relay protection and coordination
Remove obsolete equipment
Add Distribution Automation

Business Process and / or Technical Improvements:

Remove obsolete equipment
Increase capacity
Improve reliability
Improve voltage levels
Implement Distribution Automation

Assumptions

Loads on the West Rye substation will be off loaded to other circuits during construction.

Alternatives Considered

Convert area to 34.5kV instead of 12kV; this option was eliminated because this is a heavily treed area with most roads designated as "Scenic" making it difficult to obtain the desired level of tree trimming clearance required for 34.5 kV circuits.

Project Schedule

Describe the project schedule and milestones. Include estimated start and end dates.

Milestone/Phase Name	Estimated Completion Date
Engineering – start	5/1/16
Engineering – complete	9/1/16
Construction - start	4/1/17
In Service	6/1/17

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Financial Evaluation

Direct Capital Costs ($000)	2016	2017	2018	Total
Straight Time Labor	$15	$156	$	$170
Overtime Labor				$
Outside Services	$	$50	$	$ 50
Materials	$	$589	$	$589
Other, including contingency amounts (describe)	$54	$176	$	$230
Total	$69	$971	$	$1,040

Indirect Capital Costs ($000)	2016	2017	2018	Total
Benefits / Loaders	$13	$233	$	$246
Capitalized interest or AFUDC, if any	$1	$18	$	$18
Total	$13	251	$	264

Total Capital Costs	$82	$1,222	$	$1,304
Total O&M Costs				
Total Project Costs ($000)	$82	$1,222	$	$1,304

The project includes contingency funds approximately 17% for cost of removing possible contaminated soils or hazardous foundations as well as the potential increase of contractor cost.

Regulatory Approvals

Permitting required by the Town of Rye, N.H.

Risks and Risk Mitigation Plans

The plan is to build the substation during the lightly loaded time of the year and off load to other circuits. A mobile substation can be installed if needed.

The soil will be tested near the sample valves for the transformers; cost of soil remediation is included in contingency costs.

The concrete foundations will be tested for asbestos and oil staining; cost of removals is included in the contingency costs.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/18/2019**
Request No. TS 2-055 **Page 1 of 3**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: West Rye S/S Re-build, #A16E06, 12-045AU: Please provide the following information for this project:

a. Re: Justification at pages 2-3, 10-12, and 17-19: Explain how the costs listed, including construction costs, were overlooked during the original scoping and estimating for this project. Were the design/scoping engineers interviewed by Management to determine the root cause for these omissions? If not, why not? If yes, what were the results of those discussions? Why was a consultant/contractor engineer hired to perform the work as opposed to Eversource engineers? Was any reimbursement of costs obtained from the consultant engineer? If yes, please provide the supporting accounting information. If not, please explain.
b. Please provide an itemized breakout of overheads, AFUDC, and other costs leading up to the variance.
c. Did Eversource engineers conduct a site visit and site assessment during the initial scoping and designing of the project? If not, why not?
d. At any time did Project Managers work with project cost analysts to control cost escalation for this project? If not, why not? If yes, what were the results? Given the monthly reports received by Management, was Management actively involved in controlling the cost escalation of this project? If not why not? If yes, were cost controls put into place?
e. Was the Substation Constructability Walk Down Checklist used for this project? If yes, please provide a copy.

Response:
Clarifications and refinements to the scope and cost estimate in the normal evolution of the project are to be expected and do not constitute "omissions." Eversource Management is informed of such changes in the normal course of monthly project reporting. The preliminary engineering and original estimate did not "fail" to consider these items, nor were the items missed. The engineering and project-cost estimation process is iterative and involves graduated stages of information gathering, assessment, estimation and projections that are refined to a final pre-construction cost based on detailed project plans and detailed cost assessments. The cost estimates derived on the basis of conceptual-level engineering plans and preliminary cost projections are not intended to serve as the basis for final, pre-construction starting points for the project. Therefore, the premise that costs were “overlooked” is false.

a) Please refer to Attachment TS 2-055 for a general summary of the project life cycle and Eversource project funding and authorization process at the time of the project. This document

includes reference to a recent transition to a staged sanctioning process where full project funding authorization is not granted until sufficient engineering and procurement information is available to develop a full project estimate of sufficient accuracy to minimize the need for incremental authorizations during construction.

This project went through several iterations of project scope and estimate development as well as funding authorization. The additional costs identified on pages 2-3 of Attachment Staff 12-045AU were largely the result of issues that arose during project execution (poor steel fab, material description redundancies, etc.). These costs could not have been anticipated during original scope development. The use of animal protection devices was not a standard practice when this project was initiated, but became standard during execution. It was determined that the new standard for animal protection would be applied to this project. Late in the process of P&C design but prior to construction, it was determined that several additional items were required to ensure proper functionality of the completed substation and these were added at that time. Situations like this are often encountered during the engineering process and are not considered to be omissions or failures on the part of engineers performing initial scope development.

The additional costs identified on pages 17-19 are related to changes in the resource plan for the project (outsourcing engineering), receipt of manufacturer pricing of major equipment, increased definition through engineering progress of other materials required for the project, and higher than expected cost for site design and permitting. This is not considered abnormal through the project evolution.

An engineering consultant was hired to perform the detailed engineering design for this project due to internal engineering resource constraints. Eversource does not staff its engineering organization to perform the engineering on all projects and routinely outsources design services when necessary.

Eversource did not seek cost reimbursement from the design consultant in this case. It was determined that there was accountability on the part of Eversource as well as the consultant, therefore no claim was warranted.

b) Refer to Attachment TS 2-055 for a general summary of the types and variability of indirect project costs. The following table summarizes the indirect costs to the project:

	Original, $k	SRF #1, $k	SRF#2, $k	SRF#3, $k	SRF#4, $k
Direct Cost	1,040	1,383	2,023	2,332	2,581
Indirect Cost	246	204	276	331	607
Aggregate Rate	24%	15%	14%	14%	23%
AFUDC	18	1	3	2	3

The variance in indirect cost is driven primarily by an increase in direct project cost and to a lesser degree by change in individual overhead rates.

c) A site visit was made by the Substation Engineering Supervisor prior to developing the initial project scope and budget for the project in August 2015. It is standard to conduct a site visit prior to scoping a project.

d) At the time this project was in execution, it was Eversource's practice to assign dedicated cost analysts to support project managers with cost control, analysis and forecasting for major transmission projects. At the time of this project, cost analyst support for distribution-only projects did not perform all of these functions and was transitioning this practice to fully support major distribution-only projects.

This project was reviewed monthly at the Distribution Capital Project Review meeting. Cost control measures included budget forecasting, weekly and monthly reviews of the project cost, change order review and negotiations with contractors as well as attending the monthly Distribution Capital Review and Major Project Group meetings. Project forecast changes were presented and justified to management at these meetings. Impacts to the annual distribution budgets were discussed with respect to cash flow adjustments from year to year. Required cost controls included a requirement to request and secure supplemental funding to complete the project.

e) The Substation Constructability Walkdown Checklist, which was still in development at the time of this project and is still not in its final form, was not utilized on this project. The checklist formalizes the activities which are conducted as a process improvement initiative. The intended purpose of this checklist is to aid field construction resources in the transition of projects into the construction phase. The use of this checklist was an outcome of the Lessons Learned from a different project and was not in use on NH projects prior to that time.

funding_project	A16E06

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
A16E0601	**WEST RYE SS REBUILD**	Admin and Eng OH- Acct Use Only		2016	0	$ 90.54
				2017	0	$ 17,867.61
				2018	0	$ 5,986.01
				2019	0	$ 2,296.28
		AFUDC Debt		2016	0	$ 10.99
				2017	0	$ 1,509.38
				2018	0	$ 1,177.42
		Alloc- E+S OH Subst- Acct Use Only		2018	0	$ 237.58
				2019	0	$ (43,998.02)
		Contractor Labor		2018	0	$ -
				2019	0	$ -
			I C REED & SONS INC	2018	0	$ -
				2019	0	$ -
			TRC LOCKBOX	2017	0.04	$ 770.63
		Contractor Materials		2019	0	$ -
			I C REED &	2019	0	$ 99,862.00
			I C REED & SONS INC	2018	0	$ 781.31
				2019	0	$ 102,912.55
		Contractor Services		2018	0	$ -
				2019	0	$ -
			DOUCET SURVEY INC	2017	1	$ 6,905.39
			I C REED &	2018	0	$ 211,284.00
				2019	0	$ (99,862.00)
			I C REED & SONS INC	2017	0	$ 408,914.00
				2018	0	$ 310,203.55
				2019	0	$ (102,912.55)
		Contractor Services- Other		2019	0	$ -
			I C REED & SONS INC	2018	0	$ 16,249.58
				2019	0	$ (13,066.52)
		Contractor Vehicles + Equip		2019	0	$ -
			I C REED & SONS INC	2018	0	$ 4,889.48
				2019	0	$ (4,149.02)
		Engin and Super OH- Acct Use Only		2016	0	$ 950.28
				2017	0	$ 165,745.57
				2018	0	$ 271,611.12
				2019	0	$ -
		Engineering Design Services		2017	0	$ -
				2018	0	$ -
				2019	0	$ -
			Animal Protection	2018	10497	$ 10,496.75
			ELECTRIC POWER SYSTEM INC	2017	0	$ 10,150.00
				2018	0	$ 39,249.00
			LEIDOS ENGINEERING LLC	2017	4	$ 274,856.50
				2018	0	$ 9,318.50
			MIDSUN GROUP INC	2018	0	$ (209.94)
			TRC ENVIRONMENTAL CORP	2017	2	$ 1,527.50
			TRC LOCKBOX	2017	2	$ 22,555.93
				2018	0	$ 3,995.00
		Gen Ser Co Benefit Loader- Acct Use Only		2016	0	$ 265.82
				2017	0	$ 4,746.12
				2018	0	$ 2,961.10
				2019	0	$ -
		General Supplies		2019	0	$ -
			JP MORGAN CHASE BANK	2017	1	$ 259.00
		Labor Overtime Non-Exempt		2017	56.25	$ 3,187.96
				2018	34.75	$ 2,011.68
				2019	0	$ -
		Labor Straight Time Exempt		2016	26.5	$ 1,398.73
				2017	1519.75	$ 66,390.51
				2018	453.5	$ 19,199.32
				2019	0	$ -
		Labor Straight Time Non-Exempt		2016	94.5	$ 3,663.91

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16E0601	WEST RYE SS REBUILD	Labor Straight Time Non-Exempt		2017	796.75	$ 31,125.32
				2018	327.5	$ 12,628.21
				2019	0	$ -
		Licensing and Permitting		2017	0	$ -
				2019	0	$ -
			GZA GEO ENVIRONMENTAL INC	2017	2	$ 35,425.56
			GZA GEOENVIRONMENTAL INC	2017	0	$ 1,322.28
		Materials- Purchased		2019	0	$ -
			JP MORGAN CHASE BANK	2017	1	$ 668.40
			SIGN,WARNING, EVERSOURCE ENERGY SUBSTATION ADDRESS SIGN, BL	2018	1	$ 117.93
		Materials- Stores		2019	0	$ -
			ADAPTER, COAXIAL, TNC MALE TO TNC FEMALE RIGHT ANGLE RF ADAP	2017	2	$ 11.01
			ANTENNA, COAX CABLE ISOLATION, TYPE - "N", F/F, BULKHEAD CONNEC	2017	1	$ 31.88
			ANTENNA, GPS, LOW PROFILE USED WITH DSCADA RADIO DEVICES	2017	1	$ 75.00
			ANTENNA, JUMPER, CABLE, 3' TWS240NM COAX,ASSEMBLY BY TESSCO	2017	1	$ 17.95
			ANTENNA, YAGI 216-226MHZ 6.5DB, W/C1005 HARDWARE, 25 FT RG213 NM	2017	1	$ 401.31
			BRACKET, CLAMP SET, ANTENNA POLE MOUNT (1"-1.75" OD POLE)	2017	1	$ 57.84
			BRACKET, MOUNT, FOR LOW PROFILE GPS ANTENNA	2017	1	$ 10.88
			BUSHING,ELECTRICAL, TYPE: O PLUS C II, INTERCHANGEABLE, 400/1200	2018	1	$ 1,983.00
			CABINET, NEMA 4, SINGLE LOCK DOOR, 30"H X 24"WX10"D	2017	1	$ 418.23
			CABLE, BARE, EXTRA FLEXIBLE ROPE-LAY, #2 AWG CIR.MIL=66, STRAND	2018	10	$ 34.62
			CABLE, C961 COAXIAL, FOR SEL-240 GPS CLOCK, 20 FT	2017	1	$ 56.37
			CABLE, DATA, DB9M/F, STRAIGHT 10 CONDUCTOR, 6' LENGTH	2017	8	$ 278.47
			CABLE, DB9M/M, 3 WIRE, DOUBLE SHIELDED, 6', 2-2, 3-3, 5-5	2017	1	$ 21.69
			CABLE, FIBER OPTIC, OPTIC, ST-ST, 62.5 MM, 4 METER, DUPLEX	2017	1	$ 26.55
			CABLE, FIBER OPTIC, SC-ST, MULTIMODE, 2 FIBER, 62.5 M.M., DUPLEX, ZI	2017	5	$ 131.35
			CONNECTOR, COAXIAL, BNC T CONNECTOR FEMALE-MALE-FEMALE	2017	10	$ 75.00
			CONNECTOR, COAXIAL, BNC TO TSP CONVERTER, 1 FT LEAD	2017	10	$ 110.00
			FRAME, RECLOSER, SUBSTATION MOUNT, FOR NOVA TRIPLE SINGLE KN	2017	3	$ 5,133.12
			INSULATOR, STATION POST, 200 KV BIL, W/ TR210	2018	3	$ 218.50
			INTERFACE, RTU, BASIC, FOR SEL-2401GPS, SEL-3505 AND 2505	2018	-1	$ (1,257.67)
			INTERFACE, SEL RTU, BASIC, NEMA 4 CABINET, 24VDC UPS, SEL-2401GPS	2017	2	$ 10,929.16
			LUG,COMPRESSION, 2 AWG, LONG BARREL, 1 HOLE, TINNED CU	2018	10	$ 11.20
			PIPE,SEAMLESS, BUS, 2 IN, 20 FT LG, SCH 40, AL ALLOY 6063-T6	2018	60	$ 218.67
			RADIO, MOBILE, 215 TO 240 MHZ, VIPER SC PLUS	2017	1	$ 1,370.29
			RELAY, MODULE, SEL-3505, RTAC RTU, PANEL MOUNT, LOW POWER, AU	2017	1	$ 795.00
			RELAY, TRANSCEIVER, EIA-232 TO FIBER OPTIC WITH IRIG-B, REQUIRES	2017	6	$ 774.00
			RELAY, TRANSCEIVER, EIA-232 TO FIBER OPTIC WITH IRIG-B, REQUIRES	2017	6	$ 774.00
			SIGN,DANGER, HARD HAT AREA, 10 X 14 IN, 0.125 IN POLYCARBONATE, R	2018	5	$ 128.65
			SIGN,DANGER, HIGH VOLTAGE KEEP OUT..., 10 IN H, 14 LG, POLYCARBON	2018	8	$ 171.76
			SIGN,DANGER, LOWER ANTENNA, 7 X 10 IN, 0.125 IN POLYCARBONATE W	2018	4	$ 71.84
			SIGN,NOTICE, APPROVED FR CLOTHING REQUIRED FOR ENTRY..., 14 IN X	2018	5	$ 64.05
			SIGN,WARNING, POSITIVELY NO TRESPASSING, EVERSOURCE LOGO, 10	2018	6	$ 154.38
			SIGN,WARNING, SUBSTATION MINIMUM SAFE WORKING CLEARANCES, 18	2018	5	$ 101.05
			SWITCH,DISCONNECT, 1200 A, 61 KA MOM , 34.5 KV, VERTICAL BREAK, AI	2017	2	$ 12,760.00
			SWITCH,DISCONNECT, 2000 A, 100 KA MOM, 34.5KV, MANUAL OPERATED,	2017	1	$ 7,826.00
			SWITCH,DISCONNECT, IN LINE, 900 A CONTINUOUS, 35 KV, 200 KV BIL, 4/0	2017	3	$ 2,040.48
			TRANSFORMER, STATION SERVICE, CONVENTIONAL, 34500GRDY/19920 H	2017	3	$ 7,383.00
		Meals		2018	1	$ 20.00
				2019	0	$ -
		Mileage		2016	286	$ 154.44
				2017	1909	$ 1,099.82
				2018	169	$ 170.56
				2019	0	$ -
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 16.62
				2017	0	$ 12,547.33
				2018	0	$ 26,808.14
				2019	0	$ (6,599.70)
		Miscellaneous Accounting Adjustments		2019	0	$ (0.00)
		Non Productive Time Loader- Acct Use Only		2016	0	$ 871.91
				2017	0	$ 16,155.77
				2018	0	$ 4,867.18
				2019	0	$ -
		Other Outside Services		2018	0	$ -
				2019	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16E0601	WEST RYE SS REBUILD	Other Outside Services	BURNS & MCDONNELL	2018	0	$ 3,750.29
			DOUCET SURVEY INC	2017	1	$ 1,515.61
			ELECTRIC POWER SYSTEM INC	2018	0	$ 80,066.64
			HIGH VOLTAGE MAINTENANCE	2018	0	$ 150,884.00
		Other Outside Services- Other		2018	0	$ -
				2019	0	$ -
			EMPIRE SHEET METAL INC	2017	0	$ 49,759.00
		Other Outside Services- Tree Planned		2018	0	$ -
				2019	0	$ -
			ASPLUNDH TREE EXPERT CO	2017	5	$ 12,077.62
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 1,732.06
				2017	0	$ 35,233.76
				2018	0	$ 11,759.25
				2019	0	$ -
		Property Taxes		2017	0	$ 5,306.59
				2018	0	$ 1,197.04
				2019	0	$ -
		Scrap Electric Equipment		2019	0	$ -
			MERIDIAN RECYCLING LIMITED	2017	0	$ 8,500.00
		Service Company Allocations- Acct Use Only		2016	0	$ 0.00
				2017	0	$ 0.00
				2018	0	$ 0.00
		Stores Loader- Acct Use Only		2017	0	$ 10,185.50
				2018	0	$ 761.68
				2019	0	$ 3,250.00
		Stores over 25K		2019	0	$ -
			RECLOSER, VACUUM, ELECTRONIC, NOVA TRIPLE-SINGLE TYPE KNTS, T	2017	2	$ 54,855.60
			RECLOSER, VACUUM, ELECTRONIC, NOVA TRIPLE-SINGLE TYPE KNTS, T	2017	1	$ 31,603.00
			XFMR, PWR, LTC, ONAN/ONAF, 34.5 KV DELTA PRIM, 12.47 KV Y SEC, RAT	2019	1	$ 523,817.00
		UVL-Contractor Labor		2018	0	$ -
				2019	0	$ -
			0106377 - UVL - PSM00 - 00001	2017	0	$ -
			0107189 - UVL - PSM00 - 00001	2017	0	$ -
			0108100 - UVL - ENG00 - 00142	2017	0	$ -
			0108711 - UVL - ENG00 - 00142	2017	0	$ -
			0109645 - UVL - ENG00 - 00142	2017	0	$ -
			0109645 - UVL - PSM00 - 00038	2017	0	$ -
			0110033 - UVL - ENG00 - 00142	2017	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 6.98
				2017	0	$ 7,862.40
				2018	0	$ 3,777.60
				2019	0	$ -
A16E0601 Total					16384.54	$ 3,031,000.57
A16E0602	H3105X 34.5kV Line Construction	Admin and Eng OH- Acct Use Only		2017	0	$ 1,168.86
				2018	0	$ 64.15
				2019	0	$ 153.22
		AFUDC Debt		2017	0	$ 86.78
				2018	0	$ 60.77
		Alloc- E+S OH Lines- Acct Use Only		2019	0	$ 12,911.66
		Contractor Labor	I C REED & SONS INC	2019	0	$ -
		Contractor Services		2018	0	$ -
			I C REED & SONS INC	2017	0	$ 26,664.04
				2018	0	$ 6,882.58
		Contractor Services- Other		2018	0	$ -
			I C REED & SONS INC	2017	0	$ 27,608.69
				2019	0	$ 13,066.52
		Contractor Vehicles + Equip		2018	0	$ -
			I C REED & SONS INC	2017	0	$ 15,055.89
				2019	0	$ 4,149.02
		Engin and Super OH- Acct Use Only		2017	0	$ 14,756.70
				2018	0	$ 3,205.26
		Gen Ser Co Benefit Loader- Acct Use Only		2017	0	$ 74.35
		Labor Straight Time Exempt		2017	42	$ 1,925.55
		Labor Straight Time Non-Exempt		2017	20.5	$ 675.63
		Lobby Stock Loader-Acct Use Only		2017	0	$ 10,770.21

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16E0602	H3105X 34.5kV Line Construction	Lobby Stock Loader-Acct Use Only		2018	0	$ 439.75
		Materials- Purchased		2018	0	$ -
			ANCHOR,ROD, 1 IN DIA , 7 FT LG, STEEL, GALV, FOR TRIPLE STRAND EYI	2017	8	$ 100.40
			BOLT,MACHINE, SQUARE HEAD, 3/4 IN, 14 IN LG, STEEL, GALV, W/ SQUAR	2017	21	$ 26.02
			BOLT,THRU, SQUARE HEAD, 5/8 IN, 10 IN LG, ROLLED THREAD, STEEL, HO	2017	3	$ 1.69
			BOLT,THRU, SQUARE HEAD, 5/8 IN, 12 IN LG, ROLLED THREAD, STEEL, HO	2017	8	$ 9.04
			BRACE, CONNECTOR,BRACKET, PUSH BRACE, PUSH BRACE, FOR 6 IN TO	2017	1	$ 29.67
			CLEVIS, DEADEND EYELET, 1-1/2 IN X 3/4 IN, GALV	2017	12	$ 107.52
			CONNECTOR, PARALLEL GROOVE, 8 AWG STRANDED - 1/0 AWG RUN, 8 A	2017	16	$ 15.52
			GRAYBAR ELECTRIC COMPANY INC	2017	275.2	$ 72.45
			PIN, 4 X 4 X 13 IN, FOR POLE TOP, LINE POST, BRACKET, 35 KV	2017	5	$ 85.45
			PIN,INSULATOR, SHORT STUD, 3/4 IN DIA, 1-3/4 IN LG, GALV STEEL	2017	5	$ 18.40
			SCREW, ROLLED THREAD, LAG, 1/2 IN, 4 IN LG, STEEL, GALV, PILOT POIN	2017	22	$ 6.60
			WASHER,FLAT, SQUARE, 3 IN X 3 IN X 1/4 IN SQ, 13/16 IN ID, GALV, FOR 5/8	2017	54	$ 46.44
			WASHER,SPRING, COIL, 3/4 IN, STEEL, GALV	2017	40	$ 9.60
			WASHER,SPRING, COIL, 5/8 IN, GALV	2017	8	$ 1.12
			WASHER,SQUARE, 7/8 IN BOLT, 4 IN X 4 IN SQ, STEEL, GALV	2017	4	$ 4.20
			WASHER,SQUARE, CURVED, 3 IN X 3 IN X 1/4 IN SQ, GALV, FOR 5/8 IN OR 3	2017	69	$ 33.12
		Materials- Stores		2018	0	$ -
			ANCHOR, SINGLE HELIX, 12 IN, 10000 LB	2017	5	$ 208.23
			ANCHOR,ROD, 1 IN DIA , 7 FT LG, STEEL, GALV, FOR TRIPLE STRAND EYI	2017	9	$ 201.72
			BOLT, DOUBLE ARMING, 3/4 IN, 24 IN LG, STEEL, GALV, W/ 4 SQUARE NUT	2017	6	$ 23.49
			BOLT,EYE, 3/4 X 12 IN, STEEL, GALV	2017	8	$ 71.83
			BOLT,MACHINE, 3/4 IN, 12 IN LG, STEEL, GALV, W/ SQUARE NUT	2017	10	$ 20.30
			BOLT,MACHINE, 5/8 IN, 14 IN LG, STEEL, GALV, W/ SQUARE NUT	2017	6	$ 7.07
			BOLT,MACHINE, SQUARE HEAD, 3/4 IN, 14 IN LG, STEEL, GALV, W/ SQUAR	2017	21	$ 34.30
			BOLT,THRU, SQUARE HEAD, 5/8 IN, 10 IN LG, ROLLED THREAD, STEEL, HO	2017	3	$ 2.75
			BOLT,THRU, SQUARE HEAD, 5/8 IN, 12 IN LG, ROLLED THREAD, STEEL, HO	2017	8	$ 8.61
			BRACE, CONNECTOR,BRACKET, PUSH BRACE, PUSH BRACE, FOR 6 IN TO	2017	1	$ 29.55
			BRACKET, CUTOUT AND ARRESTER, 24 IN LG, FIBERGLASS, FERR / ALUM	2017	1	$ 29.49
			BRACKET, NEUTRAL OFFSET, 5/8 X 25 IN, STEEL, GALV	2017	3	$ 64.69
			CABLE, BARE, GUY WIRE, 18M, B416-93, ALUMOWELD, AL CLAD STEEL, 1	2017	500	$ 162.36
			CLAMP,STRAIN, QUADRANT, 0.5-1.2 IN DIA, 3/0 AWG - 795 MCM ACSR, AL,	2017	9	$ 365.53
			CLAMP,STRAIN, STRAIGHT LINE SIDE OPENING, 3/0 - 556.5 AWG, AL, W/ LI	2017	24	$ 133.05
			CLEVIS, BALL Y, HOT LINE TYPE, 30000 LBS ULTIMATE STRENGTH , STEE	2017	30	$ 409.71
			CLEVIS, DEADEND EYELET, 1-1/2 IN X 3/4 IN, GALV	2017	12	$ 103.36
			CONNECTOR, PARALLEL GROOVE, 8 AWG STRANDED - 1/0 AWG RUN, 8 A	2017	17	$ 16.49
			CONNECTOR,WEDGE TAP, SHELL DRIVEN, 336 ACSR RUN, 336 ACSR TAP	2017	20	$ 260.56
			CONNECTOR,WEDGE TAP, SHELL DRIVEN, 477 ACSR RUN 336 ACSR (18/1	2017	20	$ 255.50
			CROSSARM, DEADEND, JUMBO, DISTRIBUTION, 3-5/8 X 4-5/8 IN, W/ JUMBO	2017	3	$ 765.99
			CROSSARM, DISTRIBUTION, TANGENT, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CEN	2017	8	$ 847.72
			CROSSARM, TANGENT, JUMBO, 3-5/8 X 4-5/8 IN, 10 FT LG, W/ JUMBO DRIL	2017	7	$ 819.21
			CUTOUT, FUSE, OPEN, 100 A, 12 KA INTERRUPTING CURRENT ASYMMETF	2017	1	$ 66.85
			GRIP,CABLE, SUPPORT, CLOSED, DOUBLE EYE, 4-4.5 IN DIA CABLE RANG	2018	4	$ 564.10
			INSULATOR, POST, TIE TOP, 35 KV, POLYETHYLENE, PINEAPPLE	2017	21	$ 878.87
			INSULATOR, SPOOL, 750 V, CLASS 53-2	2017	3	$ 2.61
			INSULATOR, SUSPENSION, DEADEND, 34.5 KV, 23 IN LG, 378 KV BIL, POLY	2017	24	$ 1,162.49
			LINK, STRAIGHT, 5/8 IN, STEEL, GALV, 40000 LB	2017	12	$ 57.51
			LUG,COMPRESSION, CONNECTOR, 1000 KCMIL, 2 HOLE NEMA, AL	2018	12	$ 356.04
			MARKER,GUY, FULL ROUND, 8 FT LG, YELLOW, PLASTIC, SPIRAL PIGTAIL	2017	8	$ 23.42
			NUT,EYE, OVAL, 3/4 IN, 10 TPI, FERROUS, ZINC COATED HOT DIPPED GAL	2017	20	$ 18.38
			PIN, 4 X 4 X 13 IN, FOR POLE TOP, LINE POST, BRACKET, 35 KV	2017	5	$ 74.06
			PIN,INSULATOR, LINE POST, 3/4 X 7 IN SHANK, 8-1/2 IN OAL, GALV STEEL	2017	18	$ 77.51
			PIN,INSULATOR, SHORT STUD, 3/4 IN DIA, 1-3/4 IN LG, GALV STEEL	2017	5	$ 18.18
			PLATE, GUY/POLE EYE, 9/16 IN LAG HOLE, 13/16 IN BOLT CIRCLE	2017	8	$ 48.73
			POLE, 40 FT LG, CLASS 2, WESTERN RED CEDAR	2017	2	$ 1,562.54
			POLE, 45 FT LG, CLASS 2, WESTERN RED CEDAR	2017	1	$ 931.83
			POLE, 50 FT LG, CLASS 2, WESTERN RED CEDAR	2017	2	$ 1,918.00
			SCREW, ROLLED THREAD, LAG, 1/2 IN, 4 IN LG, STEEL, GALV, PILOT POIN	2017	22	$ 6.60
			TERMINATOR,CABLE, 750 KCMIL, 1000 KCMIL, 1.08 - 1.80 IN CABLE DIA, W	2018	12	$ 888.11
			WASHER,FLAT, SQUARE, 2-1/4 IN X 2-1/4 IN, 3/16 IN THK, GALV, FOR 5/8 IN	2017	16	$ 17.44
			WASHER,FLAT, SQUARE, 3 IN X 3 IN X 1/4 IN SQ, 13/16 IN ID, GALV, FOR 5/8	2017	54	$ 82.12
			WASHER,SPRING, COIL, 5/8 IN, GALV	2017	22	$ 3.96
			WASHER,SQUARE, 7/8 IN BOLT, 4 IN X 4 IN SQ, STEEL, GALV	2017	4	$ 6.77
			WASHER,SQUARE, CURVED, 3 IN X 3 IN X 1/4 IN SQ, GALV, FOR 5/8 IN OR 3	2017	70	$ 30.13

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16E0602	**H3105X 34.5kV Line Construction**	Materials- Stores	**WIRE,TIE, #4, SOLID, POLY COVERED JACKETED, AL, 25 LB COIL**	2017	1	$ 142.61
			WIRE,TIE, 6 AWG, 25 LB, SOFT-DRAWN CU, SPOOL	2017	25	$ 106.98
			WIRE,TIE, BARE, #4, SOFT-DRAWN AL, 50 LB COIL	2017	150	$ 450.13
		Mileage		2017	102	$ 54.57
		Misc Dist Exp Capitalized OH-Acct Use Only		2017	0	$ 1,092.01
				2018	0	$ 206.48
				2019	0	$ 516.47
		Miscellaneous Accounting Adjustments		2018	0	$ 0.00
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2017	0	$ 436.16
		Payroll Benefit Loader- Acct Use Only		2017	0	$ 938.25
		Service Company Allocations- Acct Use Only		2017	0	$ -
		Stores Loader- Acct Use Only		2017	0	$ 1,559.07
				2018	0	$ 287.52
A16E0602 Total					**1968.7**	**$ 159,714.88**
Grand Total					**18353.24**	**$ 3,190,715.45**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A18E16 **Status** open **Revision** 3

Project Title West Rd Overloaded Steps **Operating Unit**

Initiated By Lynne Godbout **Initiated Date** 12/8/2017 12:27:21

Description of Work West Rd Overloaded Steps. Replace 6600 feet of 1/0 ACSR with 477 spacer cable and convert to 34 kV to eliminate overloaded steps and create a circuit tie between 3102x1 and 3102x5 with 3102x

Location DIST MASS - NEW HAMPSHIRE

Project Schedule / Expenditures **Est Start Date :** 1/1/2018 **Est Complete Date :** 6/1/2018

2018	2019	2020	2021	2022	Future Years	Total
$1,408,801.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,408,801

	Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown	$1,269,805	$0	$138,996	$0	$0	$1,408,801.00

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	3/7/2019
Plant Accounting	Salbinski, Chris	$0	3/7/2019
Manager - PSNH Dist	Busby, Michael	$100,000	3/8/2019
Director - PSNH Dist	Eilenberger, James	$250,000	3/10/2019
Vice President - PSNH	Purington, Joseph	$1,000,000	3/10/2019
Sr. VP/President - Ops	Quinlan, William	$5,000,000	4/2/2019

Appendix 4
Supplement Request Form

Supplement Request Form

Date Prepared: 1/23/2019	Project Title: West Rd. Overloaded Step Transformers
Company/Companies: NH	Project ID Number: A18E16
Organization: Field Engineering	Plant Class(F.P.Type): Distribution
Project Initiator: Michael J. Busby	Project Type: *Specific*
Project Manager: Michael J. Busby	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: James C. Eilenberger	O&M Expenses Part of the Original Operating Plan? Y
Current Authorized Amount: $746,000	Estimated in service date(s): 6/1/2018
Supplement Request: $682,000	Other:
Total Request: $1,428,000	

Supplement Justification

Justification for Additional Resources

Total Requested amount of $1,428,000 reflects the actual cost of this completed job.

There were two main reasons for the increase in costs. First, the manhours were significantly underestimated. When written in the work management system, this project was estimated at 1,900 manhours. Bids from the two lowest bidders estimated the project at approximately 4,500 manhours. These results were never input back into work management in order to re-estimate the job.

Additionally, working in and around the city of Portsmouth requires numerous permits and requirements along with extremely busy traffic conditions. There were numerous outages required due to the number of businesses affected. The temporary work to avoid shut downs for these businesses also factored into the cost increase.

The cost over-run can be summarized as follows:

Outside Services estimated at $460,000; actual was $917,000 for an increase of $457,000
Materials were estimated at $93,000; actual was $124,000 for an increase of $31,000
Overheads associated with the project increased due to the increased costs. Estimated at $186,000, the actual was $382,000 for an increase of $196,000.

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 487	$ 438	$ 925
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	49	51	100
Total Direct Spending	$ 536	$ 489	$ 1,025
Capital Additions - Indirect	186	196	382
AFUDC	5	(3)	2
Total Capital Request	$ 727	$ 682	$ 1,409
O&M	19	-	19
Total Request	**$ 746**	**$ 682**	**$ 1,428**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2018	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 438	$ -	$ -	$ 438
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	51	-	-	51
Total Direct Spending	$ 489	$ -	$ -	$ 489
Capital Additions - Indirect	196	-	-	196
AFUDC	(3)	-	-	(3)
Total Capital Request	$ 682	$ -	$ -	$ 682
O&M	-	-	-	-
Total Request	**$ 682**	**$ -**	**$ -**	**$ 682**

Operations Project Authorization Form

Date Prepared: 2/9/18	**Project Title: West Rd. Overloaded Step Transformers**
Company/ies: NH	**Project ID Number: A18E16**
Organization: Field Engineering	**Class(es) of Plant: Distribution**
Project Initiator: Michael J. Busby	**Project Category: Distribution Line Capacity**
Project Manager: Michael J. Busby	**Project Type: Specific**
Project Sponsor: James C. Eilenberger	**Project Purpose:Support Load growth, Improve Reliability**
Estimated in service date: 6/1/2018	**If Transmission Project: PTF? N/A**
Eng. /Constr. Resources Budgeted? Yes	**Capital Investment Part of Original Operating Plan? Yes**
Authorization Type: Construction	**O&M Expenses Part of the Original Operating Plan? Yes**
Total Request: $746,000	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This request is for full funding in the amount of $746,000 for the construction of the project described. This project in included in the Eversource NH 2018 Capital Budget. This project eliminates a set of overloaded (115% of nameplate rating) 500 KVA stepdown transformers by converting the radially fed area from 12.47 to 34.5 kV. It also creates two new 34.5 kV circuit ties between the 3102X, the 3102X1, and the 3102X5. These new ties will bypass approximately 12 sections (2400') of the 3102X which is in tidal saltmarshes and are completely inaccessible via line trucks.

The cost also includes replacing numerous old live front padmount transformers, old direct buried 15 kV cable, and a couple of tranformers that must be relocated due to NESC violations. Each of the above will require excavation to install conduit, splice pits, and transformer pads feeding new dead front transformers. In addition, the City of Portsmouth has planned a road widening project along Peverly Hill Rd in 2019 which will require the relocation of numerous poles. This will require excavation to install new conduit from relocated poles to existing transformer locations. This work will be integrated into this project to save the cost of relocating newly placed poles when the City's project takes place next year.

Project Costs Summary

	Prior Authorized	2018	20__	20__+	Totals
Capital Additions - Direct	$ -	$ 487	$ -	$ -	$ 487
Less Customer Contribution	-	-	-	-	-
Removals net of Salvage ____%	-	49	-	-	49
Total - Direct Spending	$ -	$ 536	$ -	$ -	$ 536
Capital Additions - Indirect	-	186	-	-	186
Subtotal Request	$ -	$ 722	$ -	$ -	$ 722
AFUDC	-	5	-	-	5
Total Capital Request	$ -	$ 727	$ -	$ -	$ 727
O&M	-	19	-	-	19
Total Request	$ -	$ 746	$ -	$ -	$ 746

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor	-			
Overtime Labor	-			
Outside Services	443			
Materials	93			
Other, including contingency amounts (describe)	-			
Total	536			

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)	186			
Capitalized interest or AFUDC, if any	5			
Total	191			

Total Capital Costs	727			
Less Total Customer Contribution	-			
Total Capital Project Costs	727			
Total O&M Project Costs	19			

Note: Explain unique payment provisions, if applicable

Future Financial Impacts: N/A

Provide below the estimated future costs that will result from the project:
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other costs noted above:

What functional area(s) will these future costs be funded in?_____
A representative from the respective functional area is required to be included as a project approver.

If this is other than a Reliability Project, please complete the section below;

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other benefits noted above:

What functional area(s) will these benefits be reflected in?_____
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

Is there an ARO associated with this project? If yes, please provide details: **No**

Are there other environmental cleanup costs associated with this project? **No**

Technical Justification:

Project Need Statement

This project eliminates a set of overloaded (115% of nameplate rating) 500 KVA stepdown transformers by converting the radially fed area from 12.47 to 34.5 kV. It also creates two new 34.5 kV circuit tie between the 3102X, the 3102X1, and the 3102X5. These new ties will bypass approximately 12 sections (2400') of the 3102X which is in tidal saltmarshes and are completely inaccessible via line trucks.

Project description

- Replace 15 sections (2600') of #2 Cu and 1/0 ACSR with 477 SPCA from pole 145/30 Peverly Hill Rd to P147/38 Elwyn Rd.
- Convert the Peverly Hill Rd and Mirona Rd stepdown area from 12.47 kV to 34.5 kV
- Install Nova Reclosers and ScadaMate devices per DA master plan.

Project Objectives

This project eliminates overloaded step transformers by converting a radially fed pocket of 12 kV to 34.5 kV. It also creates a new circuit tie which allow the portion of the 3102 that passes through the tidal salt marshes to be bypassed should a contingency occur.

Project Scope

This project replaces approximately 2,600 circuit feet of old 3 phase conductors with 477 SPCA, converts nine three phase overhead transformer banks, four single phase transformers, six three phase padmounted transformers, and one single phase padmounted transformer (approximately 70 commercial/industrial customers).

Background / Justification

The 3102X2 West Rd 3 – 500 KVA stepdown transformers are currently loaded at 115% of nameplate. Recently the outside of the transformers started showing obvious signs of overloading (oil seeping, paint burning off, fins blackening). The stepdown area is a radial fed 12kV pocket surrounded by 34.5kV. Converting this area will create two new 34.5kV circuit ties. The new circuit ties would help backup a section of the 3102X circuit which normally supplies 4052 customers. The line section passes through a tidal salt marsh and cannot be accessed via line trucks.

Business Process and / or Technical Improvements:

This project replaces three overloaded stepdown transformers and eliminates a 12 kV pocket. Eliminating the 12kV pocket allows for the creation of two new 34.5 kV circuit ties. The new circuit ties provide a means to bypass sections of the 3102X which is currently located in a tidal salt marshes and cannot be accessed by line trucks.

Alternatives Considered with Cost Estimates

Installing parallel stepdown transformers were considered but every pole in this area of West Road has electrical equipment on it. The average span in this area is 75 feet and the City of Portsmouth will not license any new poles in the area. The existing step transformers are installed on a platform so parallel 500 KVA steps per phase is not an option.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Design Complete	2/16/2018
Construction Complete and In-Service	6/1/2018

Regulatory Approvals

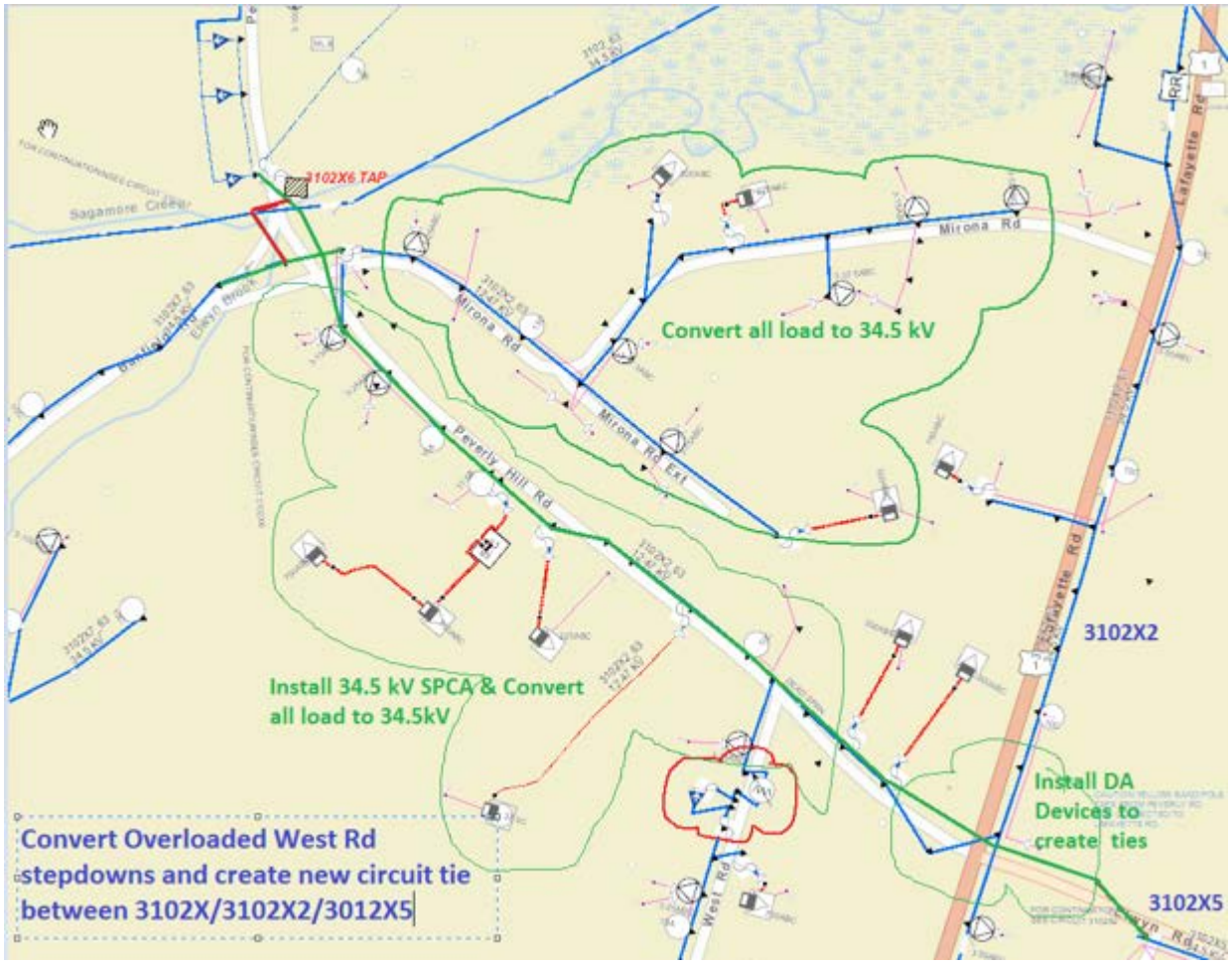
N/A

Risks and Risk Mitigation Plans

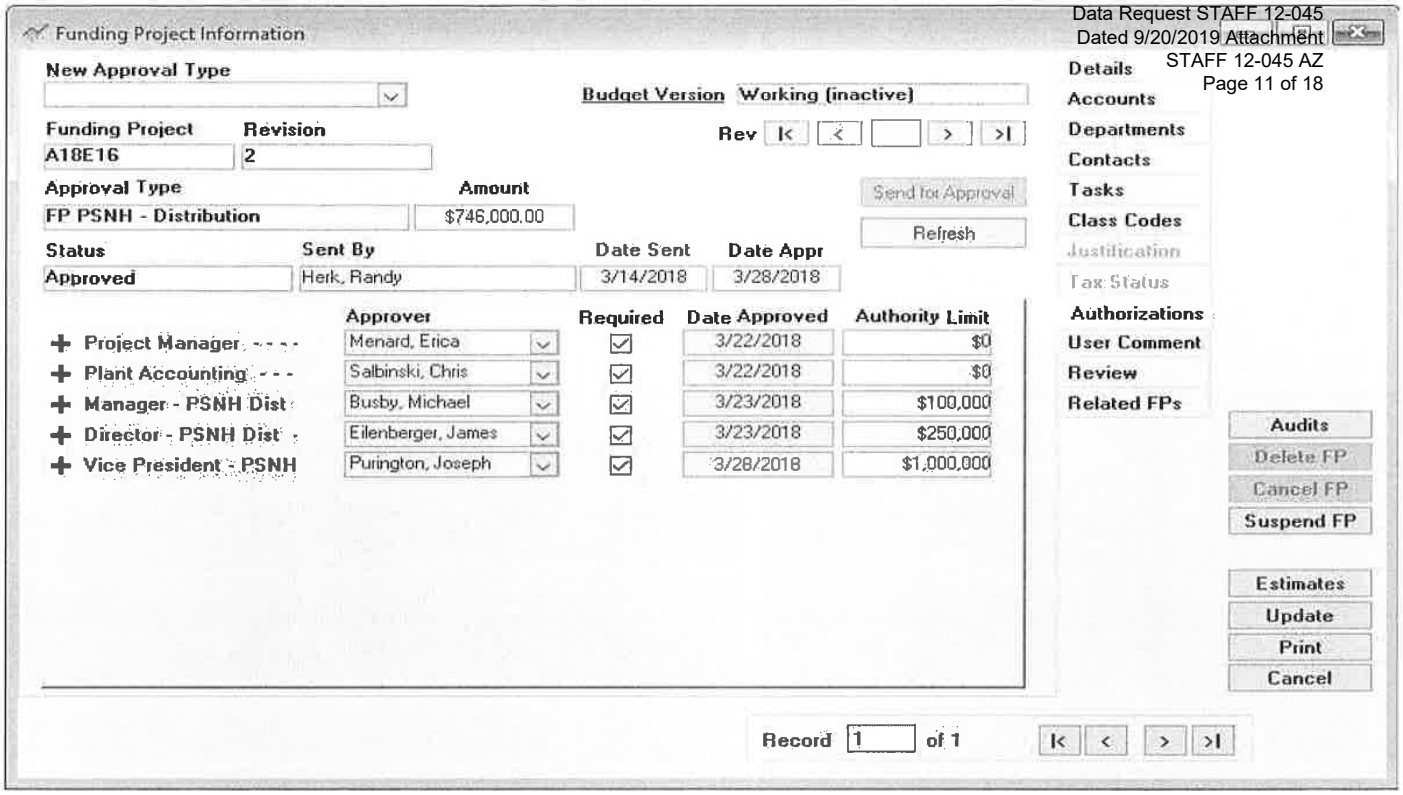
Part of the conversion includes upgrading existing live front pad mount transformers. To replace these transformers, coordinated outages and underground work are required, creating minor scheduling and budget risks.

References

Attachments (One-Line Diagrams, Images, etc.)


3102X6 TAP
Sagamore Creek
Mirona Rd
Mirona Rd Ext
Beverly Hill Rd
Lafayette Rd
West Rd
Convert all load to 34.5 kV
Install 34.5 kV SPCA & Convert all load to 34.5kV
Convert Overloaded West Rd stepdowns and create new circuit tie between 3102X/3102X2/3012X5
3102X2
Install DA Devices to create ties
3102X5

Cost Estimate Backup Details


Funding Project Information
New Approval Type
Budget Version Working (inactive)
Rev
Funding Project
A18E16
Revision
2
Approval Type
FP PSNH - Distribution
Amount
$746,000.00
Send for Approval
Refresh
Status
Approved
Sent By
Herk, Randy
Date Sent
3/14/2018
Date Appr
3/28/2018
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
3/22/2018
$0
Plant Accounting
Salbinski, Chris
3/22/2018
$0
Manager - PSNH Dist
Busby, Michael
3/23/2018
$100,000
Director - PSNH Dist
Eilenberger, James
3/23/2018
$250,000
Vice President - PSNH
Purington, Joseph
3/28/2018
$1,000,000
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

Operations Project Authorization Form

Date Prepared: 2/9/18	**Project Title: West Rd. Overloaded Step Transformers**
Company/ies: NH	**Project ID Number: A18E16**
Organization: Field Engineering	**Class(es) of Plant: Distribution**
Project Initiator: Michael J. Busby	**Project Category: Distribution Line Capacity**
Project Manager: Michael J. Busby	**Project Type: Specific**
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Eng. /Constr. Resources Budgeted? Yes	**Capital Investment Part of Original Operating Plan? Yes**
Authorization Type: Construction	**O&M Expenses Part of the Original Operating Plan? Yes**
Total Request: $746,000	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

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Project Costs Summary

	Prior Authorized	2018	20__	20__+	Totals
Capital Additions - Direct	$ -	$ 487	$ -	$ -	$ 487
Less Customer Contribution	-	-	-	-	-
Removals net of Salvage ____%	-	49	-	-	49
Total - Direct Spending	$ -	$ 536	$ -	$ -	$ 536
Capital Additions - Indirect	-	186	-	-	186
Subtotal Request	$ -	$ 722	$ -	$ -	$ 722
AFUDC	-	5	-	-	5
Total Capital Request	$ -	$ 727	$ -	$ -	$ 727
O&M	-	19	-	-	19
Total Request	$ -	$ 746	$ -	$ -	$ 746

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor	-			
Overtime Labor	-			
Outside Services	443			
Materials	93			
Other, including contingency amounts (describe)	-			
Total	536			

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)	186			
Capitalized interest or AFUDC, if any	5			
Total	191			

Total Capital Costs	727			
Less Total Customer Contribution	-			
Total Capital Project Costs	727			
Total O&M Project Costs	19			

Note: Explain unique payment provisions, if applicable

Future Financial Impacts: N/A

Provide below the estimated future costs that will result from the project:
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other costs noted above:

What functional area(s) will these future costs be funded in?_____
A representative from the respective functional area is required to be included as a project approver.

If this is other than a Reliability Project, please complete the section below;

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other benefits noted above:

What functional area(s) will these benefits be reflected in?_____
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

Is there an ARO associated with this project? If yes, please provide details: **No**

Are there other environmental cleanup costs associated with this project? **No**

Technical Justification:

Project Need Statement

This project eliminates a set of overloaded (115% of nameplate rating) 500 KVA stepdown transformers by converting the radially fed area from 12.47 to 34.5 kV. It also creates two new 34.5 kV circuit tie between the 3102X, the 3102X1, and the 3102X5. These new ties will bypass approximately 12 sections (2400') of the 3102X which is in tidal saltmarshes and are completely inaccessible via line trucks.

Project description

- Replace 15 sections (2600') of #2 Cu and 1/0 ACSR with 477 SPCA from pole 145/30 Peverly Hill Rd to P147/38 Elwyn Rd.
- Convert the Peverly Hill Rd and Mirona Rd stepdown area from 12.47 kV to 34.5 kV
- Install Nova Reclosers and ScadaMate devices per DA master plan.

Project Objectives

This project eliminates overloaded step transformers by converting a radially fed pocket of 12 kV to 34.5 kV. It also creates a new circuit tie which allow the portion of the 3102 that passes through the tidal salt marshes to be bypassed should a contingency occur.

Project Scope

This project replaces approximately 2,600 circuit feet of old 3 phase conductors with 477 SPCA, converts nine three phase overhead transformer banks, four single phase transformers, six three phase padmounted transformers, and one single phase padmounted transformer (approximately 70 commercial/industrial customers).

Background / Justification

The 3102X2 West Rd 3 – 500 KVA stepdown transformers are currently loaded at 115% of nameplate. Recently the outside of the transformers started showing obvious signs of overloading (oil seeping, paint burning off, fins blackening). The stepdown area is a radial fed 12kV pocket surrounded by 34.5kV. Converting this area will create two new 34.5kV circuit ties. The new circuit ties would help backup a section of the 3102X circuit which normally supplies 4052 customers. The line section passes through a tidal salt marsh and cannot be accessed via line trucks.

Business Process and / or Technical Improvements:

This project replaces three overloaded stepdown transformers and eliminates a 12 kV pocket. Eliminating the 12kV pocket allows for the creation of two new 34.5 kV circuit ties. The new circuit ties provide a means to bypass sections of the 3102X which is currently located in a tidal salt marshes and cannot be accessed by line trucks.

Alternatives Considered with Cost Estimates

Installing parallel stepdown transformers were considered but every pole in this area of West Road has electrical equipment on it. The average span in this area is 75 feet and the City of Portsmouth will not license any new poles in the area. The existing step transformers are installed on a platform so parallel 500 KVA steps per phase is not an option.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Design Complete	2/16/2018
Construction Complete and In-Service	6/1/2018

Regulatory Approvals

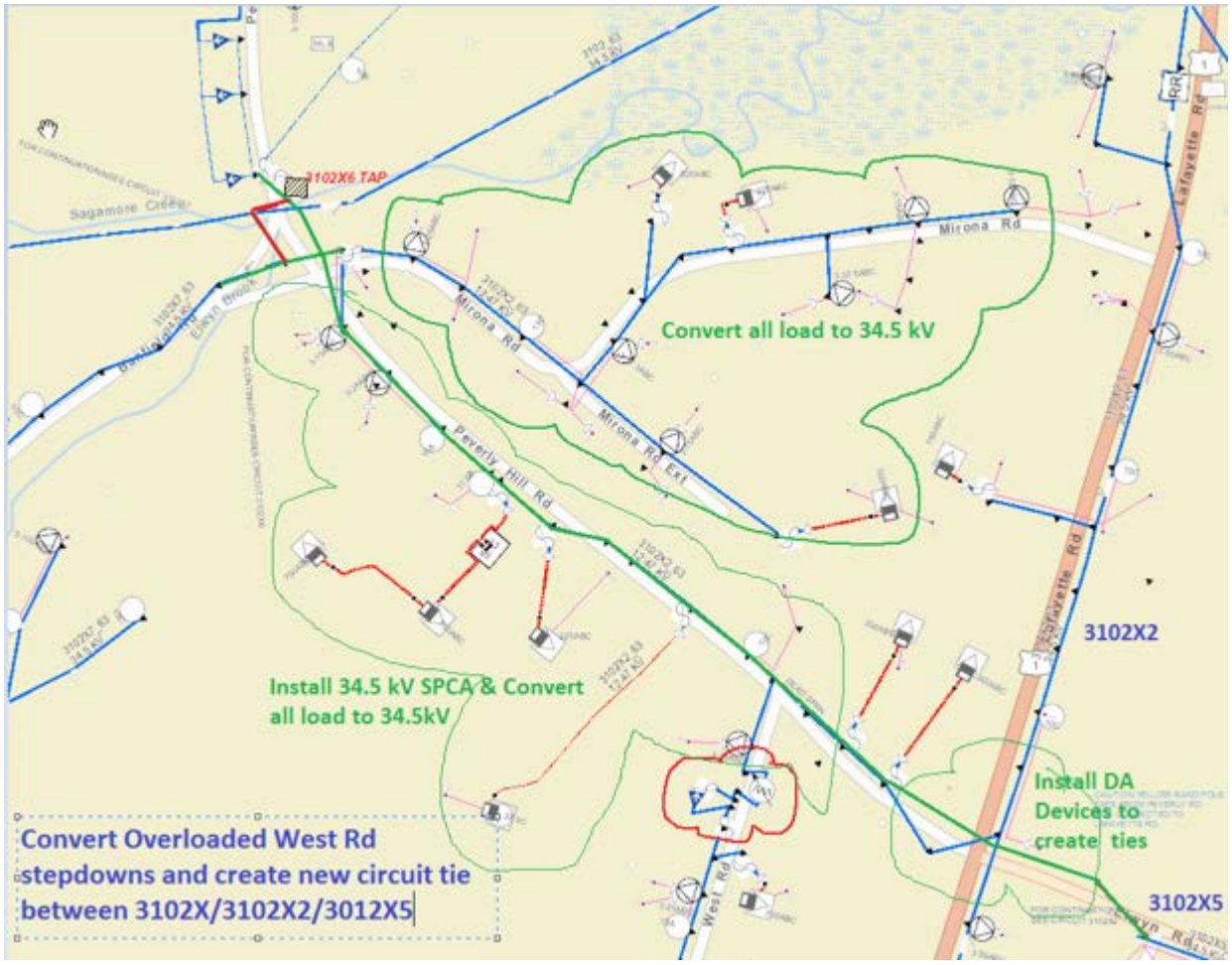
N/A

Risks and Risk Mitigation Plans

Part of the conversion includes upgrading existing live front pad mount transformers. To replace these transformers, coordinated outages and underground work are required, creating minor scheduling and budget risks.

References

Attachments (One-Line Diagrams, Images, etc.)


3102X6 TAP
Sagamore Creek
Mirona Rd
Mirona Rd Ext
Beverly Hill Rd
Lafayette Rd
West Rd
Convert all load to 34.5 kV
Install 34.5 kV SPCA & Convert all load to 34.5kV
Convert Overloaded West Rd stepdowns and create new circuit tie between 3102X/3102X2/3012X5
3102X2
Install DA Devices to create ties
3102X5

Cost Estimate Backup Details

funding_project	A18E16

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
9P820205	**Mirona Rd Conversion**	Admin and Eng OH- Acct Use Only		2018	0	$ 2,997.93
				2019	0	$ (196.27)
		AFUDC Debt		2018	0	$ 557.62
		Alloc- E+S OH Lines- Acct Use Only		2018	0	$ 48,594.42
				2019	0	$ (2,801.46)
		Contractor Materials		2019	0	$ (0.00)
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 133.20
		Contractor Services		2019	0	$ -
			CARUSO & MCGOVERN CONSTRUCTION	2018	0	$ 55,177.67
			MOORES CRANE RENTAL	2018	0	$ 1,800.00
		Contractor Services- Other		2019	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2018	0	$ 210,188.89
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 19,895.08
		Contractor Vehicles + Equip		2019	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2018	0	$ 84,170.67
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 11,243.50
		Engin and Super OH- Acct Use Only		2018	0	$ 85,876.64
				2019	0	$ (4,950.79)
		Labor Overtime Non-Exempt		2018	7	$ 370.10
				2019	0	$ 0.00
		Labor Straight Time Exempt		2018	13	$ 600.84
				2019	0	$ -
		Labor Straight Time Non-Exempt		2018	10.5	$ 366.98
				2019	0	$ (0.00)
		Lobby Stock Loader-Acct Use Only		2018	0	$ 1,215.13
				2019	0	$ (980.23)
		Materials- Stores	**ANCHOR, SINGLE HELIX, SOCKET DRIVE, 10 IN, 8000 LB**	2018	3	$ 75.03
			ARRESTER,ELBOW, LOADBREAK, 27 KV ARRESTER RATING, 22 KV MCOV	2018	9	$ 2,114.71
			ARRESTER,SURGE, DISTRIBUTION RISER POLE, METAL OXIDE VARISTOR	2018	15	$ 1,305.75
			BRACKET, CUTOUT AND ARRESTER, 12 IN W, 48 IN LG, FIBERGLASS, W/	2018	8	$ 857.24
			BRACKET, CUTOUT AND ARRESTER, 24 IN LG, FIBERGLASS, FERR / ALUM	2018	1	$ 29.77
			BRACKET,CABLE, TERMINATOR MOUNTED, AL, FOR 0.75 THRU 3.00 IN DI	2018	9	$ 150.27
			CABLE, BARE, ACSR/AW, 1/0 AWG, 6/1 STR, RAVEN	2018	400	$ 110.66
			CABLE, COVERED, ACSR/AW, 1/C, 1/0 AWG, 6/1 STR, 35 KV, 75 DEG C, 315	2018	1710	$ 2,130.49
			CABLE, INSULATED, 3 PH, SECONDARY, 500 KCMIL, 600 V, W/ 350 KCMIL N	2018	201	$ 779.48
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 1/0 AWG, 7 STR, 600 V, W/ 1/0	2018	170	$ 134.19
			CABLE, INSULATED, UG, 1/C, 500 KCMIL, 600 V, EPR INSULATED, CU	2018	645	$ 5,201.66
				2019	-645	$ (4,649.54)
			CABLE, INSULATED, UG, 3 PH , PRIMARY , 1/0 AWG, 35 KV, W/ CONCENTR	2018	595	$ 3,724.86
			CABLE, INSULATED, UG, 4/C, 500 KCMIL, 600 V, W/ 4/0 AWG NEUTRAL, EPI	2018	645	$ 16,612.29
			CONDUIT,ELECTRICAL, 5 IN DIA, 10 FT LG, PVC, SCH 40, ONE BELLED END	2018	120	$ 277.16
			CONDUIT,ELECTRICAL, 5 IN DIA, 10 FT LG, PVC, SCH 80, ONE BELLED END	2018	30	$ 95.51
			CONNECTOR,ELBOW, LOADBREAK, 35 KV, 200 A, 1/0 AWG STRANDED,345	2018	9	$ 775.94
			CROSSARM, DISTRIBUTION, DEADEND, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CENT	2018	11	$ 2,094.15
			CROSSARM, DISTRIBUTION, TANGENT, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CENT	2018	9	$ 961.62
			CUTOUT, FUSE, OPEN, 100 A, 12 KA INTERRUPTING CURRENT ASYMMETR	2018	34	$ 2,244.28
			MOUNT,CLUSTER, TRANSFORMER, MEDIUM, 5/8 X 2-1/2 IN, 37.5-167 KVA, A	2018	6	$ 1,069.82
			MOUNT,TRANSFORMER CLUSTER, LG, 5/8 X 2-1/2 IN, AL, NEMA TYPE C, G	2018	1	$ 426.27
			POLE, 45 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	7	$ 3,082.84
			POLE, 50 FT LG, CLASS 1, SOUTHREN YELLOW PINE, CCA TREATED	2018	1	$ 563.82
			POLE, 50 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	5	$ 2,383.32
			POLE, 55 FT LG , CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	1	$ 572.11
			ROPE,SYNTHETIC, MULE TAPE, 1 IN DIA, 1000 FT, POLYESTER, SILICONE	2018	1000	$ 484.76
			TERMINATOR,CABLE, COLD SHRINK, 1/0 AWG, 35 KV, W/ PIN TAP, JACKET	2018	9	$ 1,085.33
		Misc Dist Exp Capitalized OH-Acct Use Only		2018	0	$ 11,203.88
				2019	0	$ (645.90)
		Miscellaneous Accounting Adjustments		2019	0	$ (0.00)
		Non Productive Time Loader- Acct Use Only		2018	0	$ 177.76
				2019	0	$ -
		Other Outside Services- Other		2019	0	$ 0.00
			SUNBELT RENTALS INC	2018	0	$ 10,998.63
		Payroll Benefit Loader- Acct Use Only		2018	0	$ 518.97

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9P820205	**Mirona Rd Conversion**	Payroll Benefit Loader- Acct Use Only		2019	0	$ 0.00
		Police Services and Traffic Control		2019	0	$ -
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 1,810.50
		Property Taxes		2018	0	$ 2,871.82
				2019	0	$ 0.00
		Stores Loader- Acct Use Only		2018	0	$ 4,824.79
				2019	0	$ 146.55
		UVL-Contractor Labor		2018	0	$ -
				2019	0	$ -
			0119640 - WEST ROAD CONVERSION	2018	0	$ -
			0120720 - WEST ROAD CONVERSION	2018	0	$ -
			0121398 - WEST ROAD CONVERSION	2018	0	$ -
			0121398 - WEST ST/MIRONI/PEVERLY HILL NT	2018	0	$ -
			0122022 - 11 MIRONA ROAD	2018	0	$ -
			0122022 - 131 MIRONA ROAD	2018	0	$ -
			0122022 - WEST ST/MIRONI/PEVERLY HILL NT	2018	0	$ -
			0122848 - 11 MIRONA ROAD PORTSMOUTH	2018	0	$ -
			0122848 - 11 MIRONA ROAD PORTSMOUTH	2018	0	$ -
			0122848 - 131 MIRONA ROAD PORTSMOUTH	2018	0	$ -
			0122848 - WEST ST MIRONI PEVERLY HILL NT	2018	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2018	0	$ 158.14
				2019	0	$ (0.00)
9P820205 Total					**5039.5**	**$ 591,018.85**
9P820206	**EWR E17-118 Peverly Hill Rd Conve**	Admin and Eng OH- Acct Use Only		2018	0	$ 4,064.71
				2019	0	$ (82.24)
		AFUDC Debt		2018	0	$ 1,022.29
		Alloc- E+S OH Lines- Acct Use Only		2018	0	$ 15,588.13
				2019	0	$ (331.87)
		Contractor Services		2019	0	$ -
			CARUSO & MCGOVERN CONSTRUCTION	2018	0	$ 8,157.22
		Contractor Services- Other		2019	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2018	0	$ 316,739.09
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 25,379.36
		Contractor Vehicles + Equip		2019	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2018	0	$ 116,954.28
			SUNBELT RENTALS INC	2018	0	$ 27,107.06
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 13,289.45
		Employee Expense Other		2018	0	$ 8.40
				2019	0	$ (0.00)
		Engin and Super OH- Acct Use Only		2018	0	$ 162,457.37
				2019	0	$ (3,458.72)
		Labor Overtime Non-Exempt		2018	21.5	$ 1,394.58
				2019	0	$ (0.00)
		Labor Straight Time Exempt		2018	7	$ 323.54
				2019	0	$ 0.00
		Labor Straight Time Non-Exempt		2018	46.5	$ 2,133.41
				2019	0	$ 0.00
		Lobby Stock Loader-Acct Use Only		2018	0	$ 15,309.73
				2019	0	$ 115.26
		Materials- Purchased		2019	0	$ -
			JP MORGAN CHASE BANK	2018	1	$ 79.96
		Materials- Stores		2019	0	$ (0.00)
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 10 IN, 8000 LB	2018	26	$ 658.78
			ARRESTER,ELBOW, LOADBREAK, 27 KV ARRESTER RATING, 22 KV MCOV	2018	7	$ 1,632.24
			ARRESTER,SURGE, DISTRIBUTION RISER POLE, METAL OXIDE VARISTOR	2018	19	$ 1,653.41
			BAR, ANTI-SWAY, 24 IN, W/ CABLE SPACERS ON TANGENT CABLES, POL	2018	3	$ 49.41
			BLADE,CONTACT, 300 A, 25/27 KV, BRONZE, SOLID DOOR, FITS CHANCE /	2018	5	$ 169.40
			BRACE, CONNECTOR,BRACKET, PUSH BRACE, PUSH BRACE, FOR 6 IN TC	2018	1	$ 29.37
			BRACKET, ADAPTER, 4000 LB MAX LOAD, STEP TRANSFORMER, REGULA	2018	1	$ 48.53
			BRACKET, CUTOUT AND ARRESTER, 12 IN W, 48 IN LG, FIBERGLASS, W/	2018	3	$ 321.47
			BRACKET, CUTOUT AND ARRESTER, 24 IN LG, FIBERGLASS, FERR / ALUM	2018	4	$ 119.09
			BRACKET,ANGLE, 38-1/2 IN LG, STEEL, GALV, EXTENDED TAP, FOR HEND	2018	13	$ 2,142.46
			BRACKET,CABLE, TERMINATOR MOUNTED, AL, FOR 0.75 THRU 3.00 IN DI	2018	4	$ 66.79
			BRACKET,TANGENT, SPACER, 24 IN, DI, HOT DIP GALV, USE: MESSENGEF	2018	9	$ 642.05
			CABLE, BARE, 336.4 MCM, 19 STR, AL, TULIP	2019	90	$ 43.20

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9P820206	EWR E17-118 Peverly Hill Rd Conve	Materials- Stores	CABLE, BARE, ACSR, 336 KCMIL, 18/1 STR, MERLIN	2018	90	$ 65.03
				2019	-90	$ (65.03)
			CABLE, BARE, ACSR/AW, 1/0 AWG, 6/1 STR, RAVEN	2018	349.99	$ 96.83
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN	2018	121	$ 56.96
				2019	999	$ 470.27
			CABLE, BARE, ACSR/AW, 477 KCMIL, 18/1 STR, 0.814 IN DIA, PELICAN	2018	100	$ 90.08
			CABLE, COVERED, ACSR/AW, 1/C, 1/0 AWG, 6/1 STR, 35 KV, 75 DEG C, 315	2018	1050	$ 1,230.24
			CABLE, COVERED, SPACER, AAC, 1/C, 1/0 AWG, 7 STR, 35 KV, 90 DEG C, 3	2018	450	$ 463.50
			CABLE, COVERED, SPACER, AAC, 477, 35 KV, 90 DEG C, 320 MILS POLY, A	2018	-4903	$ (7,984.11)
			CABLE, INSULATED, AERIAL, AAC, 4/0 AWG, 600 V, W/ 4/0 AWG ALLOY NE	2018	160	$ 306.78
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 1/0 AWG, 7 STR, 600 V, W/ 1/0	2018	220	$ 173.66
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 4/0 AWG 6	2018	1595	$ 2,075.84
			CABLE, INSULATED, UG, 1 PH, PRIMARY , 1/0 AWG, 35 KV, W/ CONCENTRI	2018	800	$ 2,075.85
			CABLE, INSULATED, UG, 3 PH , PRIMARY , 1/0 AWG, 35 KV, W/ CONCENTR	2018	880	$ 5,526.82
			CONDUIT,ELECTRICAL, 3 IN DIA, PVC, SCH 80, 2.9 IN ID, STRAIGHT	2018	10	$ 15.88
			CONDUIT,ELECTRICAL, 3 IN, 10 FT LG, PVC, SCH 40, ONE BELLED END	2018	40	$ 39.20
			CONDUIT,ELECTRICAL, 5 IN DIA, 10 FT LG, PVC, SCH 40, ONE BELLED END	2018	40	$ 77.93
			CONDUIT,ELECTRICAL, 5 IN DIA, 10 FT LG, PVC, SCH 80, ONE BELLED END	2018	10	$ 31.84
			CONNECTOR,ELBOW, LOADBREAK, 35 KV, 200 A, 1/0 AWG STRANDED,345	2018	16	$ 1,379.93
			CROSSARM, DISTRIBUTION, DEADEND, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CENT	2018	5	$ 956.59
			CROSSARM, DISTRIBUTION, TANGENT, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CENT	2018	8	$ 859.48
			CROSSARM, TANGENT, JUMBO, 3-5/8 X 4-5/8 IN, 10 FT LG, W/ JUMBO DRIL	2018	3	$ 350.95
			CUTOUT, FUSE, OPEN, 100 A, 12 KA INTERRUPTING CURRENT ASYMMETF	2018	11	$ 675.48
			CUTOUT, FUSE, OPEN, LOADBUSTER, 200 A, 25 KV, 150 KV BIL, W/ LOADE	2018	3	$ 247.91
			EXTENSION,POLE TOP, 60 IN LG, STEEL, W/ SPACER CABLE, FINISH: GAL	2018	10	$ 1,809.50
			FITTING,SIDEWALK GUY, CLAMP END, 2-1/2 IN, STEEL, GALV	2018	2	$ 18.95
			PIPE, 2-1/2 IN DIA, 10 FT LG, PLAIN ENDS, SCH 40, STEEL, GALV, FOR SIDE	2018	10	$ 102.47
			POLE, 45 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	2	$ 872.27
			POLE, 50 FT LG, CLASS 1, SOUTHREN YELLOW PINE, CCA TREATED	2018	3	$ 1,691.46
			POLE, 50 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	11	$ 5,287.32
			POLE, 55 FT LG , CLASS 1, SOUTHREN YELLOW PINE, PENTA TREATED	2019	1	$ 670.35
			POLE, 55 FT LG , CLASS 1, WESTERN RED CEDAR	2018	1	$ 1,235.25
			POLE, 55 FT LG , CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	2	$ 1,144.23
				2019	-1	$ (572.11)
			POLE, 55 FT LG , CLASS 2, WESTERN RED CEDAR	2018	1	$ 1,270.32
			SIDEWALK GUY, FITTING, 2-1/2 IN, STEEL, GALV	2018	2	$ 18.89
			SPACER,CABLE, 46 KV, W/ CONDUCTOR CLAMPS, POLYETHYLENE, MFR:	2018	50	$ 1,340.42
			SWITCH,DISCONNECT, IN LINE, 900 A CONTINUOUS, 35 KV, 1/0 ACSR, 0.36	2018	3	$ 2,844.31
			SWITCH,DISCONNECT, IN LINE, 900 A CONTINUOUS, 35 KV, 200 KV BIL , 33	2018	12	$ 7,852.84
			TERMINATOR,CABLE, COLD SHRINK, 1/0 AWG, 35 KV, W/ PIN TAP, JACKET	2018	3	$ 364.01
			WIRE, MESSENGER, 052 AWA, FOR SPACER CABLE	2018	1250	$ 1,165.51
		Meals		2018	4	$ 40.00
				2019	0	$ (0.00)
		Misc Dist Exp Capitalized OH-Acct Use Only		2018	0	$ 14,820.32
				2019	0	$ (315.52)
		Miscellaneous Accounting Adjustments		2019	0	$ 0.00
		Non Productive Time Loader- Acct Use Only		2018	0	$ 502.09
				2019	0	$ -
		Other Outside Services- Tree Planned		2019	0	$ -
			ASPLUNDH TREE EXPERT CO	2018	8	$ 11,964.40
		Payroll Benefit Loader- Acct Use Only		2018	0	$ 1,490.69
				2019	0	$ 0.00
		Permits		2019	0	$ -
			JP MORGAN CHASE BANK	2018	4	$ 284.33
		Police Services and Traffic Control		2019	0	$ -
			UTILITY SERVICE & ASSISTANCE	2018	0	$ 1,785.00
		Property Taxes		2018	0	$ 7,388.03
				2019	0	$ 0.00
		Stores Loader- Acct Use Only		2018	0	$ 11,864.03
				2019	0	$ 57.38
		Stores over 25K		2019	0	$ -
			CABLE, INSULATED, SPACER, AAC, 1/C, 477, 35 KV, 90 DEG C, 320 MILS PC	2018	12598	$ 35,091.64
		UVL-Contractor Labor		2019	0	$ -
			0119640 - WEST ROAD CONVERSION	2018	0	$ -
			0120454 - MISC TREE TRIMMING	2018	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9P820206	**EWR E17-118 Peverly Hill Rd Conve**	UVL-Contractor Labor	**0120720 - WEST ROAD CONVERSION**	2018	0	$ -
			0121398 - WEST ST/MIRONI/PEVERLY HILL NT	2018	0	$ -
			0122022 - WEST ST/MIRONI/PEVERLY HILL NT	2018	0	$ -
			0123764 - 680 PEVERLY HILL RD PORTSMOUTH	2018	0	$ -
			0123764 - WEST ST MIRONA RD	2018	0	$ -
		UVL-Other Outside Serv-Tree Lump Sum		2019	0	$ -
			0118504 - MISC TREE TRIMMING	2018	0	$ -
			0121158 - TREE TRIMMING	2018	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2018	0	$ 1,032.47
				2019	0	$ 0.00
9P820206 Total					**16204.99**	**$ 836,165.97**
9P820965	**Replace cutouts with inlines**	Admin and Eng OH- Acct Use Only		2018	0	$ 6.22
				2019	0	$ 11.36
		AFUDC Debt		2018	0	$ 0.20
				2019	0	$ 0.45
		Alloc- E+S OH Lines- Acct Use Only		2019	0	$ 957.25
		Labor Straight Time Non-Exempt		2019	16	$ 791.01
		Lobby Stock Loader-Acct Use Only		2018	0	$ (357.60)
		Materials- Stores	**SWITCH,DISTRIBUTION, OUTDOOR, LOADBUSTER, IN-LINE, 900 A, 35 KV, 2**	2018	3	$ 936.00
		Misc Dist Exp Capitalized OH-Acct Use Only		2019	0	$ 38.29
		Miscellaneous Accounting Adjustments		2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2019	0	$ 108.13
		Payroll Benefit Loader- Acct Use Only		2019	0	$ 377.19
		Stores Loader- Acct Use Only		2018	0	$ 59.61
		Vehicle Costs Clearing- Acct Use Only		2019	0	$ 250.59
9P820965 Total					**19**	**$ 3,178.70**
Grand Total					**21263.49**	**$ 1,430,363.52**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A07X45 **Status** open **Revision** 45

Project Title REJECT POLE REPLACEMENT **Operating Unit**

Initiated By PWRPLANT **Initiated Date** 1/1/2001 00:00:00

Description of Work REJECT POLE REPLACEMENT ALL DIVISIONS

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/1/2018 **Est Complete Date :** 12/31/2018

	2011	2012	2013	2014	2015	Future Years	Total
	$0.00	$0.00	$0.00	$0.00	$0.00	$1,963,000.00	$1,963,000
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$1,668,278	$0	$294,722	$0	$0	$1,963,000.00

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	3/8/2019
Plant Accounting	Davis, Sean	$0	3/13/2019
Manager - PSNH Dist	Lajoie, Lee	$100,000	3/13/2019
Vice President - PSNH	Purington, Joseph	$1,000,000	3/14/2019
Sr. VP/President - Ops	Quinlan, William	$5,000,000	4/2/2019

EVERSOURCE
Project Authorization Form

Supplement Request Form

Date Prepared: 1/25/2019	Project Title: Reject Pole Replacement (2018)
Company/Companies: Eversource NH	Project ID Number: A07X45
Organization: NH Operations	Plant Class/(F.P.Type): Distribution
Project Initiator: Eric Sutton	Project Type: Program
Project Manager: Marc Geaumont	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: Joseph Purington	O&M Expenses Part of the Original Operating Plan? Y
Current Authorized Amount: $850,000	Estimated in service date(s): 12/31/2018
Supplement Request: $1,113,000	Other:
Total Request: $1,963,000	

Supplement Justification

Justification for Additional Resources

The Eversource Maintenance Program (EMP) and the Intercompany Operating Procedures (IOPs) both require all wood poles in Eversource maintenance territory to be inspected every 10 years. This project funds the replace of poles which are deemed "rejects" as part of the annual inspection program.

The initial budget for the reject pole replacement is funded based on historical spending and/or known future investment needed within the overall distribution budget constraints. Program spending is monitored throughout the year through a budget review committee. As work is identified throughout the year, the budget committee determines whether the additional investment needed can be funded by reducing funding in other projects or whether the additional investment must be deferred to a future year to stay within the budget.

Investment in the reject pole replacement program was higher than originally budgeted due to a higher than normal failure rate of the 2017 pole inspections. Eversource inspects approximately 35,000 wood poles each year as part of its annual pole inspection program with an average failure rate of 1.5-2% failure rate. 1,386 poles (or approximately 4%) were identified as requiring replacement as a result of the 2017 pole inspection program.

Additional investment in reject pole replacement was monitored and approved by the capital budget review committee during monthly project meetings.

EVERSOURCE
Project Authorization Form

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 567	$ 537	$ 1,104
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	67	116	183
Total Direct Spending	$ 634	$ 653	$ 1,287
Capital Additions - Indirect	216	459	675
AFUDC	-	1	1
Total Capital Request	$ 850	$ 1,113	$ 1,963
O&M	-	-	-
Total Request	**$ 850**	**$ 1,113**	**$ 1,963**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2018	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 537	$ -	$ -	$ 537
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	116	-	-	116
Total Direct Spending	$ 653	$ -	$ -	$ 653
Capital Additions - Indirect	459	-	-	459
AFUDC	1	-	-	1
Total Capital Request	$ 1,113	$ -	$ -	$ 1,113
O&M	-	-	-	-
Total Request	**$ 1,113**	**$ -**	**$ -**	**$ 1,113**

EVERSOURCE
APS-1 - Project Authorization Policy
Delegation of Authority Signature Form

Electric Distribution Project Approval Form

Project Title: REJECT POLE REPLACEMENT (2018)	**Project ID Number:** A07X45
Authorization Amount: $850,000	

Capital Project Authorizations, as defined in the Delegation of Authority policy

Position	Approver Signature	Date Approved	Authority Limit
Manager	Eric Sutton		$100,000
Director			$250,000
Vice President			$1,000,000
Sr. VP/President			$5,000,000
Executive VP			$12,500,000
CFO			$20,000,000
CEO			$25,000,000
Subsidiary Board			Greater than $25,000,000

EVERSOURCE
Project Authorization Form

Operations Project Authorization Form

Date Prepared:	**Project Title:** Reject Pole Replacement
Company/ies: Eversource NH	**Project ID Number:** A07X45
Organization: NH Operations	**Class(es) of Plant:** Distribution
Project Initiator: Eric Sutton	**Project Category:** Reliability – Line
Project Manager: Marc Geaumont	**Project Type:** Program
Project Sponsor: Joseph Purington	**Project Purpose:** Reject Pole Replacement
Estimated in service date: 12/31/18	**If Transmission Project: PTF?** No
Eng. /Constr. Resources Budgeted? No	**Capital Investment Part of Original Operating Plan?** No
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan?** No
Total Request: $850,000	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

The Eversource Maintenance Program (EMP) and the Intercompany Operating Procedures (IOPs) both require all wood poles in Eversource maintenance territory to be inspected every 10 years. This project funds the replace of poles which are deemed "rejects" as part of the annual inspection program.

Project Costs Summary

	Prior Authorized	2018	20__	20__+	Totals
Capital Additions - Direct	$ -	$ 567.0	$ -	$ -	$ 567.0
Less Customer Contribution	-	-	-	-	-
Removals net of Salvage ___%	-	67.0	-	-	67.0
Total - Direct Spending	$ -	$ 634.0	$ -	$ -	$ 634.0
Capital Additions - Indirect	-	216.0	-	-	216.0
Subtotal Request	$ -	$ 850.0	$ -	$ -	$ 850.0
AFUDC	-	-	-	-	-
Total Capital Request	$ -	$ 850.0	$ -	$ -	$ 850.0
O&M	-	-	-	-	-
Total Request	$ -	$ 850.0	$ -	$ -	$ 850.0

EVERSOURCE
Project Authorization Form

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$38			$38
Overtime Labor				
Outside Services	$536			$536
Materials	$125			$122.9
Other, including contingency amounts (describe)	-$65			-$65
Total	$634			$634

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)	$216			$216
Capitalized interest or AFUDC, if any	$0			$0
Total	$216			$216

Total Capital Costs	$850			$850
Less Total Customer Contribution	0			0
Total Capital Project Costs	$850			$850
Total O&M Project Costs				

Note: Explain unique payment provisions, if applicable

EVERSOURCE
Project Authorization Form

Future Financial Impacts:

Provide below the estimated future costs that will result from the project:
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other costs noted above:

What functional area(s) will these future costs be funded in?_____
A representative from the respective functional area is required to be included as a project approver.

If this is other than a Reliability Project, please complete the section below:

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other benefits noted above:

What functional area(s) will these benefits be reflected in?_____
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

Is there an ARO associated with this project? If yes, please provide details:

Are there other environmental cleanup costs associated with this project? If yes, please provide details:

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Project Authorization Form

Technical Justification:

Project Need Statement

Eversource inspects approximately 35,000 wood poles each year as part of its annual pole inspection program. As a result of the 2016 pole inspection program, 1,386 poles were identified as requiring replacement.

Project Objectives

Replace poles that are identified as either a higher priority or normal priority reject during the annual inspection program.

Project Scope

1,386 poles were identified as requiring replacement as a result of inspections that were completed by Smith Mountain Investments in 2016. Project A07X45 funds the replacement of the poles that are identified as deficient based on inspection criteria.

Background / Justification

Eversource inspects its wood poles utilizing a 10 year inspection cycle. As a result of the 2016 pole inspection program, 1,386 poles were identified as requiring replacement.

Business Process and / or Technical Improvements:

The annual pole inspection program typically identifies between 300 and 500 poles that require replacement. Almost 1,400 reject poles were identified during the 2016 inspection. This dramatic increase is the result of a business decision to replace poles that would have previously been braced or "restored" until the next inspection occurred 10 years later.

Alternatives Considered with Cost Estimates

The alternative is to do nothing which does not help improve the company's reliability of electric service beyond where it is. There would be no financial cost to this option, although it would likely result in increased regulator scrutiny. Ignoring deteriorating poles conditions results in unsafe conditions.

EVERSOURCE
Project Authorization Form

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Project Completion	12/31/2018

Regulatory Approvals

Risks and Risk Mitigation Plans

References

Attachments (One-Line Diagrams, Images, etc.)

EVERSOURCE
Project Authorization Form

Project Checklist – Transmission and Substation

INSTRUCTIONS:
It is the responsibility of the initiator to contact the area disciplines to determine if the project considerations contained in this list are applicable to their project. They should fill out the checklist and determine a transition plan for the purpose of project execution.

Checklist for Studies and Processes of a Transmission & Substation Capital Project				
Project Name :			**PAF No:**	
Facility Type: ☐ BPS ☐ BES ☐ PTF ☐ non-PTF ☐ CIP ☐ Distribution				
PLANNING				
Is a NX-9 required?			Choose an item	
Is an ISO-NE PAC presentation required?			Choose an item	
Is a PPA required?			Choose an item	
Is a TCA Application Required?			Choose an item	
PLANNING/PROTECTION & CONTROLS				
Are RAS/SPS/UVLs affected?			Choose an item	
OPERATIONS				
Outage Required?	☐ Primary Equipment (Power Transfer)	☐ Secondary Equipment (P&C only)	☐ Outage Not Required	
Do SCLL Conditions Exist?			Choose an item	
Has an outage schedule been approved?			Choose an item	
Are Operations & Maintenance procedures/training required?			Choose an item	
STANDARDS				
Does the project include standard equipment and designs?			Choose an item	
SUBSTATION ENGINEERING				
Does this impact Revenue Metering			Choose an item	
Is preliminary short circuit/ breaker duty analysis required?			Choose an item	
Are there any changes to the baseline audible noise?			Choose an item	
Is there an impact to the existing ground grid?			Choose an item	
Is a Transient Over Voltage (TOV) analysis required?			Choose an item	
P&C ENGINEERING				
OP-22 - Are PMUs and DDR required?			Choose an item	
If BPS, is an NPCC Directory #4 presentation required?			Choose an item	

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Project Authorization Form

Checklist for Studies and Processes of a Transmission & Substation Capital Project	
Project Name :	**PAF No:**
TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	Choose an item
Are there any changes that affect the baseline EMI?	Choose an item
Is there an impact to the existing ground grid?	Choose an item
SITING	
Is a Siting filing required?	Choose an item
PERMITTING	
Is there any permitting required?	Choose an item
Siting & Construction Services (Outreach)	
What is the level of outreach expected?	Choose an item
INITIATOR	
Has a field constructability review been completed?	Choose an item

EVERSOURCE
Project Authorization Form

Cost Estimate Backup Details

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/15/2019**
Request No. TS 2-057 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Reject Pole Replacement, #A07X45, 12-045BB. Please provide the following information for this project:

a. Please reiterate in writing the reasons discussed at the tech session of 10/29 for the significant increase ($850,000 budget v. $1.9 million) in pole replacement costs in 2018.
b. Please confirm the total number of poles replaced including:
   i. Total number of poles rejected by the pole inspection contractor.
   ii. Total number of poles rejected by others – please indicate the number and identities of other contractors.
c. How many of the defective wooden poles were replaced by steel, composite, or class 2 poles?
d. Please provide an itemized breakout of overheads, AFUDC, and other costs leading up to the variance.

Response:

a) Budgets are established based on historical spending. As stated on page 2 of 12 of Attachment Staff 12-045 BB, "Investment in the reject pole replacement program was higher than originally budgeted due to a higher than normal failure rate of the 2017 pole inspections. Eversource inspects approximately 35,000 wood poles each year as part of its annual pole inspection program with an average failure rate of 1.5-2% failure rate. 1,386 poles (or approximately 4%) were identified as requiring replacement as a result of the 2017 pole inspection program." Therefore, the higher than normal reject rate resulted in higher than normal expenditures. See also the response to OCA 6-050.

b) All poles identified as requiring replacement were identified by the Company's pole inspection contractor. Contractors employed in the period 2007 through 2019 include Utility Pole Technologies (2007 through 2012), Osmose (2013), Alamon (2013), and Smith Mountain Investments (2014 – 2019).

c) Three reject poles were replaced with steel poles, one each on the 316, 382, and 382X2 ROW lines. None were replaced with composite poles. One was replaced with a Class 1 pole. The remainder were replaced with Class 2 poles.

d) See Attachment TS 2-057 for a summary of actual overheads, AFUDC, and other costs for this project.

Docket No. DE 19-057
Data Request TS 2-057
Dated 10/28/2019
Attachment TS 2-057
Page 1 of 1

Project	Version	Charge Type	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Total 2018
A07X45:REJECT POLE REPLACEMENT	Actual	Materials	$28,993	$28,426	$54,135	$26,046	$24,631	$7,993	($937)	$6,604	$3,491	$15,288	$18,144	$12,087	$224,900
A07X45:REJECT POLE REPLACEMENT	Actual	Other	($19)	($4,213)	($20,418)	($20,191)	($5,700)	($21,775)	($2,950)	($8,550)	($19,379)	($605)	($1,162)	($3,720)	($108,682)
A07X45:REJECT POLE REPLACEMENT	Actual	Outside Services	$209,329	$123,170	$59,731	$174,992	$130,556	$95,433	$105,671	$58,377	$17,761	$39,374	$30,230	$23,334	$1,067,957
A07X45:REJECT POLE REPLACEMENT	Actual	Overtime Labor	$614	$16	$388	($35)	($66)	$445	$184	$47	$391	$1,628	$715	$211	$4,538
A07X45:REJECT POLE REPLACEMENT	Actual	Straight Time Labor	$8,670	$13,666	$7,857	$9,348	$7,544	$8,813	$2,037	$5,060	$6,479	$4,633	$8,387	$15,678	$98,172
A07X45:REJECT POLE REPLACEMENT	Actual	Total Direct Costs	$247,588	$161,064	$101,694	$190,159	$156,964	$90,909	$104,006	$61,539	$8,742	$60,317	$56,313	$47,590	$1,286,885
A07X45:REJECT POLE REPLACEMENT	Actual	AFUDC	$116	$136	$107	$126	$86	$41	$11	$19	$24	$46	$73	$85	$869
A07X45:REJECT POLE REPLACEMENT	Actual	AS&E	$1,252	$1,666	$1,373	$1,115	$1,453	$792	$908	$505	$174	$334	$300	$429	$10,301
A07X45:REJECT POLE REPLACEMENT	Actual	E&S	$86,225	$51,301	$28,140	$102,827	$74,155	$37,992	$37,133	$17,914	$7,953	$12,501	$14,092	$29,092	$499,325
A07X45:REJECT POLE REPLACEMENT	Actual	MDEC	$6,718	$3,997	$2,110	$5,609	$4,043	$3,256	$3,183	$1,536	$719	$1,091	$807	$1,130	$34,200
A07X45:REJECT POLE REPLACEMENT	Actual	Payroll	$5,032	$7,256	$4,593	$4,987	$3,968	$4,910	$1,181	$2,601	$3,596	$3,136	$4,678	$8,213	$54,150
A07X45:REJECT POLE REPLACEMENT	Actual	Stores & Lobby Stock	$10,442	$10,722	$8,808	$8,932	$8,531	$7,390	$1,185	$2,248	($684)	$5,289	$6,282	($25,433)	$43,710
A07X45:REJECT POLE REPLACEMENT	Actual	Vehicle	$1,870	$6,394	$1,577	$3,277	$2,088	$2,182	$1,035	$1,609	$2,513	$2,352	$2,792	$5,740	$33,429
A07X45:REJECT POLE REPLACEMENT	Actual	Total Allocations	$111,654	$81,472	$46,708	$126,872	$94,323	$56,562	$44,636	$26,432	$14,295	$24,749	$29,023	$19,256	$675,983
A07X45:REJECT POLE REPLACEMENT	Actual	Total Costs	$359,242	$242,536	$148,402	$317,032	$251,287	$147,471	$148,642	$87,971	$23,037	$85,066	$85,337	$66,846	$1,962,868

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A16C01 **Status** open **Revision** 10

Project Title 3271 Line Reconductor **Operating Unit**

Initiated By Lynne Godbout **Initiated Date** 11/12/2015 17:14:48

Description of Work 3271 line - Reconductor 2.66 miles of #2 solid CU with 477 ACSR (Weare, Goffstown). Offload the circuits out of Greggs substation to Weare substation. Reconductor 2.66 miles of #2 solid CU with 477 ACSR from recloser 71 to the 3271X1 tap on the 3271 line and move the 3-335 amp regulators from the existing location on the 3271 line to right after the Goffstown tap towards Greggs substation for

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/1/2016 **Est Complete Date :** 12/1/2017

	2016	2017	2018	2019	2020	Future Years	Total
	$140,576.37	$2,364,664.92	$0.00	$0.00	$0.00	$0.00	$2,505,241
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$2,477,741	$0	$27,500	$0	$0	$2,505,241.29

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Morales, Natacha	$0	4/10/2017
Plant Accounting	Davis, Sean	$0	4/10/2017
Manager - Trans Capital	Herman, Glenn	$100,000	4/17/2017
Director - Transmission Pr	Revellese, Timothy	$250,000	4/20/2017
VP - Transmission ProjEnc	Shea_TERMINATED, Kathleen	$1,000,000	5/5/2017
President, Transmission	Clarke_TERMINATED, Peter	$5,000,000	5/9/2017

EVERSOURCE

APS 1 - Project Authorization Policy

Appendix 5
Subsidiary Board Approval Package Template

Supplement Request Form

Date Prepared: March 23, 2017	Project Title: Reconductor 3271 Line
Company/Companies: Eversource - NH	Project ID Number: A16C01
Organization: Engineering	Plant Class/(F.P.Type): Distribution
Project Initiator: Matt Cosgro	Project Type: *Specific / Annual / Prelim Project / Parent*
Project Manager: Natacha Morales	Capital Investment Part of Original Operating Plan? Y / N
Project Sponsor:	O&M Expenses Part of the Original Operating Plan? Y / N
Current Authorized Amount: $1,096,573	Estimated in service date(s): August 1, 2017
Supplement Request: $1,408,668	Other:
Total Request: $2,505,241	

Supplement Justification

The Rimmon Area Study completed in 2013 proposed two projects to solve loading, obsolescence and operational issues in the greater Manchester area which were 1) the installation of a second 115/34.5 kV transformer at Rimmon Substation and 2) Re-conductor a portion of the 3271 line (2.66 miles of #2Cu to 477) between Weare Substation and Greggs Substation. Among other benefits, the two projects would allow the removal of the obsolete distribution equipment at Greggs Substation including a transformer and a low side OCB which are both 66 years old. Since the original project approval in 2015, new design guideline considerations include the rebuild of Greggs S/S to eliminate the obsolete equipment but also to provide a larger transformer at Greggs and an improved ability to restore customers. The upgrade of the 3271 line allows the Greggs load to be fed from Weare for the loss of the Greggs transformer. The upgrade will also allow the Weare load to be served from Greggs once the Greggs rebuild is complete (ISD 2019). Both Weare and Greggs are single transformer substations.

Since the original project approval in 2015, the construction standard has changed from open wire to tree wire which has increased the total project forecast due to materials, design, construction as well as areas of impacted wetlands.

The original estimate did not account for compensatory mitigation to satisfy the Army Corps of Engineers ($89,000) to be used for projects in the Merrimack River watershed. This project had to be submitted to NHDES as a Major Project since the project involves greater than 20,000 sq. ft. alteration to non-tidal wetlands as outlined in NHDES wetland rules (application fee $18,000 for 36,000 sq.ft. of impacted wetlands)

A survey for archeological resources was not accounted for in the original estimate. Eversource has an agreement with DHR to perform these surveys in its Right – Of – Ways when there is any construction or earth movement taking place.

As part of our commitment to the abutters, there is a need to purchase an access easement to avoid the difficult terrain through an abutter's property. Also, there are stonewall property boundaries that will need to be matted to avoid disturbance increasing the project $60,000.

Justification for Additional Resources

Re-design to Hendrix (tree wire) bundled has caused an increase of about $17,730.

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APS 1 - Project Authorization Policy

Appendix 5
Subsidiary Board Approval Package Template

Materials for bundled Hendrix (tree wire) have caused an increase of about $352,000.
Outside services (wetland permitting, mitigation plans, line construction, wetland matting, and tree clearing) have caused an increase of about $960,000.
Commitments to abutters and outreach have caused an increase of about $60,000.
All the above increases have been caused by the change of design from open wire to Hendrix as well as the oversight of the hazardous trees and NHDES/ACOE conditions that needed to be addressed before construction.
The total increase for this project is around $1,409,000. Please see attached estimate.

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	746	1,422	2,168
Less Customer Contribution	0	0	0
Removals net of Salvage ____%	25	0	25
Total Direct Spending	771	1,422	2,193
Capital Additions - Indirect	318	-9	309
AFUDC	8	-5	3
Total Capital Request	1,097	1,409	2,505
O&M	0	0	0
Total Request	**1,097**	**1,409**	**2,505**

Note: Dollar values are in thousands:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 1,422	$ -		$ 1,422
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 1,422	$ -	$ -	$ 1,422
Capital Additions - Indirect	$ (9)	-		(9.00)
AFUDC	(5)	-		(4.50)
Total Capital Request	$ 1,409	$ -	$ -	$ 1,409
O&M	-	-	-	-
Total Request	**$ 1,409**	**$ -**	**$ -**	**$ 1,409**

ESTIMATE SUMMARY
PSNH

Project Title: Reconductor 3271 Line
Project Mgr/Lead: Natacha a Morales
Project Number: A16C01
TAF # TBD

Estimate By: MPD
Date of Estimate: 03-20-17
ISD: 6/1/17
Estimate #P17-009

ESTIMATE SUMMARY

ESTIMATE TYPE: Construction

	TOTAL	Prior	2017	2018	2019	2020	2021 and FUTURE
CONSTRUCTION	$1,327,655	$8,451	$1,319,204	$0	$0	$0	$0
ENGINEERING/DESIGN	$63,247	$50,518	$12,730	$0	$0	$0	$0
LAND	$5,000	$0	$5,000	$0	$0	$0	$0
MATERIAL	$361,597	$0	$361,597	$0	$0	$0	$0
PROJECT MGR & SUPPORT	$225,829	$102,904	$122,925	$0	$0	$0	$0
REMOVAL	$25,000	$0	$25,000	$0	$0	$0	$0
TEST	$0	$0	$0	$0	$0	$0	$0
CONTINGENCY	$184,646	$0	$184,646	$0	$0	$0	$0
ESCALATION	$0	$0	$0	$0	$0	$0	$0
INDIRECTS	$309,448	$35,997	$273,451	$0	$0	$0	$0
AFUDC	$2,819	$382	$2,437	$0	$0	$0	$0
Total Cost	**$2,505,241**	**$198,251**	**$2,306,990**	**$0**	**$0**	**$0**	**$0**

	-10%	-	10%
Construction	**$2,254,717**	-	**$2,755,765**

COMMENTS:

Project Scope:

Re-conductor 2.66 miles of #2 copper from Recloser 71 to the 3271X1 tap, remove the 3271 mainline regulators and install new regulators for the 3194X1 tap.

Allowances:
Clearing of access easement: $25,000
Bridge over stonewalls: $50,000
Added additional Matting $52K
Added Gates $7.5k

Assumptions:
Engineering to be outsourced with in-house review, construction to be outsourced.
This estimate is based on TAF, Actuals to date, Vendor quotes and allowances. quantities may vary during detailed engineering.
Material estimates based on MR's..
All new equipment will be installed within the confines of the existing fenced yard or ROW
No additional allowances have been added for aggressive outage recall times.
Estimate includes an average of 10% contingency on direct costs which equates to 7% contingency of total cost.
See attached estimate checklist for other project information.

Estimating/Eng. Mgr J.C. Case Date

S/S Engr Mgr M J Bellandese Date

P&C Engr Mgr G.P. Wegh Date

Proj Mgr/Lead TBD Date

P17-009 reconductor line 3271 03-23-17.xlsxCover

04/07/2017

Project Number: A16C01

Project Title: Reconductor 3271 Line

Escalated Line Item Dollars

$182,146

Escalation Rate 3%			Rate $ 416	0	1	2	3	4	
			Prior to 3/1/17	2017	2018	2019	2020	2021 and FUTURE	TOTAL
CSTXX-CONSTRUCTION	R		MDYS DOLLARS	MDYS DOLLARS	MDYS DOLLARS	MDYS DOLLARS	MDYS DOLLARS	MDYS DOLLARS	MDYS DOLLARS
Electrical Construction	LT		$0	$0	$0	$0	$0	$0	0 $0
General Construction	LT		$0	$0	$0	$0	$0	$0	0 $0
Transmission Automation	LT		$0	$0	$0	$0	$0	$0	0 $0
Construction Reps	LT		$309	30 $12,493	$0	$0	$0	$0	30 $12,802
Support Switch/Tag	LT		$0	2 $833	$0	$0	$0	$0	2 $833
LT Total			0 $309	32 $13,326	0 $0	0 $0	0 $0	0 $0	32 $13,635
Employee Expenses	AE	5%	$0	$666	$0	$0	$0	$0	$666
Construction Purchased Material	AM	1%	$0	$12,847	$0	$0	$0	$0	$12,847
Construction Vendor Inc sales tax @	AQ	0.0%	$0	$1,284,700	$0	$0	$0	$0	$1,284,700
Vehicles	AV	20%	$142	$2,665	$0	$0	$0	$0	$2,807
Fees and Payments	BF		$0	$0	$0	$0	$0	$0	$0
Rents and Leases	BR		$8,000	$5,000	$0	$0	$0	$0	$13,000
CSTXX Subtotal			$8,451	$1,319,204	$0	$0	$0	$0	$1,327,655
Contingency	P1	10%		$131,920	$0	$0	$0	$0	$131,920
CSTXX Total			0 $8,451	32 $1,451,124	0 $0	0 $0	0 $0	0 $0	32 $1,459,575
ENRXX-TG ENGINEERING/DESIGN									
Project Services/Drafting	LT		$0	3 $1,249	$0	$0	$0	$0	3 $1,249
Transmission Engineering/Design	LT		$0	$0	$0	$0	$0	$0	0 $0
Civil Engineering/Design	LT		$1,475	5 $2,483	$0	$0	$0	$0	5 $3,958
Substation Engineering/Design	LT		$201	$0	$0	$0	$0	$0	0 $201
Distribution SS Engineering/Design	LT		$0	$0	$0	$0	$0	$0	0 $0
Protection & Controls Engineering	LT		$0	$0	$0	$0	$0	$0	0 $0
Survey Engineering	LT		$867	1 $648	$0	$0	$0	$0	1 $1,515
Telecom Engineering	LT		$0	$0	$0	$0	$0	$0	0 $0
LT Total			0 $2,543	9 $4,380	0 $0	0 $0	0 $0	0 $0	9 $6,923
Employee Expenses	AE	5%	$0	$219	$0	$0	$0	$0	$219
Contractor Engineering Inc sales tax	AQ	0.0%	$47,959	$8,000	$0	$0	$0	$0	$55,959
Vehicles	AV	3%	$16	$131	$0	$0	$0	$0	$147
ENRXX Subtotal			$50,518	$12,730	$0	$0	$0	$0	$63,247
Contingency	P1	10%		$1,273	$0	$0	$0	$0	$1,273
ENRXX Total			0 $50,518	9 $14,003	0 $0	0 $0	0 $0	0 $0	9 $64,520
LNDXX-TG LAND									
Real Estate	LT		$0	$0	$0	$0	$0	$0	0 $0
Employee Expenses	AE	5%	$0	$0	$0	$0	$0	$0	$0
Purchase Land	AM		$0	$0	$0	$0	$0	$0	$0
Vehicles	AV	3%	$0	$0	$0	$0	$0	$0	$0
Fees and Payments	BF		$0	$5,000	$0	$0	$0	$0	$5,000
LNDXX Subtotal			$0	$5,000	$0	$0	$0	$0	$5,000
Contingency	P1	10%		$500	$0	$0	$0	$0	$500
LNDXX Total			0 $0	0 $5,500	0 $0	0 $0	0 $0	0 $0	0 $5,500
MATXX-TG MATERIAL									
See attached	AM		$0	$256,537	$0	$0	$0	$0	$256,537
-	AM		$0	$0	$0	$0	$0	$0	$0
	AM		$0	$0	$0	$0	$0	$0	$0
Freight		0%	$0	$0	$0	$0	$0	$0	$0
Sales Tax		0.0%	$0	$0	$0	$0	$0	$0	$0
Stores Expense Allocation (ZC)		16%	$0	$105,060	$0	$0	$0	$0	$105,060
MATXX Subtotal			$0	$361,597	$0	$0	$0	$0	$361,597
Contingency	P1	10%		$36,160	$0	$0	$0	$0	$36,160
MATXX Total			$0	$397,757	$0	$0	$0	$0	$397,757
PSMXX-PROJECT MANAGER & SUPPORT									
Project Planning	LT		$0	4 $1,666	$0	$0	$0	$0	4 $1,666
Project Management	LT		$0	8 $3,332	$0	$0	$0	$0	8 $3,332
Contracts/Purchasing	LT		$1,370	1 $416	$0	$0	$0	$0	1 $1,786
Legal	LT		$2,623	1 $1,092	$0	$0	$0	$0	1 $3,715
Transmission Planning	LT		$0	1 $416	$0	$0	$0	$0	1 $416
Environmental	LT		$0	5 $2,082	$0	$0	$0	$0	5 $2,082
LT Total			$3,993	20 $9,004	0 $0	0 $0	0 $0	0 $0	20 $12,997
Employee Expenses	AE	5%	$164	$450	$0	$0	$0	$0	$614
Legal Vendor	AQ		$0	$1,500	$0	$0	$0	$0	$1,500
Project Support Vendor Inc Sales Tax	AQ	0.0%	$98,712	$10,000	$0	$0	$0	$0	$108,712
Vehicles	AV	3%	$16	$270	$0	$0	$0	$0	$286
Include allowance for Property tax large proj	BR		$0	$0	$0	$0	$0	$0	$0
Fees and Payments	BF		$16	$101,701	$0	$0	$0	$0	$101,717
PSMXX Subtotal			$102,904	$122,025	$0	$0	$0	$0	$225,629
Contingency	P1	10%		$12,293	$0	$0	$0	$0	$12,293
PSMXX Total			$102,904	20 $135,218	0 $0	0 $0	0 $0	0 $0	20 $238,122
REMXX-TG REMOVAL									
Engineering/Design	LT		$0	$0	$0	$0	$0	$0	0 $0
General Construction	LT		$0	$0	$0	$0	$0	$0	0 $0
LT Total			0 $0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0
Employee Expenses	AE	15%	$0	$0	$0	$0	$0	$0	$0
Outside Services Inc Sales Tax	AQ	0.0%	$0	$0	$0	$0	$0	$0	$0
Contractor Labor Inc sales Tax	AQ	0.0%	$0	$25,000	$0	$0	$0	$0	$25,000
Vehicles	AV	20%	$0	$0	$0	$0	$0	$0	$0
Rents and Leases	BR		$0	$0	$0	$0	$0	$0	$0
REMXX Subtotal			$0	$25,000	$0	$0	$0	$0	$25,000
Contingency	P1	10%		$2,500	$0	$0	$0	$0	$2,500
REMXX Total			$0	0 $27,500	0 $0	0 $0	0 $0	0 $0	0 $27,500
TSTXX-TG TEST									
Test Labor-In House	LT		$0	$0	$0	$0	$0	$0	0 $0
Employee Expense	AE	10%	$0	$0	$0	$0	$0	$0	$0
Contractor Test & Commissioning Labor	AQ	0.0%	$0	$0	$0	$0	$0	$0	$0
Vehicles	AV	10%	$0	$0	$0	$0	$0	$0	$0
TSTXX Subtotal			$0	$0	$0	$0	$0	$0	$0
Contingency	P1	10%		$0	$0	$0	$0	$0	$0
TSTXX Total			$0	0 $0	0 $0	0 $0	0 $0	0 $0	0 $0
TOTAL PROJECT DIRECT COST			$161,672	$2,031,101	$0	$0	$0	$0	$2,192,973
INDIRECTS									
Non-Productive Time Allocation (ZB)	58	16.7%	$1,210	$4,461	$0	$0	$0	$0	$5,670
Payroll Benefits Allocation (ZE)	59	32.1%	$906	$9,998	$0	$0	$0	$0	$10,904
Gen SVC CO OVRHD ALLOC (ZF)	60	26.0%	$5,177	$40,061	$0	$0	$0	$0	$45,238
E&S Allocations (ZI) (25%<20M<3%)	61	27.0%	$26,452	$201,805	$0	$0	$0	$0	$228,257
AS&E Allocations (ZJ)	62	1.0%	$2,250	$17,128	$0	$0	$0	$0	$19,378
AFUDC (ZK)	63	0.1%	$382	$2,437	$0	$0	$0	$0	$2,819
Indirects Subtotal			$36,379	$275,868	$0	$0	$0	$0	$312,267
TOTAL PROJECT COST			$198,251	$2,306,990	$0	$0	$0	$0	$2,505,241
				1,926,042					

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ESTIMATE DETAIL SHEET

Project Number: A16C01

Project Title: Reconductor 3271 Line

Escalation Rate Material 3%
Escalation Rate Labor 3%

ITEM & DESCRIPTION	MATERIAL COST				LABOR COST				TOTAL COST
	UNITS	QTY	UNIT COST	MATERIAL	UNIT MH	TOTAL MH	MH RATE	LABOR	
JCR Bid for construction	LS	1		$0	1	1	$897,700	$897,700	$897,700
MR 34136930	LS	1	$43,896	$43,896	1	1		$0	$43,896
MR 01436930	LS	1	$174,300	$174,300	1	1		$0	$174,300
MR 78646930	LS	1	$4,768	$4,768	1	1		$0	$4,768
MR 51436930	LS	1	$26,572	$26,572	1	1		$0	$26,572
ROW trimming and clearing	LS	1	$0	$0	1	1	$260,000	$260,000	$260,000
Allowance for clearing Access easement	LS	1	$0	$0	1	1	$25,000	$25,000	$25,000
Allowance for bridge over stonewalls	LS	1			1	1	$50,000	$50,000	$50,000
Additional Matting	LS	1			1	1	$52,000	$52,000	$52,000
Gates	EA	2	$3,500	$7,000					$7,000
REMOVAL									
Removal old conductor and structures	LS	0	$0	$0	1	1	25000	$25,000	$25,000
		0			0	0	110	$0	$0
				$0				$0	
INSTALLATION TOTAL				$256,537		9		$1,284,700	$1,541,237
REMOVAL TOTAL				$0		1		$25,000	$25,000
PAGE TOTAL				$256,537		10		$1,309,700	$1,566,237

Roll Up Activity	Project Title: Reconductor 3271 Line					Project Number: A16C01	
	PRIOR	2017	2018	2019	2020	2021 and FUTURE	Total
Engineering/PM/Siting	153,421.08	135,655	-	-	-	-	289,076
Material	-	274,384	-	-	-	-	274,384
Construction	8,450.79	1,331,357	-	-	-	-	1,339,808
Test	-	-	-	-	-	-	-
Indirects	35,997.23	378,511	-	-	-	-	414,508
AFUDC	381.97	2,437	-	-	-	-	2,819
Contingency	-	184,646	-	-	-	-	184,646
Total	$198,251	2,306,990	-	-	-	-	2,505,241
Check	$ 198,251.07	2,306,990	-	-	-	-	2,505,241
		-	-	-	-	-	-

Docket No. DE 19-057
Data Request STAFF 12-045
Dated 9/20/2019
Attachment STAFF 12-045 AF
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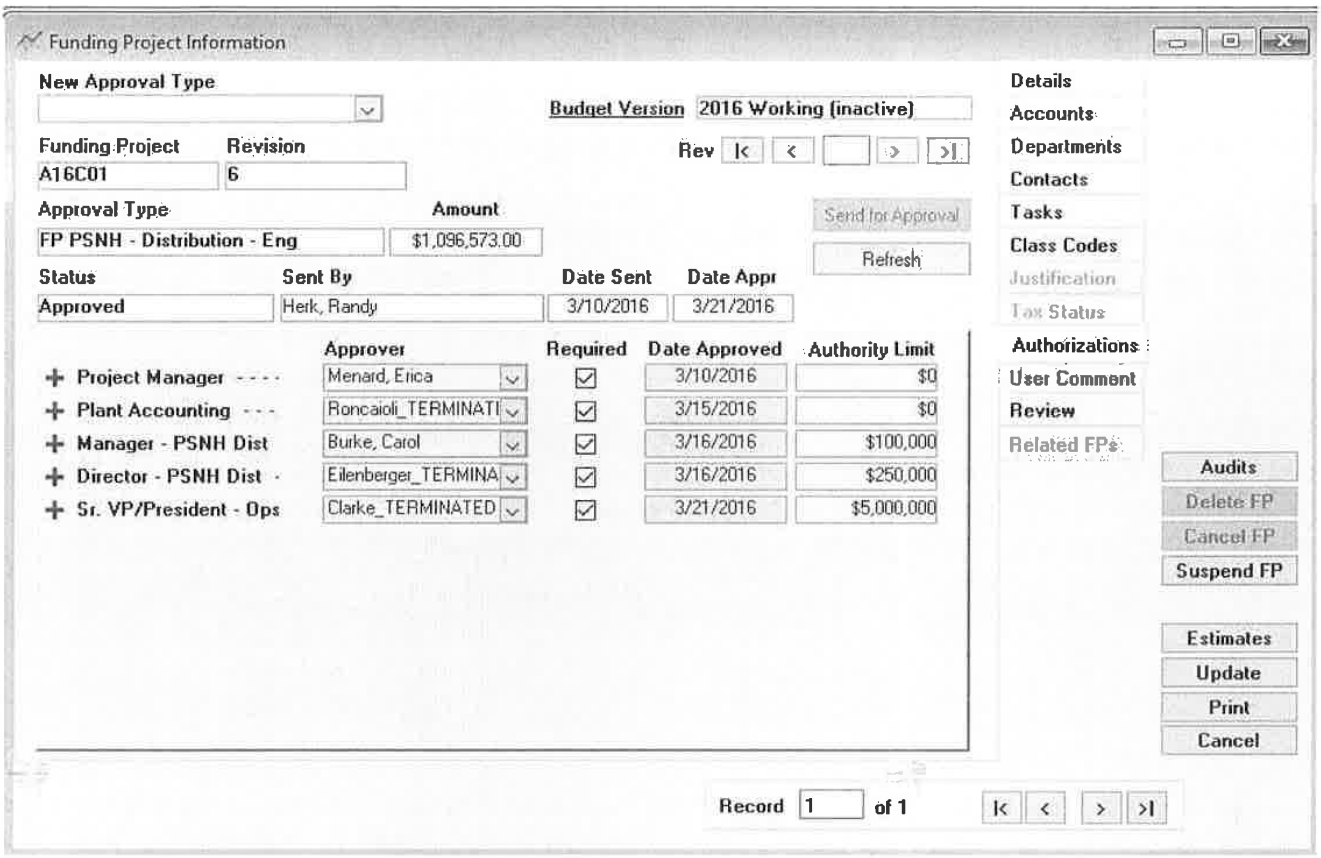


EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Authorization Form

General Information

Date Prepared: August 20, 2015	Project Title: Reconductor 3271 line
Company: Eversource - NH	Project ID Number: A16C01
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Matthew Cosgro	Project Category: Reliability
Project Owner/Manager: Carol Burke/Marc Pilotte	Project Purpose: part of regulatory tracked program? N
Project Sponsor: James Eilenberger	Project Type: Specific
Estimated in service date: June 1, 2017	Capital Investment Part of Original Operating Plan? Y
If Transmission Project: N/A	Supplement to Existing Authorization? N
	O&M Expenses Part of the Original Operating Plan? Y

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

The Rimmon Area Study completed in 2013 proposed two projects to solve loading issues in the Manchester area which were 1) the installation of a second 115/34.5 kV transformer at Rimmon Substation and 2) Re-conductor a portion of the 3271 line (2.66 miles) between Weare Substation and Greggs Substation to allow the removal of the obsolete distribution equipment at Greggs Substation including a transformer and a low side OCB which are both 66 years old. The Rimmon Substation upgrade project is scheduled for completion in September so this PAF will cover the re-conductoring of the 3271 line. The upgrade of the 3271 line will allow the capacity of Weare Substation to help support the Rimmon area and allow the removal of the obsolete Greggs Substation equipment which will be completed as a separate project once this project is completed in 2017.

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Project Costs Summary

Note: Dollar values are in thousands

($000)	Prior Authorized*	2015	2016	2017+	Totals
Capital Additions - Direct		$ -	$ 70	$ 670	$ 741
Customer Contribution		$ -	$ -	$ -	$ -
Removals net of Salvage		$ -	$ -	$ 30	$ 30
Total - Direct Spending	$ -	$ -	$ 70	$ 700	$ 771
Capital Additions - Indirect		$ -	$ 28	$ 290	$ 318
Subtotal Request	$ -	$ -	$ 98	$ 991	$ 1,089
AFUDC (half-year convention)		$ -	$ 1	$ 7	$ 8
Total Request	$ -	$ -	$ 99	$ 998	$ 1,097

* to be completed if supplemental authorization is required

Summary Project Description

Re-build 2.66 miles of the 3271 line including replacing the #2 solid copper wire with 477 ACSR from Recloser 71 to the 3271X1 tap. Also included is the removal of regulators on the 3271 mainline and installation of new regulators on the 3194X1 tap.

Note: Dollar values are in thousands

	Total Project Costs	Amount in Operating Plan	Difference
Capital	$1,097	$1,097	$0
O&M	$0	$0	$0
Total	$1,097	$1,097	$0

Project Authorization

Project authorization below must be in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

Approver	Approver Name	Approver Signature	Date
Project Initiator	Matthew Cosgro		
Project Manager	Carol Burke		
Plant Accounting	Michele Roncaioli		
Director	James Eilenberger		
Vice President	Peter Clarke		

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Overall Justification

As identified in the 2013 Rimmon Area Study, the re-conductoring of the 3271 line is necessary to create a major tie between Rimmon Substation and Weare Substation which brings the trapped capacity of Weare Substation down into the Greggs/Rimmon Substation area which will eventually allow the removal of a 66 year old transformer and OCB at Greggs Substation. The removal of the Greggs transformer resolves an ESCC Operations Top 10 Issue (ESC 2013-3, Greggs transformer fault locks out C1960, B1430, O1610, and BT30. No motor operator on J17 high side switch)

Project Scope

Re-conductor 2.66 miles of #2 copper from Recloser 71 to the 3271X1 tap, remove the 3271 mainline regulators and install new regulators for the 3194X1 tap.

Project Objectives

Develop a major tie between Rimmon and Weare Substations to bring trapped capacity from Weare Substation into the Greggs/Rimmon area which also allows the removal of aging and obsolete equipment from Greggs Substation.

Business Process and / or Technical Improvements:

This project would remove all the #2 copper from the main line, bringing the 3271 in-line with the design standards specified in ED-3002.

Assumptions

Rimmon Substation project is completed.

Alternatives Considered

The Rimmon Area Study reviewed several area alternatives and recommended the addition of a second transformer at Rimmon Substation and the re-conductoring of the 3271 Line for 2.66 miles.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Permitting	December 1, 2016
Re-conductoring	June 1, 2017

EVERSOURCE

Accounting Policy Statement No. 2
Operations Project Authorization

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs ($000)	2016	2017	2018	Total
Straight Time Labor	$6	$50	$	$56
Overtime Labor	$0	$0	$	$0
Outside Services	$50	$325	$	$375
Materials	$0	$325	$	$325
Other, including contingency amounts (describe)	$15	$0	$	$15
Total	$70	$700	$	$770

Indirect Capital Costs ($000)	2016	2017	2018	Total
Benefits / Loaders	$28	$290	$	$318
Capitalized interest or AFUDC, if any	$1	$7	$	$8
Total	$29	$297	$	$236

Total Capital Costs	$99	$998	$	$1,097
Total O&M Costs	$0	$0	$	$0
Total Project Costs ($000)	$99	$998	$	$1,097

Note: Explain unique payment provisions, if applicable

Regulatory Approvals

None needed

Risks and Risk Mitigation Plans

Typical permitting and wetland mitigation plans will need to be developed.

funding_project	A16C01

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
A16C0101	**3271 LINE RECONDUCTOR**	Admin and Eng OH- Acct Use Only		2016	0	$ 1,367.15
				2017	0	$ 36,811.32
				2018	0	$ 0.32
		AFUDC Debt		2016	0	$ 196.55
				2017	0	$ 2,176.42
		Contractor- Fixed Price		2018	0	$ -
			NORTHERN LAND CLEARING INC	2017	0	$ 335,869.90
		Contractor Services		2017	0	$ -
				2018	0	$ -
			JCR CONSTRUCTION CO INC	2017	1	$ 964,255.05
			THOMAS LABRECQUE & KELLY LABRECQUE	2017	0	$ 2,500.00
		Contractor Services- Other		2018	0	$ -
			JCR CONSTRUCTION CO INC	2017	0.56	$ 1,318.00
		Contractor Vehicles + Equip		2018	0	$ -
			JCR CONSTRUCTION CO INC	2017	0.44	$ 1,036.00
		Employee Expense Other		2017	0	$ 1.05
		Engin and Super OH- Acct Use Only		2016	0	$ 18,301.82
				2017	0	$ 314,944.99
				2018	0	$ 17.46
		Engineering Design Services		2018	0	$ -
			TRC LOCKBOX	2016	0.8	$ 21,245.20
				2017	3.22	$ 39,833.66
		Environmental Outside Services		2018	0	$ -
			VANASSE HANGEN BRUSTLIN INC	2017	1	$ 16,789.35
		Fees + Payments- Other	**NHDES ARM FUND**	2017	0	$ 15,550.70
			SOUTH LAND TRUST OF NEW HAMPSHIRE	2017	0	$ 70,600.00
			STATE OF NEW HAMPSHIRE TREASURER	2017	0	$ 15,550.70
		Fees and Payments	**JP MORGAN CHASE BANK**	2017	0	$ 37.50
		Filing Fees	**JP MORGAN CHASE BANK**	2017	1	$ 16.00
		Gen Ser Co Benefit Loader- Acct Use Only		2016	0	$ 1,348.57
				2017	0	$ 10,331.71
				2018	0	$ 18.34
		Labor Overtime Non-Exempt		2016	1	$ 52.27
				2017	2	$ 102.87
				2018	0	$ -
		Labor Straight Time Exempt		2016	65	$ 2,880.10
				2017	728.75	$ 31,381.25
				2018	0.5	$ 22.96
		Labor Straight Time Non-Exempt		2016	6	$ 174.12
				2017	46.5	$ 1,449.70
				2018	0	$ -
		Licensing and Permitting		2017	0	$ -
				2018	0	$ -
			VANASSE HANGEN BRUSTLIN INC	2017	2	$ 21,752.77
		Lobby Stock Loader-Acct Use Only		2017	0	$ 37,909.42
		Material Salvage		2017	0	$ (29,320.74)
				2018	0	$ (1,635.14)
		Materials- Purchased		2017	0	$ (9,017.03)
			POLE, SYP, 40 FT, CL 2, CCA	2017	-1	$ (337.54)
			VANASSE HANGEN BRUSTLIN INC	2016	0	$ -
		Materials- Stores	**ANCHOR, SINGLE HELIX, 10,000#, 12 IN**	2017	30	$ 1,215.84
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTIO CLASS, 27 KV, POLYMER, I	2017	18	$ 1,573.13
			BALL, CLEVIS, Y, HOT LINE TYPE, LONG, GALV STEEL, 30000 LB	2017	39	$ 529.12
			BAR, ANTI-SWAY, CABLE SPACERS ON TANGENT CABLES, POLYETHYLEI	2017	43	$ 707.18
			BOLT, DOUBLE ARM, 3/4 IN, 24 IN L, GALV STEEL, W/4 SQ NUTS	2017	22	$ 86.75
			BOLT, DOUBLE ARM, 3/4 IN, 26 IN L, GALV STEEL, W/4 SQ NUTS	2017	20	$ 79.99
			BOLT, DOUBLE ARM, 3/4 IN, 30 IN L, GALV STEEL, W/6 SQ NUTS	2017	10	$ 54.65
			BOLT, EYE, 3/4 IN X 12 IN, GALV STEEL	2017	5	$ 44.89
			BOLT, EYE, 3/4 IN X 14 IN, GALV STEEL	2017	2	$ 18.93
			BOLT, EYE, 5/8 IN, 14 IN L, GALV STEEL, W/SQUARE NUT	2017	6	$ 19.16
			BOLT, MACHINE, 1/2 IN, 13 UNC-2A TPI, 10 IN L, GALV STEEL, HOT DIP GAI	2017	32	$ 17.43
			BOLT, MACHINE, 1/2 IN, 13 UNC-2A TPI, 2 IN, SS, HEX HEAD, GR 304	2017	27	$ 11.36

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0101	3271 LINE RECONDUCTOR	Materials- Stores	BOLT, MACHINE, 3/4 IN, 12 IN L, GALV STEEL, PER EEI STD TDJ-1, W/SQ NI	2017	8	$ 16.27
			BOLT, MACHINE, 3/4 IN, 14 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2017	134	$ 219.37
			BOLT, MACHINE, 3/4 IN, 16 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2017	20	$ 39.81
			BOLT, MACHINE, 5/8 IN, 10 IN L, GALV STEEL, W/SQ NUT	2017	6	$ 5.49
			BOLT, MACHINE, 5/8 IN, 12 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2017	79	$ 85.03
			BOLT, MACHINE, 5/8 IN, 14 IN L, GALV STEEL, W/SQ NUT	2017	14	$ 16.49
			BOLT, MACHINE, 5/8 IN, 7 IN L, GALV STEEL, W/SQ NUT	2017	6	$ 4.14
			BRACE, 35 KV X FOR 10 FT SPACING, WOOD, 3-3/8 IN X 4-3/8 IN	2017	2	$ 923.84
			BRACE, CROSSARM, WOOD, 1-3/4 IN X 1-3/4 IN, 60 IN SPAN	2017	8	$ 146.37
			BRACKET, ANGLE, EXTENDED TAP, HENDRIX, SPACER CABLE SINGLE CII	2017	5	$ 828.21
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2017	1	$ 29.61
			BRACKET, CUTOUT & ARRESTER, FOR DE FIBERGLASS CROSSARM MOU	2017	18	$ 152.00
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2017	43	$ 3,078.90
			BRACKET,TANGENT, SPACER, 24 IN, DI, HOT DIP GALV, USE: MESSENGEI	2017	3	$ 214.55
			CABLE, BARE, 19-#10 AWG, 27M, 19 STR, 3400 FT LG, ALUMOWELD	2017	-1400	$ (786.90)
			CABLE, BARE, ACSR, 477 KCMIL, 26/7 STR, HAWK	2017	-5705	$ (4,723.74)
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN	2017	600	$ 241.00
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN/AW	2017	5825	$ 2,716.91
			CABLE, BARE, ALUMOWELD, 19-#10 AWG, (19 STR), 27M, 5000 FT REEL	2017	3429	$ 2,156.84
			CABLE, BARE, COPPER CLAD STEEL, #2, SOLID, 40%, 100 LBS, SOFT DRA	2017	500	$ 1,751.94
			CABLE, BARE, CU MHD, 2/0, 7 STR	2017	122	$ 211.18
			CABLE, BARE, HAWK, ACSR, 477 KCMIL, 26/7 STR	2017	12540	$ 10,383.11
			CABLE, BARE, SD/ANNEALED, CU, #2, 7 STR	2017	54	$ 40.63
			CABLE, COVERED, 60 MILS, POLYETHYLENE, MHD COPPER, #4, (7 STR), U	2017	330	$ 223.08
			CABLE, INSULATED, SPACER, AAC, 1/C, 477, 35 KV, 90 DEG C, 320 MILS PC	2017	0	$ (70.02)
			CABLE, INSULATED, SPACER, POLY, 35 KV, AL, 477 AAC, 320 MIL, 1/C, 90 I	2017	0	$ (129.55)
			CLAMP, ANGLE, #4 - 4/0 RANGE	2017	5	$ 53.02
			CLAMP, QUADRANT, ALUMINUM, 3/0 - 795 ACSR, .50 TO 1.20, W/ SOCKET	2017	42	$ 2,426.98
			CLAMP, STRAIN, STRT SIDE OPENING, 3/0 - 556.5 AL, W/LIFTING EYE	2017	56	$ 649.20
			CLAMP,SUSPENSION, 0.7-1.118 IN, AL, W/ SOCKET EYE	2017	6	$ 131.55
			CLEVIS, DEADEND EYELET, GALV, 1-1/2 IN X 3/4 IN	2017	24	$ 206.76
			CLEVIS, EYE 90 DEGREE, COTTER KEY TO HAVE 1-3/8 IN OVERALL LENGT	2017	5	$ 149.84
			CLEVIS, THIMBLE, GALV STEEL, 36K	2017	6	$ 57.56
			CONNECTOR, GROUND, ROD, 5/8 IN, #8 TO 1/0	2017	59	$ 84.51
			CONNECTOR, PARALLEL GROVE, AL, RUN : 3/0 TO 397.5 ACSR, TAP : #6 T	2017	14	$ 49.55
			CONNECTOR, PARALLEL GROVE, ALUMINUM, #1 SOL TO 336 ACSR RUN,	2017	59	$ 90.83
			CONNECTOR, SPLIT BOLT, COPPER, #4 SOL	2017	18	$ 11.24
			CROSSARM, 29 FT RA DRILLING, LAMINATED, 5-1/2 X 7-1/2 NEW TYPE TO	2017	2	$ 1,147.82
			CROSSARM, DISTRIBUTION, DEADEND, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CEN	2017	-5	$ (958.94)
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, JUMBO, BRO\	2017	12	$ 3,061.96
			CROSSARM, DISTRIBUTION, TANGENT, 3-5/8 X 4-5/8 IN, 10 FT LG , W/ CEN	2017	-2	$ (211.93)
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2017	6	$ 1,159.85
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTEF	2017	7	$ 738.80
			CROSSARM, FIBERGLASS, 10 FT TANGENT, JUMBO, BROWN, WITH JUMB	2017	21	$ 2,358.09
			CROSSARM, TANGENT, JUMBO, 3-5/8 X 4-5/8 IN, 10 FT LG, W/ JUMBO DRIL	2017	-16	$ (1,806.88)
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	0	$ (2.49)
			EYELET, STANDARD, LONG, PER ANSI C135.5, GALVANIZED STEEL, FOR 3	2017	12	$ 35.64
			EYELET, THROUGH BOLT/ NOT THREADED, GALVANIZED STEEL, FOR 5/8	2017	12	$ 25.11
			EYENUT, FOR 3/4 IN BOLT, GALVANIZED STEEL	2017	58	$ 96.94
			EYENUT, SINGLE STRAND, GALVANIZED STEEL, FOR 3/4 IN BOLT	2017	8	$ 18.45
			GRIP, GUY, PREFORMED, FOR ALUMOWELD CABLE, 19-#10 AWG GREEN	2017	68	$ 1,168.41
			GRIP, PREFORMED DEADEND, FOR 0000127 AWA MESSENGER	2017	6	$ 803.67
			GUARD, ELECTRICAL, PRIMARY CONDUCTOR /TREE/BRANCH, 8 FT. LG, 1	2017	6	$ 159.50
			INSULATOR, PIN, POLY, VISE TOP, 35 KV, 1 IN. PIN, COVERED CONDUCTO	2017	36	$ 777.30
			INSULATOR, POST, (PINEAPPLE), TIE TOP, POLYETHYLENE, 35KV	2017	49	$ 2,060.67
			INSULATOR, STRAIN, FIBERGLASS, 78 IN, ROLLER CLEVIS, 30,000 LB, NO	2017	16	$ 558.50
			INSULATOR, SUSPENSION, COMPOSITE, SILICONE, 35 KV, NOT ENGINEER	2017	81	$ 948.21
			INSULATOR, SUSPENSION, DEADEND, POLY, 23 IN LONG, 34.5 KV, 378 KV	2017	39	$ 1,908.73
			LINK, ROLLER, ASSY, TYPE 1 GUY LINK, RUS TG-92	2017	32	$ 725.36
			LINK, STRAIGHT, GALV STEEL, 5/8 IN, 40,000 LB	2017	36	$ 172.55
			LINK, STRIRRUP, FOR SPACER CABLE TANGENT BRACKET	2017	43	$ 372.94
			LINK,ASSEMBLY, ROLLER, GUY, RUS TG-92, TYPE 1	2017	-14	$ (317.34)
			MARKER, GUY, FULL ROUND, PLASTIC, 8 FT L, YELLOW, SPIRAL PIGTAIL	2017	32	$ 93.26
			MOLDING, F/GROUND WIRE, HIGH DENSITY POLY, BLACK, 8 FT L, 1/2 IN W	2017	2000	$ 673.20
			NUT, HEX, FINISHED, 1/2 IN, 13 UNC-2B TPI, STS, GR 18-8	2017	18	$ 2.00

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0101	3271 LINE RECONDUCTOR	Materials- Stores	PIN, INSULATOR, CROSSARM, 5/8" X 6-1/4" SHANK, 1" THRD, 8", GALV. ST	2017	21	$ 274.19
			PIN, INSULATOR, FOR SPCR CABLE BKT, 3/4" X 2-3/8" SHANK, 1" THRD, 7'	2017	15	$ 227.72
			PIN, INSULATOR, LINE POST, 3/4" X 7" SHANK, 8-1/2" OVERALL LENGTH, S	2017	43	$ 185.17
			PIN, INSULATOR, SHORT STUD, 3/4 IN D, 1-3/4 IN L, GALV STEEL	2017	4	$ 14.54
			PIN, POLE TOP, LINE POST, BRACKET, 4 X 4 X 13 IN, 35 KV	2017	4	$ 59.44
			PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16 IN. LAG HOLE, WITH C	2017	24	$ 144.51
			POLE, WESTERN RED CEDAR, 40 FT, CL 2	2017	2	$ 1,619.66
			POLE, WESTERN RED CEDAR, 45 FT L, CL 1	2017	12	$ 11,457.22
			POLE, WESTERN RED CEDAR, 45 FT, CL 2	2017	16	$ 15,054.70
			POLE, WESTERN RED CEDAR, 50 FT L, CL 1	2017	6	$ 6,643.54
			POLE, WESTERN RED CEDAR, 50 FT, CL 2	2017	6	$ 5,909.70
			POLE, WESTERN RED CEDAR, 55 FT L, CL 1	2017	9	$ 12,575.69
			POLE, WESTERN RED CEDAR, 55 FT L, CL 2	2017	1	$ 1,193.16
			POLE, WESTERN RED CEDAR, 60 FT L, CL 2	2017	4	$ 6,533.66
			ROD, ANCHOR, GALVANIZED STEEL, 1 IN DIA, 7 FT LG, TRIPLE STRAND E'	2017	30	$ 672.41
			ROD, GROUND, HOT DIPPED GALVANIZED, MINIMUM 5/8 IN DIA, 8 FT LG	2017	59	$ 295.17
			SCREW, LAG, 1/2 IN, 4 IN LG, STEEL, GALVANIZED, TWIST DRIVE PILOT PO	2017	89	$ 26.72
			SHACKLE, ANCHOR, 5/8 IN, BOLT/ NUT / KEY, GALV, SCREW PIN, 30,000 LI	2017	20	$ 131.12
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2017	400	$ 10,638.78
			STAPLE, SQUARE SHANKED, BARBED, 2 IN L X 5/8 IN X 0.165 IN THK, 160/I	2017	1600	$ 411.92
			STAPLE, WIRE, SQUARE SHANKED BARDED, 3/8 X 1-1/2 IN L X 0.131 IN THI	2017	36	$ 4.66
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.846-0.883 DIA, 35 KV, 90(	2017	6	$ 4,191.43
			THIMBLE, CLEVIS, FOR PREFORMED GRIPS ON SPACER CABLE, STEEL, C	2017	18	$ 194.33
			TURNBUCKLE, CLEVIS/EYE, CIRCULAR EYE, 15/16 IN OPENING, 35,000 LB	2017	3	$ 296.83
			WASHER, COIL SPRING, GALV STEEL, 1/2 IN	2017	16	$ 2.22
			WASHER, COIL SPRING, GALV STEEL, 3/4 IN	2017	133	$ 40.82
			WASHER, COIL SPRING, GALVANIZED, 5/8 IN	2017	136	$ 24.24
			WASHER, FLAT, 1/2 IN NOM, 1-3/8 IN OD, STEEL, ROUND, HOT DIP GALVAN	2017	16	$ 1.11
			WASHER, LOCKING, EXTERNAL TEETH, 3/4 OR 1 IN NOM, STEEL, GALV, SI	2017	18	$ 4.18
			WASHER, LOCKING, REGULAR HELICAL SPRING, 1/2 IN NOM, SS, GR 304	2017	18	$ 1.39
			WASHER, SQUARE, 2-1/4 IN X 2-1/4 IN, FLAT, FLAT, FOR 5/8 IN & 3/4 IN DIA	2017	34	$ 7.47
			WASHER, SQUARE, CURVED, GALVANIZED, 3 IN X 3 IN X 1/4 IN F/ 5/8 OR 3/	2017	350	$ 187.09
			WASHER, SQUARE, FLAT 3 X 3 IN X 1/4 IN, GALVANIZED, 13/16 IN HOLE FO	2017	160	$ 211.16
			WASHER, SQUARE, FLAT, GALVANIZED, 1/2 IN BOLT	2017	16	$ 3.49
			WASHER, SQUARE, FLAT, STEEL, 4 X 4 IN (FOR 7/8 IN BOLT), GALV	2017	28	$ 47.40
			WASHER, SQUARE, FLAT, STEEL, FOR 5/8 IN BOLT, 3.5 IN X 3.5 IN X 0.25 IN	2017	21	$ 37.63
			WIRE, TIE, BARE, ALUMINUM, #4, (50 LB COILS) SOFT DRAWN ONLY	2017	50	$ 90.47
			WIRE, TIE, COPPER, SOFT DRAWN, 6 AWG, 25 LB / SPOOL	2017	50	$ 210.46
			WIREHOLDER, GROUND, NYLON, 2-1/4 IN SCREW, GRAY	2017	24	$ 77.64
		Mileage		2016	57	$ 30.78
				2017	1098	$ 587.48
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 1,491.33
				2017	0	$ 17,842.45
				2018	0	$ 1.37
		Miscellaneous Accounting Adjustments		2018	0	$ 0.00
		Non Productive Time Loader- Acct Use Only		2016	0	$ 537.95
				2017	0	$ 5,712.11
				2018	0	$ 4.06
		Other Outside Services		2017	0	$ -
				2018	0	$ -
			M&S TRAILERS INC	2017	4	$ 1,827.50
			VANASSE HANGEN BRUSTLIN INC	2016	16	$ 90,777.59
				2017	9	$ 50,030.85
				2018	0	$ -
		Other Outside Services- Other		2018	0	$ -
			DEAN & THERESA GIBSON	2017	0	$ 5,000.00
			JMC COMPANY LLC	2017	0	$ 8,000.00
			THOMAS LABRECQUE & KELLY LABRECQUE	2017	0	$ 4,500.00
		Other Outside Services- Tree Planned		2018	0	$ -
			JOHN BROWN & SONS INC	2017	2	$ 6,992.81
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 461.95
				2017	0	$ 7,424.94
				2018	0	$ -
		Property Taxes		2017	0	$ 11,830.42
				2018	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
A16C0101	**3271 LINE RECONDUCTOR**	Service Company Allocations- Acct Use Only		2016	0	$ (0.00)
				2017	0	$ (0.00)
				2018	0	$ 0.00
		Stores Loader- Acct Use Only		2017	0	$ 16,934.31
		Stores over 25K	**CABLE, BARE, 0000127 AWA MESSENGER FOR 795 SPACER CABLE**	2017	13775	$ 32,187.62
			CABLE, INSULATED, SPACER, POLY, 35 KV, AL, 477 AAC, 320 MIL, 1/C, 90 I	2017	41568	$ 110,234.95
		UVL-Contractor Labor		2018	0	$ -
			0105510 - UVL - ENG00 - 00023	2016	0	$ 516.00
				2017	0	$ (516.00)
			0105510 - UVL - ENG00 - 00041	2016	0	$ 1,145.00
				2017	0	$ (1,145.00)
			0107189 - UVL - ENG00 - 00041	2017	0	$ -
			0108100 - UVL - ENG00 - 00041	2017	0	$ -
			0108711 - UVL - ENG00 - 00032	2017	0	$ -
			0108711 - UVL - ENG00 - 00041	2017	0	$ -
			0108868 - MISC CONTRACTOR WORK	2017	0	$ -
			0109464 - 3271 ROW/LINE	2017	0	$ -
			0109645 - UVL - CST00 -	2017	0	$ -
			0109645 - UVL - ENG00 - 00032	2017	0	$ -
			0110019 - 3271 ROW RECONDUCTOR	2017	0	$ -
			0110033 - UVL - CST00 -	2017	0	$ -
			0110033 - UVL - ENG00 - 00032	2017	0	$ -
			0110891 - GOFFSTOWN TO WEARE ROWOFF-ROAD	2017	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 49.99
				2017	0	$ 8,098.19
				2018	0	$ 2.04
A16C0101 Total					**80638.77**	**$ 2,427,609.91**
Grand Total					**80638.77**	**$ 2,427,609.91**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number NHRMTR17 **Status** open **Revision** 4

Project Title NH Remote Disconnect 2017-2018 **Operating Unit**

Initiated By flannga **Initiated Date** 1/11/2017 15:32:47

Description of Work NH Remote Disconnect Project 2017-2018

Location General Plant - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/1/2017 **Est Complete Date :** 12/31/2017

	2017	2018	2019	2020	2021	Future Years	Total
	$1,985,629.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,985,629
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$1,985,629	$0	$0	$0	$0	$1,985,629.00

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Thibodeau, Randall	$0	2/15/2019
Plant Accounting	Davis, Sean	$0	2/15/2019
Manager - Operation Serv	Bowen, Martin	$100,000	2/19/2019
Director - Operation Servi	Van Dam, William	$250,000	2/27/2019
Vice President - Operatior	Driscoll, Stephen	$1,000,000	4/3/2019
Executive VP - COO	Schweiger, Werner	$12,500,000	7/9/2019

EVERSOURCE

APS 1 - Project Authorization Policy

Appendix 4
Supplement Request Form

Supplement Request Form

Company/Companies: PSNH New Hampshire	Project Title: Remote Disconnect Plus
Organization: Distribution Operations	Project ID Number: NHRMTR17
Project Initiator: Martin Bowen III	Plant Class/(F.P.Type): PSNH – Pre-Cap Assets: Meters
Project Manager: Martin Bowen III	Project Type: *Specific*
Project Sponsor: William Van Dam	Capital Investment Part of Original Operating Plan? Y
Current Authorized Amount: $918,793	O&M Expenses Part of the Original Operating Plan? N/A
Supplement Request: $1,066,836	Estimated in service date(s): 12/31/2017
Total Request: $1,985,629	Other:

Supplement Justification

Supplement Request Forms must be completed for projects in accordance with the Project Authorization Policy and approval levels in the Delegation of Authority Policy (DOA) as follows:

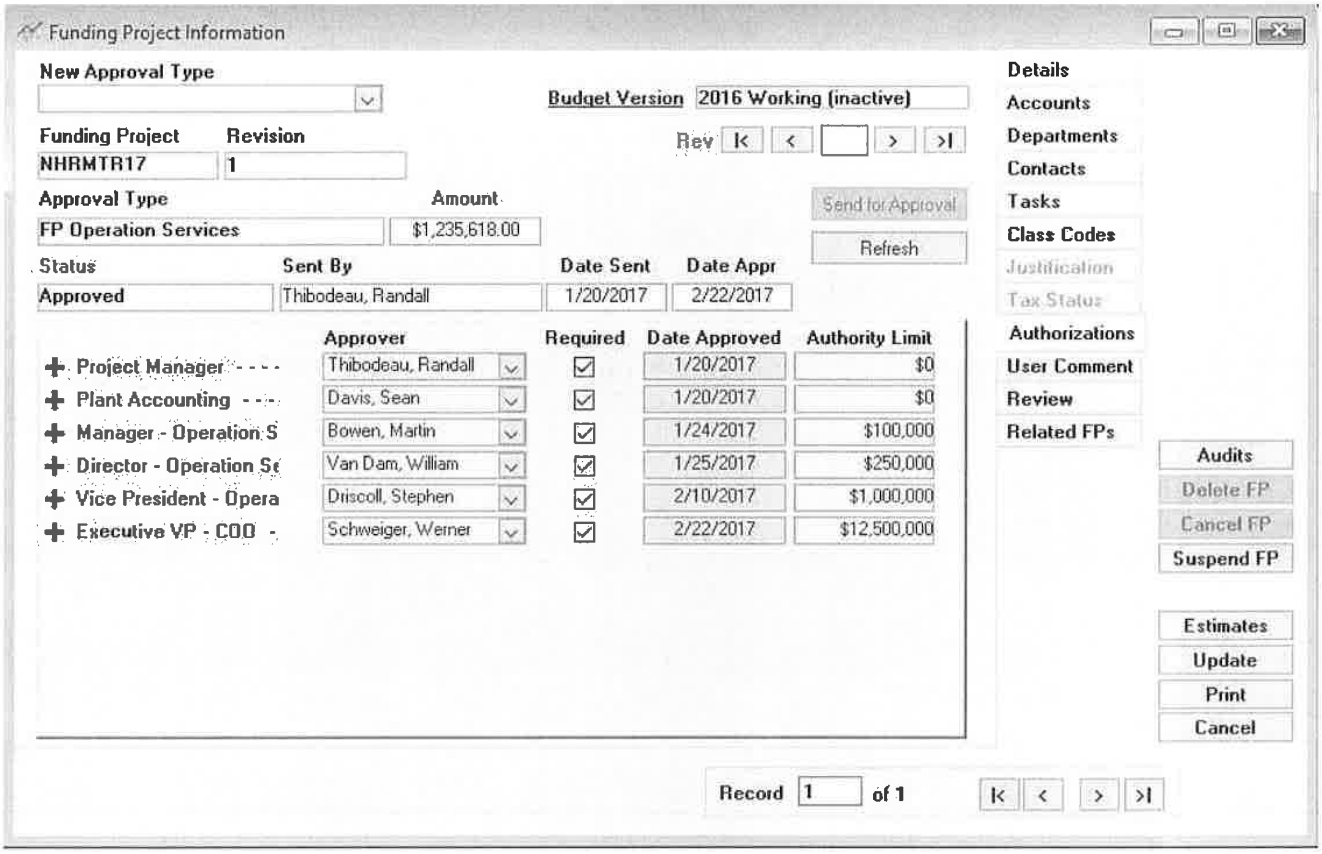
For Corporate Shared Services Projects:
For projects $500K to $10M - An increase in total authorized cost > 15% or;
For projects > $10M - An increase in total authorized cost > $1.5M

For Distribution Operations Projects:
For projects <= $250K - An increase in direct costs >= $25K or;
For projects >$250K - An increase in direct costs >10%

For Transmission Operations Projects:
For projects <= $500K – An increase in total authorized cost >= $75K
For projects $500K to $16.5M- An increase in total authorized cost > 15% or;
For projects > $16.5M - An increase in total authorized cost > $2.5M

Justification for Additional Resources

The initial authorized amount of $918,793 was included in the 2017 Remote Disconnect Plus Meter project authorization form (PAF). The additional funding of $1,066,836 is requested by Meter Operations to accept the charges to replace manually probed interval meters in New Hampshire for a total capital expenditure in the amount of $1,985,629. The Remote Disconnect Plus project in New Hampshire was originally scheduled to be a 2-year capital meter project beginning in 2017 and ending in 2018. Meter Operations decided to take full advantage of its accessible resources which include cash, meters and associated meter materials available from the vendors, and Eversource manual labor to complete this project in 2017. The preliminary budget number of $316,825 for 2018 will be transferred to fund the second-year portion of the Remote Disconnect Plus Meter project in Eastern Massachusetts in 2018. By completing the New Hampshire Remote Disconnect Plus project a year in advance, it ensures a more accurate, reliable, and cost-effective metering plant operation while achieving O&M reductions and preventing the loss of stored data.


Funding Project Information
New Approval Type
Budget Version
2016 Working (inactive)
Rev
Funding Project
Revision
NHRMTR17
1
Approval Type
Amount
FP Operation Services
$1,235,618.00
Send for Approval
Refresh
Status
Sent By
Date Sent
Date Appr
Approved
Thibodeau, Randall
1/20/2017
2/22/2017
Approver
Required
Date Approved
Authority Limit
Project Manager
Thibodeau, Randall
1/20/2017
$0
Plant Accounting
Davis, Sean
1/20/2017
$0
Manager - Operation S
Bowen, Martin
1/24/2017
$100,000
Director - Operation Sc
Van Dam, William
1/25/2017
$250,000
Vice President - Opera
Driscoll, Stephen
2/10/2017
$1,000,000
Executive VP - COO -
Schweiger, Werner
2/22/2017
$12,500,000
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record
1
of 1

Project Authorization Form

General Information

Date Prepared: October, 2016

Project Title: Remote Disconnect Plus

Class(es) of Plant Hardware

Project Initiator: Anna Rankin

Project Owner/Manager: Barbara Moreira, William Van Dam

Project Sponsor: Jessica B Cain, Steve Driscoll

Project ID Number: TBD

Organization: Customer Operations

Company: Eversource (EMA, CT, NH)

Part of Original Operating Plan? Yes/ No
If no, offset by elimination of another budgeted amount? Yes / No

O&M Expenses Part of the Original Operating Plan? Yes / No

Authorization for additional resources? Yes / No
If so obtain required VP approval
Is this PAF for a transfer of a significant amount? Yes/ No

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and financial evaluation completed with the designated representative of the Chief Financial Officer (CFO) organization.

ERM _____
CFO _____

Timing of project 2017 - 2018

Estimated in service date Ongoing during project time period

Project X** Annual _____ Preliminary _____

****The current assumptions for remote-disconnect meter replacement in E-MA and CT, as well as the remaining manually probed interval meters in NH and remaining electromechanical meters in E-MA and CT have been estimated in advance of requirements gathering. If required, a supplemental PAF will be submitted for review and approval based upon completion of the detailed requirements.**

Executive Summary

Project Costs Summary

	Prior Authorized Amount (if applicable)	Amount of This Authorization	Total Project Cost
Capital (details below)	$	$39,000,000	$39,000,000
O&M	$	$-	$-
Total	$	$39,000,000	$39,000,000

Provide in the table below estimated details of total Capital spending above:

Cost Components	Description of the Cost Component	Estimated Cost
Material	Meters, locking bands	$ 18,800,000
Labor	Cost of First Install, NH meter exchange system update processing, Warrant costs	$ 18,500,000
Outside Services	Televox campaign plus 2 mailings	$ 150,000
Software	N/A	$ 0
Hardware	N/A	$ 0
Other (please list):	Socket Upgrade Program Contingency (2.9%)	$ 1,069,000
Total Capital Spending		**$ 39,000,000**

By Entity, by project breakdown:

State	Project ID	2017	2018	Total Project Cost
MA (East)	ETRMTR17	$20,949,413	$7,223,936	$28,173,349
CT	CTRMTR17	$7,131,794	$2,459,239	$9,591,033
NH	NHRMTR17	$918,793	$316,825	$1,235,618
Total		**$29,000,000**	**$10,000,000**	**$39,000,000**

Summary Project Description

The primary goal of this project is to address hard-to-access meters that are preventing bad debt reductions and further savings achievable by installing a meter with remote disconnect functionality. In support of the Customer Group's Credit Strategy and the exchanges of E-MA lifecycle meters, this project will:

- In E-MA, replace 21,000 hard to access (CGI) credit meters, 51,000 non-credit meters in the same hard to access (CGI) locations along with an additional 18,000 indoor meters at credit premises over an 18 month period in E-MA with remote disconnect meter technology.
- In CT, prioritize the replacement of 13,300 credit CGI electric meters along with 26,500 meters at those premises and/or in 2 man zone areas with remote disconnect meter technology.

This project also aims to achieve O&M reductions and prevent loss of stored data by eliminating the final manually read Eversource meters, including:

- In NH, replace 1,800 manually probed interval meters
- In CT & E-MA, replace 180 remaining mechanical meters with AMR meter technology.

Project Authorization

Project authorization below must be obtained from each approver listed below in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

Approver	Approver Name	Approver Signature	Date
Project initiator	Anna Rankin		
Project Manager EMA &NH	Paul DiChiara		
Project Manager CT & WMA	Noel Grant		
Project Manager Materials	Martin Bowen III		
Plant Accounting			
Budgeting and Internal Reporting*	Randy Thibodeau		
Investment Planning**	N/A		
DOA	Barbara Moreira, William Van Dam		
DOA	Jessica B Cain, Steve Driscoll		
CIO or VP, Supply Chain, Environmental Affairs and Property Management or their designee ***	N/A		

* For Corporate / Shared Services projects only
** For Massachusetts Operations projects only
*** For IT or Facilities and Environmental projects only

Overall Justification

Problem statement

Mitigating a population of hard-to-reach meters will lead to increased operational savings, decreased write-offs and further bad debt reduction.

Project objectives

1. Reduce bad debt
2. Eliminate manual reading of final non-AMR meters
3. Reduce time spent performing disconnects/reconnects
4. Continue to replace hard to access, end-of-life meters with remote disconnect meters

Project scope

The project will facilitate the deployment of 132,000 electric meters with remote disconnect/reconnect functionality. 90,000 meters have been identified in E-MA (of which 65,000 are at end-of-life). 40,000 credit, hard-to-access or 2 man zone meters have been identified in CT. In addition, 1800 manually probed interval data meters in NH will be replaced with remote read functionality, and the final 180 non-AMR mechanical meters in CT and E-MA will be replaced with AMR meters.

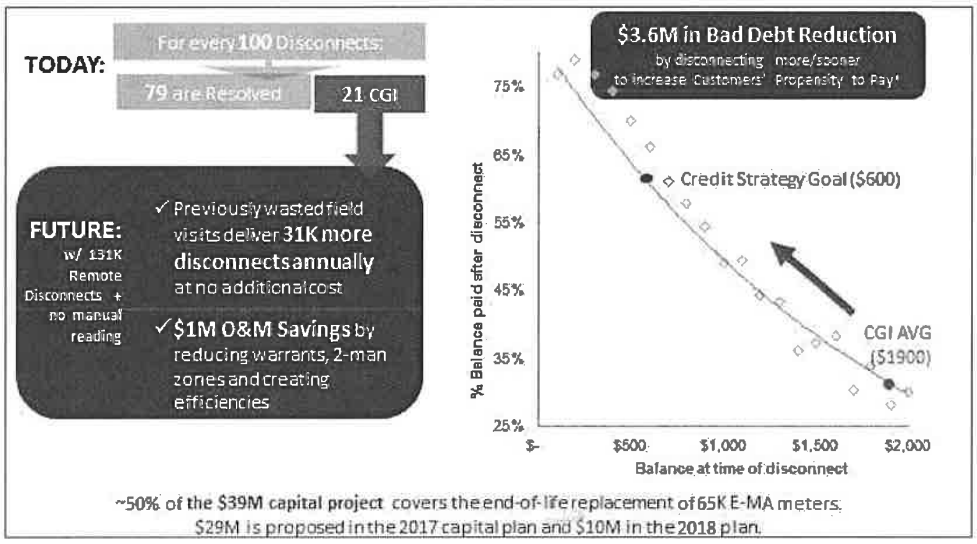
This project assumes an outbound customer call campaign, as well as to two standard mail notifications prior to meter exchange.

In addition to the cost of the meters, Cost of First Install was calculated for CT, NH and E-MA, which includes meter programming, travel to and from site, installation time, and assumes multiple visits for inside locations.

Additional cost assumptions include a 10% rate for a warrant to access the premise in E-MA, 100% utilization of heavy-duty locking bands, meter population percentages by type and state and a "socket upgrade program" for a known population of meters that cannot be exchanged without a service upgrade or repair.

Benefits

Total steady state benefits of $4.6M, includes reduction in bad debt, O&M savings from reduced amount of time for disconnect, reduced amount of time to perform a reconnect, disconnects and reconnects performed by drive-by-AMR and savings from two-person zones. The ratio of bad debt and O&M savings may change depending on the greatest benefit to the company by optimizing labor versus bad debt value.



Alternatives considered

The following alternatives were considered for the project.

- Replacing all indoor meters with remote disconnect meters
- Replacing high-risk CGI ("Can't Get In") meters with remote disconnect meters by area work center
- Replacing credit customers with indoor meters with remote disconnect meters
- Replacing credit customers with indoor meters with remote disconnect meters plus outside meters in both E-MA and CT

While the impact to the total incremental avoided write-off changes in each scenario, the solution chosen was decided based on corporate business strategy, cost and schedule.

Assessment of solutions utilized by and applicability to other Eversource Companies

The solution chosen is fully aligned with the existing type of technologies used for metering in Eversource's tri-state territory.

Safety assessments

Increased personal safety of field meter resources.

Financial Evaluation

Describe the project schedule and milestones

Milestones and Actions	Responsible Party	Completion Date (MM/YYYY)
Deployment Phase 1A: 54k E-MA meters which will include 21,000 CGI, credit meters, 18,000 indoor credit meters, 51,000 non-credit meters at CGI locations inclusive of life cycle replacement meters at visited locations	Meter Operations	12/2018
Deployment Phase 1B: 40k CT meters (all); exchanged for remote disconnect meters	Meter Operations	12/2017
Deployment Phase 1C: 1800 NH probed interval meters exchanged for remote read capability	Meter Operations	12/2017
Deployment Phase 1D: 180 electro-mechanical meters for AMR meters in E-MA and CT Electric	Meter Operations	12/2018

Explain unique payment provisions, if applicable

There are no unique payment provisions for this project at this time, unless contractors are utilized within CT.

Provide the following financial information (attach additional detail if summarized items are significant or additional information is needed)

Direct Capital Costs	2017	2018	Total
Labor	TBD	TBD	$18,500,000
Outside services (non-payroll)	TBD	TBD	$ 150,000
Materials	TBD	TBD	$ 18,800,000
IT Supplier Costs	N/A	N/A	
Software	N/A	N/A	
Total	**$28,400,000**	**$9,500,000**	**$37,900,000**

Indirect Capital Costs	2017	2018	Total
Benefits 17% Non Prod	TBD	TBD	
Loaders – Gen Svcs Co (Indirects)	N/A	N/A	N/A

Capitalized interest or AFUDC, if any	N/A	N/A	N/A
Other, including contingency amounts (describe) Socket Repair Program 2.9% Contingency	$569,000	$500,000	$1,069,000
Total	**$569,000**	**$500,000**	**$1,069,000**

Total Capital Costs	**$29,000,000**	**$10,000,000**	**$39,000,000**

Total O&M Costs	N/A	N/A	N/A

Total Project Costs	**$29,000,000**	**$10,000,000**	**$39,000,000**

Vendor software payments (indicate whether or not included in the above)*	N/A	N/A	N/A

*Accounting for vendor software payments for SaaS or other agreements invólving the right to use software is to be determined by a separate analysis, and approval by Plant Accounting and Budgeting and Internal Reporting is required. Plant Accounting maintains a checklist to aid in this analysis.

Provide below and describe the estimated future costs that will result from the project

Future Costs	2017	2018	Total Future Project Costs
O&M	$23,500	$47,000	$47,000 Annually
Capital			
Other (describe)			
Total	**$X**	**$X**	**$X**

Compare these future costs to amounts that are in the approved Operating Plan

$47,000 is the annual expense of telephony in NH to remotely read the exchanged interval meters. For the 1st year our assumption includes 6 months of telephony charges.

Provide below and describe the estimated financial benefits (reductions from current year Operating Plan) that will result from the project

Financial Benefits	2017	2018	Total Financial Benefits
O&M	$ -	$900,000	$900,000

Capital			
Revenues			
Other (describe) Bad Debt Reduction	$200,000	$2,400,000	$3,600,000
Total	**$200,000**	**$3,300,000**	**$4,500,000**

Include the benefits going forward using current year Operating Plan amounts

Benefit:

What is the project's IRR? _____

What is the project's NPV? _____

What is the project's payback period? _____

Use appropriate discount rate by company (can be provided by Budgeting and Internal Reporting).

If the above items are not applicable, explain why (e.g., if negative but there are other reasons to proceed)

Regulatory Approvals

Indicate what regulatory approvals are needed for the project

Regulatory approvals are not needed for this project.

Risks and Risk Mitigation Plans

Describe the applicable risks and associated risk mitigation plans: e.g., construction, customer, reputational, schedule, financial, regulatory, environmental and IT risks. Indicate discussions with relevant subject matter experts.

CATEGORY	RISK DESCRIPTION	MITIGATION STEPS
Business	The same resources for this project will be working on other initiatives simultaneously.	Work together with the team on managing the schedules and goals. Set realistic expectations.
Customer	Entering customer premise	Project assumes customer outreach program, 10% warrant rate for E-MA as well as total "cost of first install"
Financial	Budget adherence	Reviews of estimate and actual costs throughout the project life
Financial	Accelerated Depreciation on	

	replaced meters	
Schedule	Dependencies include meter manufacture lead times, component issues, current meter reading, disconnect and reconnect targets, as well as cooperation with other departments	
Technical	Implementation/upgrade of FCS to include security features. Network (3G-4G) and MV-90 upgrades.	
Labor Strategy Assessment	Potential use of contractors in CT for exchanges; potential reduction in E-MA OT if performed over 3 years; potential labor issues with elimination of two-man zones for disconnect/reconnects	Advance notification to appropriate teams
Regulatory	Regulatory pushback	

Docket No. DE 19-057
Data Request TS 2-061
Dated 10/28/2019
Attachment TS 2-061
Page 1 of 1

NH Remote Disconnect 2017-2018

All Charge types	**1,985,629**
Direct Costs	**1,556,067**
Other Misc Acct (CT_A01)	44,387
Other AFUDC-Debt (CT_AF1)	3,977
Employee Expenses (CT_EE0)	10
Labor (CT_L01)	402,294
Overtime Labor (CT_L25)	4,991
Materials-Stores (CT_M12)	1,111,062
Outside Services (CT_OS0)	(10,654)
Allocations	**429,562**
Alloc-AS&E (CT_Z90)	28,830
Alloc-Misc Costs Cap (CT_Z92)	5,992
Alloc-PR Load (CT_Z93)	152,427
Alloc-E+S (CT_Z96)	160,288
Alloc-Veh Clear (CT_Z98	14,014
Non-Productive (CT_ZNP)	68,011

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/26/2019**
Request No. TS 2-061 **Page 1 of 2**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Penelope Conner

Request:
Re: NH Remote Disconnect 2017-2018, #NHRMTR17, 12-045AJ. Please provide the following information for this project:

a. Re: Justification for additional Resources at page 2: Explain the justification and purpose of Meter Operations' request to replace the manually probed interval meters at an additional cost of $1 million.
b. Explain the shifting of funds in the amount of $316,825 out of the NH budget to the Remote Disconnect Plus Meter project in eastern Massachusetts.
c. Please provide an itemized break-out of overheads, AFUDC, and other costs leading up to the variance.
d. Did Project Managers work with project cost analysts to control cost escalation for this project? If not, why not? If yes, what were the results? Given the monthly reports received by Management, was Management actively involved in controlling the cost escalation of this project? If not why not? If yes, were cost controls put into place?

Response:

a. These meters were also manually read meters, and therefore the company had intended to replace them since the time the AMR project analysis in support of the business case was conducted. The justification for replacing these meters is the same as the justification for the meters replaced in the AMR Project as provided in the "Decisional Considerations" section of the response to Staff 10-003. Those primary drivers were the end-of-life meter reading system and handheld equipment used to read the meters, the non-standard meter-to-bill process and method for getting the data to the NH interval billing system, the cost savings, efficiencies, safety and environmental benefits of remote reading over manual reading and the qualitative non-monetary customer benefits of more timely readings with reduced potential for estimated reads. While options for addressing the manually read probed meters in NH were being considered a project in MA & CT was initiated to purchase and install modem equipped remote disconnect meters in targeted locations. This was a suitable solution for the NH probed meters as well, and since there aren't any simple AMR options for Time of Use meters and the technology needed - cellular capable meters that can meter TOU data – is not inexpensive, a decision was made to take full advantage of that project and its accessible resources (which included funding, meters and associated meter materials available from the vendors, and Eversource manual labor) to include the replacement of what was about 1800 manually read probed meters in NH. This solution would also provide billing process efficiencies by enabling the prompt identification of meter issues and a response to address them while the monthly manually read probed meters would only provide insight to issues at month end and the Company would apply correction going

forward but the missing data was lost and would be another contributing factor to estimated reads.

b. The NH Remote Disconnect Plus project was originally expected to take 2 years to complete. Since the project was completed in the first year, the preliminary budget amount of $316,825 for the 2018 portion of the NH Remote Disconnect Plus project was transferred to fund the second-year portion of the Remote Disconnect Meter project in Eastern Massachusetts in 2018.

c. See Attachment TS 2-061 for a summary of actual overheads, AFUDC, and other costs for this project.

d. Cost analysts provided standard monthly reports to the management team, however; the cost analysts do not dictate spending or modifications to the initial capital meter plan. The management team's decision to exceed the original budget occurred since they were able to take full advantage of the labor and material resources. The availability of resources enabled Meter Operations to complete the two year project in one year.

funding_project	NHRMTR17

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
NHRMTR17	**NH 2017 REMOTE DISCONNECT ME**	Admin and Eng OH- Acct Use Only		2017	0	$ 28,829.82
				2018	0	$ 71.41
		AFUDC Debt		2017	0	$ 3,977.08
		Contractor Labor		2018	0	$ -
			0107680 - WORK FOR THELMA BROWN	2017	0	$ -
			0108350 - WORK FOR THELMA BROWN	2017	0	$ -
			0109104 - WORK FOR THELMA BROWN	2017	0	$ -
			EATON CORP	2017	-5.55112E-17	$ 0.00
			I C REED & SONS INC	2017	0	$ 0.00
		Contractor Materials	**I C REED & SONS INC**	2017	8.32667E-17	$ -
		Contractor Vehicles + Equip	**I C REED & SONS INC**	2017	2.77556E-17	$ -
		Engin and Super OH- Acct Use Only		2017	0	$ 160,287.88
				2018	0	$ -
		Engineering Design Services	**I C REED & SONS INC**	2017	0	$ -
			TRC LOCKBOX	2017	4.44089E-16	$ (0.00)
		IT Outside Services		2018	0	$ -
			Charges to Cap Proj from Base	2018	0	$ 1,074.67
			Correct cost for a capital project	2018	0	$ 13,207.42
		Labor Overtime Non-Exempt		2017	1	$ 4,990.89
		Labor Straight Time Exempt		2017	115	$ 9,417.02
				2018	0	$ -
			BRIDGE TOU INSTALL FOR MARCH 31 2017 JE	2017	175	$ 23,460.50
			METER INSTALLATIONS FOR JANUARY 31 2017 JE	2017	8010	$ 220,441.41
			TOU	2017	1096	$ 131,113.04
			XFR CG LABOR TO NH METER OPS BRIDGE PROJ	2017	106	$ 4,416.13
		Labor Straight Time Non-Exempt		2017	26	$ 7,048.91
				2018	0	$ -
			XFR CG LABOR TO NH METER OPS BRIDGE PROJ	2017	218	$ 6,396.97
		Materials- Purchased	**APRIL 2017 PCARD**	2017	0	$ -
			ELSTER SOLUTIONS LLC	2017	0	$ 1,305.68
			ITRON INC	2017	0	$ (640.50)
			JP MORGAN CHASE BANK	2017	1	$ 121.50
			METER, WATTHOUR, MULTIFUNCTION, TRANSFORMER RATED, FORM 9S,	2017	24	$ 15,120.00
			METER,WATTHOUR, SELF CONTAINED RATED, 120 - 480 V, CL 200, FORM:	2017	24	$ 12,595.20
			NWN CORPORATION	2017	0	$ -
			POWERSOLVE INC	2017	0.3	$ 2,811.51
		Materials- Stores		2017	2985	$ 528,421.32
			BATTERY, LITHIUM, 3.6 NOM. VOLTAGE, 1 AH, MBY WAFER CELL, UL REC	2017	180	$ 1,102.47
			METER, WATTHOUR, TYPE KV2SM, FORM 2S, 240 VOLT, CLASS 320	2017	4	$ 2,260.00
			METER,WATTHOUR, TRANSFORMER RATED, 120 - 480 V, CL 20, FORM: 9S	2017	-36	$ (18,968.76)
			POWERSUPPLY, DIN MOUNT, 24V OUTPUT, 2.5 CURRENT OUTPUT	2017	1	$ 167.04
		Mileage		2017	18	$ 9.63
		Misc Dist Exp Capitalized OH-Acct Use Only		2017	0	$ 5,991.72
		Miscellaneous Accounting Adjustments		2017	0	$ -
				2018	0	$ (0.00)
		Miscellaneous Journal Entries		2018	0	$ -
			CAT ID # 0000459677 FROM 186H2	2017	0	$ 20,880.00
			CAT ID # 0000459891 FROM 186H2	2017	0	$ 2,736.00
		Non Productive Time Loader- Acct Use Only		2017	0	$ 68,010.87
				2018	0	$ -
		Payroll Benefit Loader- Acct Use Only		2017	0	$ 152,427.34
				2018	0	$ -
		Property Taxes		2017	0	$ 20,771.40
				2018	0	$ -
		Stores over 25K	**METER, WATTHOUR, MULTIFUNCTION, TRANSFORMER RATED, FORM 9S,**	2017	576	$ 362,880.00
			METER, WATTHOUR, TRANSFORMER RATED, FROM 9S, 120-480 VOLT, CL	2017	192	$ 101,166.72
			METER, WATTHOUR, TYPE KV2SM, FORM 2S, 240 VOLT, CLASS 200	2017	192	$ 102,720.00
		UVL-Contractor Labor		2018	0	$ -
			0105287 - MK STATION METERING PHASE 2	2017	0	$ (10,653.75)
			0106167 - MK STATION METERING PHASE 2	2017	0	$ -
			0107000 - MK STATION METERING PHASE 2	2017	0	$ -
			0107704 - MK STATION METERING PHASE 2	2017	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
NHRMTR17	**NH 2017 REMOTE DISCONNECT ME**	UVL-Contractor Labor	**0108574 - MK STATION METERING PHASE 2**	2017	0	$ -
			0108875 - MK STATION MAXSYS METER REPLC	2017	0	$ -
			0109398 - MK STATION METERING PHASE 2	2017	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2017	0	$ 14,014.44
				2018	0	$ -
NHRMTR17 Total					**13908.3**	**$ 1,999,982.98**
NHRMTR18	**NH Remote Disconnect install credi**	Admin and Eng OH- Acct Use Only		2018	0	$ 1,410.28
		Miscellaneous Accounting Adjustments		2019	0	$ -
		Stores over 25K	**METER,WATTHOUR, 240 V, CL 200, FORM: 2S**	2018	316	$ 130,305.76
			METER,WATTHOUR, TRANSFORMER RATED, 120 - 480 V, CL 20, FORM: 9S	2018	288	$ 151,750.08
NHRMTR18 Total					**604**	**$ 283,466.12**
Grand Total					**14512.3**	**$ 2,283,449.10**

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APS 1 - Project Authorization Policy

Delegation of Authority Signature Form

Electric Distribution Project Approval Form

Project Title:	**Project ID Number:**
Distribution Line Right of Way Program (2017)	DL9R
Authorization Amount: $2,356,100	

Capital Project Authorizations, as defined in the Delegation of Authority Policy

Position	Approver	Date Approved	Authority Limit
Manager	Carol Burke		$100,000
Director			$250,000
Vice President			$1,000,000
Sr. VP/President			$5,000,000
Executive VP			$12,500,000
CFO			$20,000,000
CEO			$25,000,000
Subsidiary Board			Greater than $25,000,000

Minutes

NH Project Approval Committee

March 28, 2019
10:00 a.m. – 11:30 a.m. – Granite State 2/East – Energy Park
Conference Dial: Meet Me 634-3866
N:\TRC_CPAC\NH\EPAC NH

Attendance:	Guests/Presenters:
Thelma Brown	Laura Benson
Jim Eilenberger	Sam Bosse
Russel Johnson	Tom Davis
Lee Lajoie	Bob Krewson
Erica Menard	Marc Pilotte
Chris Wayland (for Eric Sutton)	

Distribution Project Approvals

- **Project A18X01** – Maple Hill Acres URD Replacement –
  Approved, subject to determining how the 2018 work was funded when the project had not yet been approved and inserting this information into the PAF.
- **Project A19E39 -** Replace Failed Cable Rye –
  Tabled pending information Erica has requested from Plant Accounting about re-linking the STORMS request to the new project. Excavation work was done a couple years ago but the cable has not been installed. Mike Busby to provide more detail on the project scope as it seems to have expanded to include several transformer replacements which were not part of the original PAF.
- **Project A19N09** - Relocate 1W1 Main Line onto Route 3 –
  Approved as presented, subject to taking O&M out of financial tables and the Total Request field
- **DH9N 9N520810-** 3445X Exit 7 Pole Relocations For City of Nashua
  Approved as presented
- **DK9Z 9Z820839-** 3194X1 Regulator Installation
  Tabled, pending revisions to the reasons for the cost over-runs including removal of the remark about 104 hours of labor charged by one person.
- **Project GT9R** – Tools and Equipment- Troubleshooters
  Approved as presented
- **Project** A19C42 - Myrtle South Back Conversion
  Approved as presented

Distribution Supplemental Project Approval

- **Project DL9R** - Distribution ROW Annual -2017 Supplemental
  Approved as presented
- **GX9R 2018** - Tools & Equipment Program – Field Operations Supplemental
  Approved as presented

- **Project A18W22** – Peterborough Road and Bridge Project Supplemental Supplemental was withdrawn, as it appears direct charges are expected to be only 4% over the approved amount

- **Project R15SSAI** - REP3 4 and 12 kV Substations Supplemental Approved as presented

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APS 1 - Project Authorization Policy

Appendix 4
Supplement Request Form

Supplement Request Form

Date Prepared:	Project Title: Distribution Line Right of Way Program
Company/Companies: Eversource NH	Project ID Number: DL9R
Organization: NH Operations	Plant Class/(F.P.Type): Distribution
Project Initiator: Carol Burke	Project Type: Program
Project Manager: Marc Geaumont	Capital Investment Part of Original Operating Plan? Yes
Project Sponsor: Joseph Purington	O&M Expenses Part of the Original Operating Plan? Yes
Current Authorized Amount: $1,644,500	Estimated in service date(s): 12/31/17
Supplement Request: $711,600	Other:
Total Request: $2,356,100	

Supplement Justification

Justification for Additional Resources

The Distribution Right of Way program is for specific work not identified during the budget cycle but is a result of monitoring the system throughout the year. The program covers planned, proactive replacement of equipment in the Right of Way. Emergent equipment failure in the ROW is covered under project DS9RE.

The initial budget for the asset replacement in rights of way program is funded based on historical spending and/or known future investment needed within the overall distribution budget constraints. Program spending is monitored throughout the year through a budget review committee. As work is identified throughout the year, the budget committee determines whether the additional investment needed can be funded by reducing funding in other projects or whether it must be deferred to a future year to stay within the budget.

Investment in the distribution right of way program was higher than originally budgeted due to more work being performed on the system than anticipated to improve overall reliability of the system.

In 2017 there were 152 Cascade maintenance orders for repairs completed under this project. 115 of those work requests were pole replacements and the remaining 32 were crossarm or brace repairs, line insulator repairs or overhead line repairs.

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APS 1 - Project Authorization Policy

Appendix 4
Supplement Request Form

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,224.4	$ 645.2	$ 1,869.6
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	15.4	(15.4)	-
Total Direct Spending	$ 1,239.8	$ 629.8	$ 1,869.6
Capital Additions - Indirect	336.7	136.4	473.1
AFUDC	68.0	(54.6)	13.4
Total Capital Request	$ 1,644.5	$ 711.6	$ 2,356.1
O&M	-	-	-
Total Request	**$ 1,644.5**	**$ 711.6**	**$ 2,356.1**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 645.2	$ -	$ -	$ 645.2
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	(15.4)	-	-	(15.4)
Total Direct Spending	$ 629.8	$ -	$ -	$ 629.8
Capital Additions - Indirect	136.4	-	-	136.4
AFUDC	(54.6)	-	-	(54.6)
Total Capital Request	$ 711.6	$ -	-	$ 711.6
O&M	-	-	-	-
Total Request	**$ 711.6**	**$ -**	**$ -**	**$ 711.6**

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Project Authorization Form

Date Prepared: December 12, 2016	Project Title: Distribution ROW Annual Program
Company/ies: Eversource NH	Project ID Number: DL9R
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Erica Menard	Project Category: Reliability – Distribution Line Reliability
Project Owner/Manager: Marc Gagne	Project Type: Annual
Project Sponsor: Joseph Purington	Project Purpose: part of regulatory tracked program? No
Estimated in service date: 12/31/2017	If Transmission Project: NA
Supplement to Existing Authorization? No	Capital Investment Part of Original Operating Plan? Yes
Eng./Constr. Resources Budgeted? Yes	O&M Expenses Part of the Original Operating Plan? Yes

Project Authorization

Project authorization must be in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

An annual program includes many similar, small, and/or routine capital jobs performed over the course of a year for which one project authorization form can be prepared. This project authorization form is being prepared for the distribution line reliability ROW program across New Hampshire.

If a single work order within an Annual Project exceeds the applicable threshold established in Accounting Policy Statement 2 (APS-02), the work order shall be included with a project authorization form and approved as a specific project.

An approval of $1.6 million is requested for the 2017 Distribution ROW annual program. The specific work is not identified during the budget cycle but is a result of monitoring the system throughout the year. The program covers planned, proactive replacement of equipment in the Right of Way. Emergent equipment failure in the ROW is covered under project DS9RE.

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Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized*	2016	2017	2018+	Totals
Capital Additions - Direct	$0.0	$0.0	$1,224.4		$1,224.4
Less Customer Contribution			$0.0		$0.0
Removals net of Salvage			$15.4		$15.4
Total - Direct Spending	$0.0	$0.0	$1,239.8	$0.0	$1,239.8
Capital Additions - Indirect		$0.0	$336.7		$336.7
Subtotal Request	$0.0	$0.0	$1,576.5	$0.0	$1,576.5
AFUDC			$68.0		$68.0
Total Request	$0.0	$0.0	$1,644.5	$0.0	$1,644.5

** to be completed if supplemental authorization is required*

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	2016	2017	2018+	Total
Straight Time Labor		$143.0		$143.0
Overtime Labor		$1.4		$1.4
Outside Services		$888.6		$888.6
Materials		$60.4		$60.4
Other, including contingency amounts (describe)		$146.4		$146.4
Total		$1,239.8		$1,239.8

Indirect Capital Costs	2016	2017	2018+	Total
Indirects/Overheads (including benefits)		$336.7		$336.7
Capitalized interest or AFUDC, if any		$68.0		$68.0
Total		$404.7		$404.7

Total Capital Costs		$1,644.5		$1,644.5
Less Total Customer Contribution		$0.0		$0.0
Total Capital Project Costs		$1,644.5		$1,644.5
Total O&M Project Costs		$12.4		$12.4

Note: Explain unique payment provisions, if applicable

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Technical Authorization Form

Date Prepared: December 12, 2016	Project Title: Distribution ROW Annual Program
Company/ies: Eversource NH	Project ID Number: DL9R
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Erica Menard	Project Category: Reliability – Distribution Line Reliability
Project Owner/Manager: Marc Gagne	Project Type: Annual
Project Sponsor: Joseph Purington	Project Purpose: part of regulatory tracked program? No
Estimated in service date: 12/31/2017	If Transmission Project: NA
Authorization Type: Annual	Authorization Amount: $1,644,501

Project Need Statement *(Description of Issue)*

The Distribution ROW annual program covers planned, proactive replacement of equipment in the Right of Way.

Project Objectives

This project is intended to provide funding for the Proactive replacement of aging equipment in the right of way to avoid future failures, and/or comply with regulatory, statutory, and intracompany requirements and agreements.

Project Scope

Distribution ROW Annual Program (DL9R) - $1.6 million

This project addresses statewide issues with the distribution system assets in the ROW. Approval of the Distribution ROW (DL9R) annual program covers authorization of statewide distribution ROW work orders. Actual charges will accumulate in the individual area work center work orders.

Background / Justification

This is an annual project whichh is required to maintain the integrity of the Company's distribution system.

Business Process and / or Technical Improvements:

Asset renewal and planned obsolescence.

Cost Estimate and Assumptions

Annual expenditures vary, depending on the frequency of equipment failures and proactive reliability-based initiatives. Annual budgets were developed using historical spending and/or known spending levels.

Alternatives Considered with Cost Estimates

Not applicable

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Project Authorization Policy
Operations Project Authorization

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Annual program completion	12/31/2017

Regulatory Approvals

The construction budget is submitted to the New Hampshire Public Utilities Commission in accordance with Rule Puc 308.07 using Form E-22. Also on a quarterly basis projects not previously reported in the annual construction budget that have exceeded $100,000 are reported to the New Hampshire Public Utilities Commission.

Risks and Risk Mitigation Plans

On a monthly basis, capital project spending is reviewed and any risks are identified and managed during that meeting.

References

Not applicable

One-Line Diagrams, Attachments, and Images

Not applicable

EVERSOURCE
Project Authorization Policy

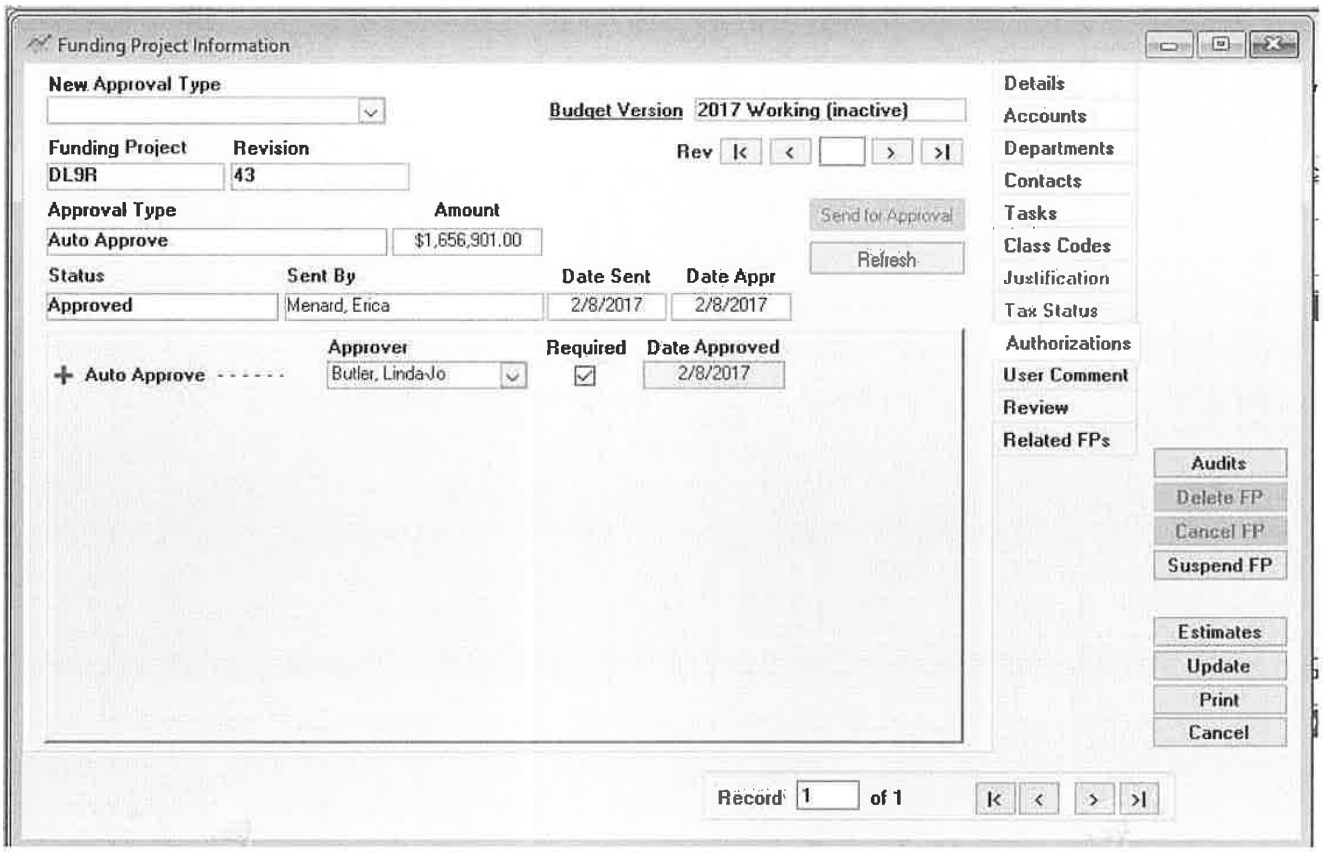
Appendix 5
Subsidiary Board Approval Package Template

Operations Project Authorization Form

Project Title:	Project ID Number:
Distribution Right of Way Line Reliability Annual Program	DL9R

Authorizations, as defined in the Authority and Signature Delegation Policy

Employee Name (printed)	Employee Number	Approval (employee signature)	Date
William J. Quinlan	004721	William J Quinlan	1/12/17
Peter J. Clarke	019549	Peter J Clarke	1/12/17
Joseph A. Purington	049586	Joseph A Purington	1/31/17
Marc Beaumont	050892	Marc Beaumont	2/1/17


Funding Project Information
New Approval Type
Budget Version
2017 Working (inactive)
Funding Project
Revision
DL9R
43
Rev
Approval Type
Amount
Auto Approve
$1,656,901.00
Send for Approval
Refresh
Status
Sent By
Date Sent
Date Appr
Approved
Menard, Erica
2/8/2017
2/8/2017
Approver
Required
Date Approved
Auto Approve
Butler, Linda Jo
2/8/2017
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record
1
of 1

Docket No. DE 19-057
Data Request TS 2-062
Dated 11/01/2019
Attachment TS 2-062
Page 1 of 1

Project	Version	Charge Type	Jan 2018	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Total 2017
DL9R:DIST LINE ROW PROGRAM	Actual	Materials	$49,510	$34,514	$33,969	$41,969	$18,210	$6,462	$0	($986)	$0	$0	$0	$0	$183,648
DL9R:DIST LINE ROW PROGRAM	Actual	Other	$100	$3,633	$18,787	$16,329	$8,767	$7,021	$5,811	$6,352	$6,735	$5,529	$5,352	$5,723	$90,139
DL9R:DIST LINE ROW PROGRAM	Actual	Outside Services	$175,772	$1,028,427	$403,479	$39,403	($57,369)	($19,631)	($16,571)	($14,937)	$26,913	$337	($11,296)	$12,131	$1,566,660
DL9R:DIST LINE ROW PROGRAM	Actual	Overtime Labor	$0	$0	$164	$2,512	$514	$0	$0	$0	$0	$0	$0	$505	$3,695
DL9R:DIST LINE ROW PROGRAM	Actual	Straight Time Labor	$9,070	$5,021	$4,686	$9,694	$5,461	$2,111	$93	$0	$0	$0	$0	$3,503	$39,638
DL9R:DIST LINE ROW PROGRAM	Actual	Total Direct Costs	$234,452	$1,071,595	$461,085	$109,907	($24,417)	($4,037)	($10,667)	($9,571)	$33,648	$5,866	($5,944)	$21,862	$1,883,780
DL9R:DIST LINE ROW PROGRAM	Actual	AFUDC	$67	$424	$903	$1,172	$1,344	$1,431	$1,436	$1,444	$1,456	$1,470	$1,475	$748	$13,370
DL9R:DIST LINE ROW PROGRAM	Actual	AS&E	$3,477	$20,446	$9,987	$5,153	$5,895	($394)	$509	$26	$393	$59	$66	$154	$45,771
DL9R:DIST LINE ROW PROGRAM	Actual	E&S	$27,748	$226,316	$90,052	$12,415	($12,229)	($3,641)	($3,784)	($3,520)	$6,020	$66	($3,200)	$6,290	$342,533
DL9R:DIST LINE ROW PROGRAM	Actual	MDEC	$19	$10,287	$4,093	$564	($556)	($165)	($172)	($240)	$410	$5	($240)	$490	$14,495
DL9R:DIST LINE ROW PROGRAM	Actual	Payroll	$5,002	$2,718	$2,625	$6,606	$3,234	$1,142	$50	$0	$0	$0	$0	$2,066	$23,444
DL9R:DIST LINE ROW PROGRAM	Actual	Stores & Lobby Stock	$20,197	$12,716	($11,133)	$15,902	$6,042	($1,018)	$0	($69)	($759)	$0	$0	$0	$41,878
DL9R:DIST LINE ROW PROGRAM	Actual	Vehicle	$4,515	$2,236	$855	$3,477	$2,185	$600	$42	$0	$0	$0	$0	$784	$14,695
DL9R:DIST LINE ROW PROGRAM	Actual	Total Allocations	$61,025	$275,143	$97,383	$45,289	$5,916	($2,046)	($1,919)	($2,359)	$7,520	$1,601	($1,899)	$10,532	$496,186
DL9R:DIST LINE ROW PROGRAM	Actual	Total Costs	$295,478	$1,346,738	$558,468	$155,197	($18,500)	($6,083)	($12,586)	($11,930)	$41,169	$7,467	($7,843)	$32,393	$2,379,966

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/18/2019**
Request No. TS 2-062 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Distribution Line Right of Way, #DL9R, 12-045AM. Please provide the following information for this project:

a. Re: Supplement Request Form at page 4: Explain why the current authorized amount of $1.644 million differs from Revised Estimated Costs of $1.869 million referenced on line 5 of Attachment ELM-3, at Bates page 1285?
b. Re: Justification for Additional Resources: Provide a detailed explanation as to why the work performed was greater than anticipated thus leading to costs exceeding the amount originally budgeted. Given that spending under this program is monitored by the budget review committee, did Project Managers work with project cost analysts to control cost escalation for this project? If not, why not? If yes, what were the results? Given the monthly reports received by Management, was Management actively involved in controlling the cost escalation of this project? If not why not? If yes, were cost controls put into place?
c. Please provide an itemized break-out of overheads, AFUDC, and other costs leading up to the variance.

Response:

a) The current authorized amount of $1,644,500 is the total original authorized amount as shown in page 7 of Attachment Staff 12-045 AM. The direct portion of the original authorization was $1,239,800. That is shown in Column E on Bates Page 1285 in Attachment ELM-3. The supplemental authorized amount is $2,356,100 total costs and $1,869,600 direct costs as shown on page 5 in Attachment Staff 12-045 AM. The direct portion of the supplemental authorization is also shown on Column F on Bates Page 1285 in Attachment ELM-3.

b) Project funding is based on historical expenditures. A large quantity of work was identified in 2016 and executed at the start of 2017. The Company's pole inspection program identified poles to be replaced on distribution ROW lines. Field checks were performed to verify the inspection results and identify ROW access points. Adjacent structures of similar age and condition were also reviewed for replacement to maximize the efficient use of wetlands matting and mobilization and access costs. Through this effort additional poles and associated equipment were identified for replacement, including insulators, crossarms, and poles. The work scope was identified and managed by Eversource employees and performed by off road contractor crews. Project oversight was provided by monthly meetings involving senior management where scope of work and project costs were monitored. The results of this monitoring process were the allocation of additional funds from other projects in the budget. Management was actively involved in monitoring and controlling costs through these monthly capital budget meetings.

c) See Attachment TS 2-062 for a summary of actual overheads, AFUDC, and other costs for this project.

funding_project DL9R

year	accounting_work_order	accounting_work_order_description	cost_element_description	Description	Values Sum of quantity	Sum of amount
2017	9N721804	Switching for installation of	Admin and Eng OH- Acct Use Only		0	$ 114.74
			AFUDC Debt		0	$ 7.44
			Contractor Services- Other	UTILITY SERVICE & ASSISTANCE	0	$ 7,495.76
			Contractor Vehicles + Equip	UTILITY SERVICE & ASSISTANCE	0	$ 3,139.00
			Engin and Super OH- Acct Use Only		0	$ 6,244.32
			Labor Overtime Non-Exempt		8	$ 523.44
			Labor Straight Time Exempt		21	$ 1,105.00
			Labor Straight Time Non-Exempt		60.5	$ 2,443.45
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ 486.57
			Non Productive Time Loader- Acct Use Only		0	$ 600.60
			Payroll Benefit Loader- Acct Use Only		0	$ 1,498.47
			Vehicle Costs Clearing- Acct Use Only		0	$ 783.31
	9N721804 Total				89.5	$ 24,442.10
	DL7TD115	Distribution line annual - 2(	Admin and Eng OH- Acct Use Only		0	$ 1,475.59
			Contractor Labor	COMENSURA INC	1.5	$ 10.77
				I C REED & SONS INC	-1	$ (31,907.22)
			Contractor Services- Other	I C REED & SONS INC	2.68	$ 51,707.25
				JCR CONSTRUCTION CO INC	1.55	$ 4,739.56
				UTILITY SERVICE & ASSISTANCE	2.79	$ 20,464.06
			Contractor- Unit Price	JCR CONSTRUCTION CO INC	1	$ 3,894.00
			Contractor Vehicles + Equip	I C REED & SONS INC	2.33	$ 64,873.24
				JCR CONSTRUCTION CO INC	0.76	$ 5,943.82
				UTILITY SERVICE & ASSISTANCE	1.23	$ 10,804.50
			Engin and Super OH- Acct Use Only		0	$ (12,792.12)
			Labor Straight Time Exempt		4	$ 182.12
			Lobby Stock Loader-Acct Use Only		0	$ 3,559.53
			Materials- Purchased	JP MORGAN CHASE BANK	3	$ 511.06
			Materials- Stores	ANCHOR, SINGLE HELIX, 10,000#, 12 IN	10	$ 415.74
				BALL, CLEVIS, Y, HOT LINE TYPE, LONG, GALV STEEL, 30000 LB	9	$ 123.26
				BOLT, DOUBLE ARM, 3/4 IN, 24 IN L, GALV STEEL, W/4 SQ NUTS	3	$ 12.26
				BOLT, DOUBLE ARM, 3/4 IN, 26 IN L, GALV STEEL, W/4 SQ NUTS	3	$ 12.74
				BOLT, DOUBLE ARM, 7/8 IN, 24 IN L, GALV STEEL	3	$ 36.78
				BOLT, EYE, 3/4 IN X 14 IN, GALV STEEL	5	$ 47.32
				BOLT, EYE, 3/4 IN X 16 IN, GALV STEEL	5	$ 49.90
				BOLT, MACHINE, 3/4 IN, 12 IN L, GALV STEEL, PER EEI STD TDJ-1, W/SC	2	$ 3.60
				BOLT, MACHINE, 3/4 IN, 14 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	51	$ 83.30
				BOLT, MACHINE, 3/4 IN, 16 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	2	$ 4.15
				BOLT, MACHINE, 3/4 IN, 18 IN L, GALV STEEL, W/SQ NUT	5	$ 10.89
				BOLT, MACHINE, 5/8 IN, 14 IN L, GALV STEEL, W/SQ NUT	4	$ 4.78
				BRACE, 35 KV X FOR 10 FT SPACING, WOOD, 3-3/8 IN X 4-3/8 IN	0	$ 125.55
				BRACE, CROSSARM, WOOD, 1-3/4 IN X 1-3/4 IN, 60 IN SPAN	2	$ 36.59
				BRACKET, BAND, CROSSARM, 5-3/4 X 7-3/4 INCH, GALV STEEL	3	$ 174.85
				BRACKET, NEUTRAL OFFSET, 5/8 IN X 25 IN, GALV	8	$ 172.95
				CABLE, BARE, ALUMOWELD, 19-#10 AWG, (19 STR), 27M	-2600	$ (1,455.55)
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAI	125	$ 53.33
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAI	500	$ 207.13
				CLAMP, QUADRANT, ALUMINUM, 3/0 - 795 ACSR, .50 TO 1.20, W/ SOCKI	6	$ 346.88
				CLAMP, SUSPENSION, W/SOCKET CONNECTOR, AL, FOR 556.5 AL/ACS	3	$ 57.08
				CLEVIS, BALL, GALV STEEL, 30K	6	$ 33.01
				CLEVIS, DEADEND EYELET, GALV, 1-1/2 IN X 3/4 IN	6	$ 51.78
				CLEVIS, SHORT, 'Y' BALL, 30 K, GALV STEEL	6	$ 49.56
				CLIP, ANTI-STATIC GROUND WIRE ZP 1/0 STR, GALV. STL, 1/0 STR MA	180	$ 59.27
				CONNECTOR, BOOSTER CARTRIDGE, BURNDY WEJ TAP, BLUE	25	$ 43.43
				CONNECTOR, GROUND, ROD, 3/4 IN, #8 TO 1/0	12	$ 29.94
				CONNECTOR, PARALLEL GROVE, AL, RUN : 3/0 TO 397.5 ACSR, TAP : #	42	$ 148.74
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 266.8 TO 4/0 STR, BLUE	6	$ 25.17
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 336 ACSR RUN, 336 ACSR	10	$ 126.51
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 4/0 RUN, 4/0 TAP, BLUE	6	$ 11.74
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 477 ACSR RUN 336 ACSR (	10	$ 124.45
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 556 AAC/ACSR OR 477 ACS	10	$ 126.05
				CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, JUMBO, BI	4	$ 1,018.27
				CROSSARM, FIBERGLASS, 10 FT TANGENT, JUMBO, BROWN, WITH JU	20	$ 2,216.15

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2017	DL7TD115	Distribution line annual - 2(	Materials- Stores	CROSSARM, LAMINATED, WOOD, 5-1/8 IN X 7-1/2 IN X 36 FT, DA IDLER	1	$ 1,022.90
				DEADEND, AUTOMATIC, LONG BAIL, FOR 7/16" STRAND, GALVANIZED	36	$ 820.93
				DEADEND, AUTOMATIC, SHORT BAIL, FOR 7/16" STRAND GALVANIZED	25	$ 485.30
				EYENUT, FOR 3/4 IN BOLT, GALVANIZED STEEL	6	$ 9.98
				HOLDER, 1" POLE TAGS, HOLDS 10 TAGS, ALUMINUM	25	$ 59.36
				HOLDER, 1" POLE TAGS, HOLDS 7 TAGS, ALUMINUM	25	$ 54.33
				HOLDER, 1" POLE TAGS, HOLDS 8 TAGS, ALUMINUM	27	$ 59.85
				HOLDER, 1" POLS TAGS, HOLDS 9 TAGS, ALUMINUM	25	$ 58.76
				INSULATOR, POST, (PINEAPPLE), TIE TOP, POLYETHYLENE, 35KV	47	$ 1,969.80
				INSULATOR, SPOOL, CLASS 53-2, 750V	8	$ 6.96
				INSULATOR, STRAIN, FIBERGLASS, 78 IN, LT GRAY OR GREEN, ROLLE	18	$ 341.40
				INSULATOR, SUSPENSION, DEADEND, POLY, 23 IN LONG, 34.5 KV, 378	12	$ 587.30
				MARKER, AERIAL, 5 IN X 10 IN, "1", BLK ON YELLOW, .060 AL W/GROMM	151	$ 2,063.93
				MARKER, AERIAL, 5 IN X 10 IN, "3", BLK ON YELLOW, .060 AL W/GROMM	3	$ 41.67
				MARKER, AERIAL, 5 IN X 10 IN, "4", BLK ON YELLOW, .060 AL W/GROMM	2	$ 24.90
				MARKER, AERIAL, 5 IN X 10 IN, "5", BLK ON YELLOW, .060 AL W/GROMM	101	$ 1,382.02
				MARKER, AERIAL, 5 IN X 10 IN, "7", BLK ON YELLOW, .060 AL W/GROMM	1	$ 13.83
				MARKER, AERIAL, 5 IN X 10 IN, "8", BLK ON YELLOW, .060 AL W/GROMM	3	$ 40.73
				MARKER, AERIAL, 5 IN X 10 IN, "O", BLK ON YELLOW, .060 AL W/GROMI	1	$ 13.04
				MARKER, GUY, FULL ROUND, PLASTIC, 8 FT L, YELLOW, SPIRAL PIGTA	20	$ 58.59
				MOLDING, F/GROUND WIRE, HIGH DENSITY POLY, BLACK, 8 FT L, 1 IN	8	$ 6.65
				NUT, HEX, HEAVY, 1/4 IN, 20 UNC-2B TPI, SS, GR 18-8	100	$ 3.87
				PIN, INSULATOR, LINE POST, 3/4" X 7" SHANK, 8-1/2" OVERALL LENGTH	8	$ 34.45
				PIN, INSULATOR, SHORT STUD, 3/4 IN D, 1-3/4 IN L, GALV STEEL	-5	$ (18.07)
				PIN, POLE TOP, LINE POST, BRACKET, 4 X 4 X 13 IN, 35 KV	-6	$ (87.76)
				PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16 IN. LAG HOLE, WITH	24	$ 144.14
				ROD, ANCHOR, GALVANIZED STEEL, 1 IN DIA, 7 FT LG, TRIPLE STRAND	10	$ 224.13
				ROD, GROUND, HOT DIPPED GALVANIZED, MINIMUM 5/8 IN DIA, 8 FT L	12	$ 59.92
				SCREW, CAP, 1/4 IN, 20 UNC-2A TPI, 3/4 IN LG, SS, GR 304, HEX HEAD	50	$ 2.20
				SCREW, LAG, 1/2 IN, 4 IN LG, STEEL, GALVANIZED, TWIST DRIVE PILOT	6	$ 1.80
				SCREW, LAG, 1/4 IN, 3 IN LG, STEEL, HOT DIPPED GALVANIZED, HEX H	100	$ 8.81
				SHACKLE, ANCHOR-CLEVIS, GALVANIZED STEEL, 3/4" THROAT, 2-1/2 "	78	$ 308.11
				TAG, IDENTIFICATION, 1" HORIZONTAL, EVERSOURCE LOGO, INJECTI(	50	$ 13.40
				TAG, IDENTIFICATION, HORIZONTAL, "/," INJECTION MOLDED, POLYPR	50	$ 13.01
				TAG, IDENTIFICATION, HORIZONTAL, "0," INJECTION MOLDED, POLYPI	50	$ 12.79
				TAG, IDENTIFICATION, HORIZONTAL, "1," INJECTION MOLDED, POLYPI	75	$ 19.42
				TAG, IDENTIFICATION, HORIZONTAL, "2," INJECTION MOLDED, POLYPI	50	$ 12.79
				TAG, IDENTIFICATION, HORIZONTAL, "3," INJECTION MOLDED, POLYPI	75	$ 19.38
				TAG, IDENTIFICATION, HORIZONTAL, "4," INJECTION MOLDED, POLYPI	75	$ 19.12
				TAG, IDENTIFICATION, HORIZONTAL, "5," INJECTION MOLDED, POLYPI	50	$ 13.54
				TAG, IDENTIFICATION, HORIZONTAL, "6" OR "9" INJECTION MOLDED, P	50	$ 13.10
				TAG, IDENTIFICATION, HORIZONTAL, "7," INJECTION MOLDED, POLYPI	50	$ 12.50
				TAG, IDENTIFICATION, HORIZONTAL, "8," INJECTION MOLDED, POLYPI	75	$ 19.15
				TAG, IDENTIFICATION, HORIZONTAL, "L," INJECTION MOLDED, POLYPI	25	$ 6.51
				TAG, IDENTIFICATION, HORIZONTAL, "M," INJECTION MOLDED, POLYP	25	$ 6.25
				TAG, IDENTIFICATION, HORIZONTAL, "R," INJECTION MOLDED, POLYPI	25	$ 6.37
				TAG, IDENTIFICATION, HORIZONTAL, "X," INJECTION MOLDED, POLYPI	25	$ 6.99
				TAG, IDENTIFICATION, HORIZONTAL, "Y," INJECTION MOLDED, POLYPI	25	$ 6.34
				TAG, IDENTIFICATION, HORIZONTAL, "Z," INJECTION MOLDED, POLYPI	25	$ 6.28
				WASHER, COIL SPRING, GALV STEEL, 3/4 IN	252	$ 77.33
				WASHER, COIL SPRING, GALVANIZED, 5/8 IN	100	$ 17.82
				WASHER, FLAT, 1/4 IN NOM, 11/16 IN OD, SS, GR 18-8, ROUND	100	$ 1.87
				WASHER, LOCKING, REGULAR HELICAL SPRING, 1/4 IN NOM, SS, GR 3	100	$ 1.60
				WASHER, SQUARE, 2-1/4 IN X 2-1/4 IN, FLAT, FLAT, FOR 5/8 IN & 3/4 IN	100	$ 21.97
				WASHER, SQUARE, CURVED, GALVANIZED, 3 IN X 3 IN X 1/4 IN F/ 5/8 O	126	$ 67.24
				WASHER, SQUARE, FLAT 3 X 3 IN X 1/4 IN, GALVANIZED, 13/16 IN HOLE	246	$ 338.90
				WIRE, TIE, BARE, ALUMINUM, #4, (50 LB COILS) SOFT DRAWN ONLY	50	$ 90.75
			Meals	JCR CONSTRUCTION CO INC	0.04	$ 1,020.00
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ (259.45)
			Non Productive Time Loader- Acct Use Only		0	$ 30.42
			Payroll Benefit Loader- Acct Use Only		0	$ 69.08
			Police Services and Traffic Control	NEW ENGLAND TRAFFIC CONTR SVCS	0.17	$ 296.00
			Refuse Removal and Recycling	WASTE MANAGEMENT	9	$ 4,882.16
			Stores Loader- Acct Use Only		0	$ 895.73
			Travel	JCR CONSTRUCTION CO INC	0	$ -

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2017	DL7TD115	Distribution line annual - 2(	**UVL- Police Serv + Traffic Cntrl**	0106237 - MISC CONTRACTOR WORK	0	$ -
			UVL-Contractor Labor	0104985 - 3525X2 LINE (BERLIN)	0	$ (8,000.00)
				0104985 - 3525X2 LINE (CHOCORUA)	0	$ (16,000.00)
				0104985 - LANCASTER OFF-ROAD CKT PATROL	0	$ (4,000.00)
				0104985 - MISC CONTRACTOR WORK	0	$ (62,524.83)
				0104985 - OFF-ROAD REPAIRS LANCASTER	0	$ (112,000.00)
				0104985 - REPLACING DAVIT ARMS (TILTON)	0	$ (4,000.00)
				0106237 - MISC CONTRACTOR WORK	0	$ -
				0106973 - MISC CONTRACTOR WORK	0	$ -
				0111735 - 318 LINE ROW WORK	0	$ -
				0112698 - 318 LINE ROW WORK	0	$ -
				0113396 - 318 LINE ANTRIM	0	$ -
			Vehicle Costs Clearing- Acct Use Only		0	$ 85.01
	DL7TD115 Total				**1317.05**	**$ (60,823.87)**
	DL7TD116	NH: Distribution line annua	**Admin and Eng OH- Acct Use Only**		0	$ 707.98
			Contractor Services- Other	JCR CONSTRUCTION CO INC	2.24	$ 13,398.49
			Contractor Vehicles + Equip	JCR CONSTRUCTION CO INC	2.74	$ 15,104.82
			Engin and Super OH- Acct Use Only		0	$ 6,270.73
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ 285.03
			Travel	JCR CONSTRUCTION CO INC	0.02	$ 340.00
	DL7TD116 Total				**5**	**$ 36,107.05**
	DL7TD117	NH Distribution line annual	**Admin and Eng OH- Acct Use Only**		0	$ 43,472.49
			AFUDC Debt		0	$ 13,362.16
			Contractor Labor	COMENSURA INC	6.5	$ 75.56
				I C REED & SONS INC	0	$ -
				UTILITY SERVICE & ASSISTANCE	0	$ -
			Contractor Materials	I C REED & SONS INC	2	$ 10,064.76
				UTILITY SERVICE & ASSISTANCE	0	$ 8.80
			Contractor Services- Other	I C REED & SONS INC	5.32	$ 222,166.31
				JCR CONSTRUCTION CO INC	11.49	$ 189,819.07
				UTILITY SERVICE & ASSISTANCE	10.98	$ 232,889.48
			Contractor- Unit Price	JCR CONSTRUCTION CO INC	0	$ -
			Contractor Vehicles + Equip	I C REED & SONS INC	15.38	$ 517,778.92
				JCR CONSTRUCTION CO INC	12.42	$ 231,040.31
				UTILITY SERVICE & ASSISTANCE	7.78	$ 175,185.00
			Engin and Super OH- Acct Use Only		0	$ 342,810.53
			Filing Fees	CHASE	0	$ -
			Labor Overtime Non-Exempt		50.25	$ 3,190.06
			Labor Straight Time Exempt		452	$ 21,454.07
			Labor Straight Time Non-Exempt		369.75	$ 14,576.83
			Lobby Stock Loader-Acct Use Only		0	$ 34,457.58
			Materials- Purchased	APRIL 2017 PCARD	0	$ -
				JP MORGAN CHASE BANK	6	$ 1,453.99
				MILL METALS CORP	2.33	$ 2,208.90
				REDIMIX COMPANIES INC	1	$ 528.50
			Materials- Stores	ANCHOR, SCREW, DOUBLE HELIX, 6000#, 1 3/8IN CORE, 10IN	4	$ 197.89
				ANCHOR, SCREW, TRIPLE HELIX, TWIN EYE FITTING, 10 - 12 - 14 INCH	5	$ 822.43
				ANCHOR, SINGLE HELIX, 10,000#, 12 IN	41	$ 1,699.84
				ARRESTER, SURGE, LIGHTNING, DISTRIBUTIO CLASS, 27 KV, POLYME	3	$ 263.36
				BALL, CLEVIS, Y, HOT LINE TYPE, LONG, GALV STEEL, 30000 LB	81	$ 1,100.39
				BALL, Y CLEVIS, SHORT, GALV STEEL, 30000 LB	5	$ 41.34
				BOLT, DOUBLE ARM, 3/4 IN, 24 IN L, GALV STEEL, W/4 SQ NUTS	50	$ 203.47
				BOLT, DOUBLE ARM, 3/4 IN, 26 IN L, GALV STEEL, W/4 SQ NUTS	50	$ 199.98
				BOLT, DOUBLE ARM, 7/8 IN, 24 IN L, GALV STEEL	10	$ 122.17
				BOLT, EYE, 3/4 IN X 14 IN, GALV STEEL	32	$ 296.35
				BOLT, EYE, 3/4 IN X 16 IN, GALV STEEL	40	$ 399.17
				BOLT, MACHINE, 3/4 IN, 12 IN L, GALV STEEL, PER EEI STD TDJ-1, W/S(	52	$ 99.77
				BOLT, MACHINE, 3/4 IN, 14 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	313	$ 511.63
				BOLT, MACHINE, 3/4 IN, 16 IN L, GALV STEEL, SQ HEAD, W/SQ NUT	91	$ 182.92
				BOLT, MACHINE, 5/8 IN, 14 IN L, GALV STEEL, W/SQ NUT	106	$ 125.73
				BOLT, MACHINE, 7/8 IN, 14 IN L, GALV, W/SQ NUT	12	$ 51.03
				BOLT, MACHINE, 7/8 IN, 16 IN L, GALV STEEL, W/SQ NUT	26	$ 140.08
				BOLT, MACHINE, 7/8 IN, 18 IN L, GALV STEEL, W/SQ NUT	16	$ 98.26
				BRACE, 35 KV X FOR 10 FT SPACING, WOOD, 3-3/8 IN X 4-3/8 IN	4	$ 1,618.66
				BRACE, CROSSARM, WOOD, 1-3/4 IN X 1-3/4 IN, 60 IN SPAN	7	$ 124.28

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2017	DL7TD117	NH Distribution line annual	Materials- Stores	BRACE, X FOR 14 FT SPACING, WOOD	14	$ 5,175.32
				BRACKET, BAND, CROSSARM, 5-3/4 X 7-3/4 INCH, GALV STEEL	3	$ 174.85
				BRACKET, NEUTRAL OFFSET, 5/8 IN X 25 IN, GALV	27	$ 579.21
				BRACKETS, SADDLE, 34 FT ROUND WOOD DESIGN, TO HOLD PHASES	3	$ 95.56
				CABLE, BARE, ALUMOWELD, 19-#10 AWG, (19 STR), 27M	140	$ 78.54
				CABLE, BARE, ALUMOWELD, 19-#10 AWG, (19 STR), 27M, 5000 FT REEL	654	$ 367.60
				CABLE, BARE, COPPER CLAD STEEL, #2, SOLID, 40%, 100 LBS, SOFT D	100	$ 354.64
				CABLE, BARE, COPPERWELD, COPPER, #2, SOLID, 40%, 100#, SD	100	$ 354.64
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAD	1625	$ 635.08
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWELD, ALUMINUM CLAD	0	$ 8.11
				CABLE, BARE, HAWK, ACSR, 477 KCMIL, 26/7 STR	120	$ 99.36
				CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 S	992	$ 1,726.41
				CABLE, COVERED, 60 MILS, POLYETHYLENE, MHD COPPER, #4, (7 STR	330	$ 223.36
				CLAMP, QUADRANT, ALUMINUM, 3/0 - 795 ACSR, .50 TO 1.20, W/ SOCKI	12	$ 692.12
				CLAMP, QUADRANT, STATIC- FOR 7/16 IN EHS STATIC WIRE, ALUM, 0.2	4	$ 53.60
				CLAMP, STRAIN, STRT SIDE OPENING, 3/0 - 556.5 AL, W/LIFTING EYE	20	$ 231.23
				CLAMP, STRAIN, STRT SIDE OPENING, AL, #6-2/0 AL/ACSR, W/LIFTING	6	$ 32.04
				CLAMP, SUSP, AL, 0.70 TO 1.118, W/SOCKET EYE	3	$ 65.83
				CLAMP, SUSPENSION, W/SOCKET CONNECTOR, AL, FOR 4/0 AL - 336.4	6	$ 106.20
				CLEVIS, BALL, GALV STEEL, 30K	14	$ 77.02
				CLEVIS, DEADEND EYELET, GALV, 1-1/2 IN X 3/4 IN	24	$ 207.07
				CLEVIS, SHORT, 'Y' BALL, 30 K, GALV STEEL	32	$ 263.95
				CLEVIS, THIMBLE, GALV STEEL, 36K	30	$ 287.07
				CLIP, ANTI-STATIC GROUND WIRE ZP 1/0 STR, GALV. STL, 1/0 STR MA	160	$ 57.60
				CONNECTOR, BOOSTER CARTRIDGE, YELLOW, BURNDY WEJTAP	25	$ 43.91
				CONNECTOR, GROUND, ROD, 3/4 IN, #8 TO 1/0	42	$ 82.34
				CONNECTOR, PARALLEL GROVE, AL, RUN : 3/0 TO 397.5 ACSR, TAP : #	10	$ 35.41
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, 556 AAC/ACSR OR 477 ACS	12	$ 152.45
				CROSSARM, 29 FT RA DRILLING, LAMINATED, 5-1/2 X 7-1/2 NEW TYPE	8	$ 4,577.58
				CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, JUMBO, BI	-4	$ (1,018.27)
				CROSSARM, DOUGLAS FIR, 5-3/4 X 7-3/4 IN X 34 FT, 110 KV	1	$ 615.40
				CROSSARM, FIBERGLASS, 10 FT TANGENT, JUMBO, BROWN, WITH JU	98	$ 10,445.39
				DEADEND, AUTOMATIC, LONG BAIL, FOR 7/16" STRAND, GALVANIZED	63	$ 1,441.92
				DEADEND, AUTOMATIC, SHORT BAIL, FOR 7/16" STRAND GALVANIZED	25	$ 485.30
				EXTENSION, ANCHOR ROD, SWAMP, 1-1/2 X 1-1/2 X 60 IN	17	$ 814.36
				EYENUT, FOR 3/4 IN BOLT, GALVANIZED STEEL	53	$ 88.15
				GRIP, CABLE, SUPPORT, CLOSED TYPE SINGLE EYE, 1.75 - 1.99 IN	2	$ 51.54
				GRIP, GUY, PREFORMED, FOR ALUMOWELD CABLE, 19-#10 AWG GRE	24	$ 412.36
				HOLDER, 1" POLE TAGS, HOLDS 8 TAGS, ALUMINUM	78	$ 182.53
				INSULATOR, POST, (PINEAPPLE), TIE TOP, POLYETHYLENE, 35KV	264	$ 11,068.37
				INSULATOR, SPOOL, CLASS 53-2, 750V	40	$ 34.77
				INSULATOR, STRAIN, FIBERGLASS, 78 IN, LT GRAY OR GREEN, ROLLE	69	$ 1,308.55
				INSULATOR, STRAIN, FIBERGLASS, 78 IN, ROLLER CLEVIS, 30,000 LB,	9	$ 314.13
				INSULATOR, SUSPENSION, DEADEND, POLY, 23 IN LONG, 34.5 KV, 378	60	$ 2,937.07
				LINK, ROLLER, ASSY, TYPE 1 GUY LINK, RUS TG-92	2	$ 45.93
				LINK, STRAIGHT, GALV STEEL, 5/8 IN, 40,000 LB	9	$ 43.15
				MARKER, AERIAL, 5 IN X 10 IN, "1", BLK ON YELLOW, .060 AL W/GROMM	6	$ 90.57
				MARKER, AERIAL, 5 IN X 10 IN, "2", BLK ON YELLOW, .060 AL W/GROMM	5	$ 67.75
				MARKER, AERIAL, 5 IN X 10 IN, "3", BLK ON YELLOW, .060 AL W/GROMM	9	$ 125.02
				MARKER, AERIAL, 5 IN X 10 IN, "4", BLK ON YELLOW, .060 AL W/GROMM	6	$ 74.68
				MARKER, AERIAL, 5 IN X 10 IN, "5", BLK ON YELLOW, .060 AL W/GROMM	63	$ 866.85
				MARKER, AERIAL, 5 IN X 10 IN, "6" or "9", BLK ON YELLOW, .060 AL W/G	8	$ 108.72
				MARKER, AERIAL, 5 IN X 10 IN, "7", BLK ON YELLOW, .060 AL W/GROMM	3	$ 41.48
				MARKER, AERIAL, 5 IN X 10 IN, "8", BLK ON YELLOW, .060 AL W/GROMM	6	$ 81.11
				MARKER, AERIAL, 5 IN X 10 IN, "O", BLK ON YELLOW, .060 AL W/GROMI	10	$ 131.13
				MARKER, AERIAL, 5 IN X 10 IN, "X", BLK ON YELLOW, .060 AL W/GROMM	15	$ 213.05
				MARKER, GUY, FULL ROUND, PLASTIC, 8 FT L, YELLOW, SPIRAL PIGTA	123	$ 361.63
				MOLDING, F/GROUND WIRE, HIGH DENSITY POLY, BLACK, 8 FT L, 1 IN	408	$ 339.30
				NUT, LOCKING, 7/8 IN, GS	4	$ 2.23
				PIN, INSULATOR, LINE POST, 3/4" X 7" SHANK, 8-1/2" OVERALL LENGTH	206	$ 887.11
				PIN, INSULATOR, SHORT STUD, 3/4 IN D, 1-3/4 IN L, GALV STEEL	51	$ 184.60
				PIN, POLE TOP, LINE POST, BRACKET, 4 X 4 X 13 IN, 35 KV	86	$ 1,282.37
				PLATE, CLAMP, CENTER, FOR X BRACE ASSEMBLIES, FOR POLE SPAC	8	$ 139.77
				PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16 IN. LAG HOLE, WITH	83	$ 498.75
				PLATE, YOKE, 8 IN TRIANGLE, 30K, 4 HOLE, GUYING	1	$ 73.96

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2017	DL7TD117	NH Distribution line annual	**Materials- Stores**	POLE, 50 FT LG, CLASS 2, WESTERN RED CEDAR	-1	$ (985.88)
				POLE, TRANSMISSION, WOOD LAMINATED, 70FT LG, CL 1	1	$ 2,720.00
				POLE, TRANSMISSION, WOOD LAMINATED, 75 FT LG, CLASS 3	1	$ 3,102.00
				POLE, TRANSMISSION, WOOD LAMINATED, 75 FT LONG, CL H1W	2	$ 9,158.00
				POLE, WESTERN RED CEDAR, 40 FT L, CL 3	9	$ 5,841.72
				POLE, WESTERN RED CEDAR, 40 FT, CL 2	48	$ 38,974.14
				POLE, WESTERN RED CEDAR, 45 FT, CL 2	16	$ 15,057.32
				POLE, WESTERN RED CEDAR, 50 FT, CL 2	5	$ 4,912.21
				POLE, WESTERN RED CEDAR, 60 FT L, CL 2	1	$ 1,938.07
				POLE, WESTERN RED CEDAR, 75 FT L, CL H-2	3	$ 16,792.03
				POWERSUPPLY, TRANSMISSION, POWER SUPPLY 30W 24V OUTPUT 8	0	$ -
				ROD, ANCHOR, GALVANIZED STEEL, 1 IN DIA, 7 FT LG, TRIPLE STRANI	49	$ 1,098.26
				ROD, GROUND, HOT DIPPED GALVANIZED, MINIMUM 5/8 IN DIA, 8 FT L(	60	$ 299.77
				SCREW, LAG, 1/2 IN, 4 IN LG, STEEL, GALVANIZED, TWIST DRIVE PILO	35	$ 10.50
				SCREW, LAG, 1/4 IN, 3 IN LG, STEEL, HOT DIPPED GALVANIZED, HEX H	100	$ 8.91
				SHACKLE, ANCHOR, 3/4 IN, BOLT/ NUT / KEY, GALVANIZED, 60,000 LBS	2	$ 24.41
				SHACKLE, ANCHOR-CLEVIS, GALVANIZED STEEL, 3/4" THROAT, 2-1/2 "	105	$ 414.79
				SOCKET, EYE 1/2 IN DIA.- GALV. STEEL, 20,000# RATING	18	$ 103.96
				SOCKET, EYE, DUCTILE IRON, 13/16 IN D, 2-1/16 IN L, GALVANIZED, 30,	3	$ 24.96
				SOCKET, Y-CLEVIS, GALV HEAT TREATED, 30 000 LB, HOT LINE TYPE	6	$ 148.86
				SPLICE, COMPRESSION, 850.8 45/7, (30AH & 10SH)	3	$ 171.92
				STAPLE, SQUARE SHANKED, BARBED, 2 IN L X 5/8 IN X 0.165 IN THK, 1(	160	$ 41.24
				TAG, IDENTIFICATION, EVERSOURCE, ALUMINUM, 1-1/8 IN X 8 IN, .016	100	$ 74.25
				TAG, IDENTIFICATION, HORIZONTAL, "-," (DASH), INJECTION MOLDED,	25	$ 6.25
				TAG, IDENTIFICATION, HORIZONTAL, "/," INJECTION MOLDED, POLYPR	100	$ 25.18
				TAG, IDENTIFICATION, HORIZONTAL, "0," INJECTION MOLDED, POLYPI	50	$ 12.80
				TAG, IDENTIFICATION, HORIZONTAL, "2," INJECTION MOLDED, POLYPI	75	$ 19.50
				TAG, IDENTIFICATION, HORIZONTAL, "3," INJECTION MOLDED, POLYPI	101	$ 26.31
				TAG, IDENTIFICATION, HORIZONTAL, "4," INJECTION MOLDED, POLYPI	100	$ 25.40
				TAG, IDENTIFICATION, HORIZONTAL, "5," INJECTION MOLDED, POLYPI	75	$ 19.30
				TAG, IDENTIFICATION, HORIZONTAL, "6" OR "9" INJECTION MOLDED, P	100	$ 25.60
				TAG, IDENTIFICATION, HORIZONTAL, "7," INJECTION MOLDED, POLYPI	50	$ 12.98
				TAG, IDENTIFICATION, HORIZONTAL, "8," INJECTION MOLDED, POLYPI	50	$ 12.89
				TAG, IDENTIFICATION, HORIZONTAL, "X," INJECTION MOLDED, POLYPI	50	$ 12.57
				TEE, DEADEND, DOUBLE GUYING TEE, 9 INCH HOLE SPACING, 35K	12	$ 693.85
				TEE, MOUNTING DEADEND, FOR 7/8 IN BOLTS	15	$ 320.18
				TERMINAL, TAP LUG, BRONZE, #6 - 350 MCM, TWO CABLE TO FLAT	0	$ -
				TURNBUCKLE, CLEVIS/EYE, CIRCULAR EYE, 15/16 IN OPENING, 35,000	9	$ 890.48
				WASHER, COIL SPRING, GALV STEEL, 3/4 IN	833	$ 255.58
				WASHER, COIL SPRING, GALVANIZED, 5/8 IN	239	$ 42.61
				WASHER, DOUBLE COIL SPRING, GALVANIZED, 7/8 IN, NU STD #MAT W	72	$ 44.12
				WASHER, SQUARE, CURVED, GALVANIZED, 3 IN X 3 IN X 1/4 IN F/ 5/8 O	1004	$ 537.24
				WASHER, SQUARE, CURVED, GALVANIZED, 4 IN X 4 IN X 1/4 IN F/ 7/8 IN	20	$ 30.71
				WASHER, SQUARE, FLAT 3 X 3 IN X 1/4 IN, GALVANIZED, 13/16 IN HOLE	380	$ 506.06
				WASHER, SQUARE, FLAT, STEEL, 4 X 4 IN (FOR 7/8 IN BOLT), GALV	21	$ 29.31
				WIRE, TIE, BARE, ALUMINUM, #4, (50 LB COILS) SOFT DRAWN ONLY	150	$ 272.09
			Meals	JCR CONSTRUCTION CO INC	0.03	$ 1,020.00
				UTILITY SERVICE & ASSISTANCE	0.04	$ 1,200.00
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ 13,983.19
			Non Productive Time Loader- Acct Use Only		0	$ 6,548.39
			Other Outside Services- Other	VERMONT RECREATIONAL SURFACING & FENCING INC	0	$ 1,500.00
			Other Outside Services- Tree Planned	JOHN BROWN & SONS INC	1	$ 7,150.00
			Payroll Benefit Loader- Acct Use Only		0	$ 14,770.42
			Permits	AON RISK SERVICES NORTHEAST INC	0	$ 4,300.00
			Police Services and Traffic Control	JCR CONSTRUCTION CO INC	1	$ 740.00
				STATE OF NEW HAMPSHIRE	0.86	$ 1,776.00
				TOWN OF OSSIPEE	0.77	$ 837.00
			Property Taxes		0	$ 72,250.60
			Refuse Removal and Recycling		0	$ -
				WASTE MANAGEMENT	16	$ 5,280.69
				WASTE MANAGEMENT OF N H	0	$ 2,397.80
			Stores Loader- Acct Use Only		0	$ 2,965.25
			Travel	JCR CONSTRUCTION CO INC	1.42	$ 10,008.44
			UVL-Contractor Labor	0106237 - MISC CONTRACTOR WORK	0	$ -
				0106237 - STRUCTURE REPLACEMENTS-3025 LI	0	$ -

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2017	DL7TD117	NH Distribution line annual	UVL-Contractor Labor	0106237 - STRUCTURE REPLACEMENTS-348 LIN	0	$ -
				0106973 - 346 LINE MATTING	0	$ -
				0106973 - 346 LINE ROW REPAIRS	0	$ -
				0106973 - I-95 N HAMPTON	0	$ -
				0106973 - LANCASTER 348X	0	$ -
				0106973 - MISC CONTRACTOR WORK	0	$ -
				0106973 - OFF ROAD REPAIRS WHITEFIELD	0	$ -
				0106973 - STRUCTURE REPLACEMENTS-348 LIN	0	$ -
				0108059 - 313/383 HANCOCK	0	$ -
				0108059 - 3194X1 LINE	0	$ -
				0108059 - 348 LINE	0	$ -
				0108059 - I-95 CROSSING	0	$ -
				0108059 - I-95 MATTING	0	$ -
				0108059 - MISC CONTRACTOR WORK	0	$ -
				0108868 - CROSSARM CHANGEOUTS- KEENE	0	$ -
				0108868 - MISC CONTRACTOR WORK	0	$ -
				0108868 - OFF-ROAD REPAIRS WHITEFIELD	0	$ -
				0108868 - STRUCTURE REPLACEMENTS	0	$ -
				0109350 - STRUCTURE REPLACEMENTS	0	$ -
				0110019 - BEDFORD MAINTENANCE MAINTENANC	0	$ -
				0110019 - BEDFORD STRUCTURE REPLACEMENTS	0	$ -
				0110891 - STRUCTURE REPLACEMENTS313 LINE	0	$ -
			Vehicle Costs Clearing- Acct Use Only		0	$ 13,854.02
	DL7TD117 Total				**12606.32**	**$2,380,855.15**
2017 Total					**14017.87**	**$2,380,580.43**
Grand Total					**14017.87**	**$2,380,580.43**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A15N01 **Status** open **Revision** 30

Project Title CONVERT LACONIA 4KV TO 12.47KV **Operating Unit**

Initiated By Randy Herk **Initiated Date** 12/19/2014 10:11:04

Description of Work Convert 38H1 in Laconia and shift the load to the 70W1 (2016). Convert 38H2 in Laconia and shift the load to 70W1 (2015). Convert 38H3 in Laconia and shift the load to the 68W6 (2016). Convert 38H4 in Laconia and shift the load to the 68W6 (2015).

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/1/2015 **Est Complete Date :** 2/3/2017

	2015	2016	2017	2018	2019	Future Years	Total
	$576,372.63	$609,227.23	$1,273,588.11	$0.00	$0.00	$0.00	$2,459,188
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$2,323,343	$0	$135,845	$0	$0	$2,459,187.97

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	1/8/2019
Plant Accounting	Salbinski, Chris	$0	1/8/2019
Manager - PSNH Dist	Bosse, Samuel	$100,000	1/11/2019
Director - PSNH Dist	Eilenberger_TERMINATED, James	$250,000	1/13/2019
Vice President - PSNH	Purington, Joseph	$1,000,000	3/4/2019
Sr. VP/President - Ops	Quinlan, William	$5,000,000	4/2/2019

Supplement Request Form

Date Prepared: 10/29/18	**Project Title:** Convert Laconia 4kV to 12.47kV
Company/Companies: Eversource NH	**Project ID Number:** A15N01
Organization: NH Operations	**Plant Class/(F.P.Type):** Distribution
Project Initiator: Bill Steff	**Project Type:** Peak Load
Project Manager: Sam Bosse	**Capital Investment Part of Original Operating Plan?** Yes
Project Sponsor: Jim Eilenberger	**O&M Expenses Part of the Original Operating Plan?** Yes
Current Authorized Amount: $1,123,000	**Estimated in service date(s):** 2/3/17
Supplement Request: $1,336,000	**Other:**
Total Request: $2,460,000	

Supplement Justification

This project was complete in 2017 and requires a supplemental justification because direct costs were more than 10% above the approved budget. The review and approval of funding for this project was done through a legacy process where year-end projections were updated monthly. Project controls have been put in place to monitor funding at monthly T&D capital project meetings. This will provide the necessary controls to address the need for supplements in a timely manner.

This project converted the remaining two 4 KV circuits (38H1 & 38H3) to 12 KV for the Laconia Area Study. These new 12 KV circuits tie into other area 12 KV circuits providing a more reliable electric system for the Laconia area. The Project Authorization Form (PAF) for this project was approved in April 2016. At that time, the project was approved at a total cost of $1,123,000 with an in-service date of December 2016. The total project cost was based on direct costs of $813,000 with indirect costs and AFUDC of $310,000.

The actual cost to complete the project is $2,459,000 which is $1,336,000 above the approved project amount. The approved direct costs for this project are $813,000. The final direct costs associated with this project are $1,105,000 or 36% above the approved estimate. This increase in direct costs are based primarily on higher than anticipated contracted outside service costs. The contingency budget has been applied.

Justification for Additional Resources

The overall scope of the job did not change from the original PAF, attached. However, a number of pole changes not included in the original design were approved by the Construction Rep during construction caused delays in the project. This resulted in increases in internal labor, materials, and outside services. The higher than anticipated outside labor charges resulted in higher than anticipated overheads as well.

The differences in estimates versus actual include:

Internal Labor – This was more than estimated because of delays caused by changes made by contractor as approved by construction rep. Most of the changes were pole replacements not originally planned for, but the decision was made to upgrade many of the class 3 poles to class 2 while the crews were working on these poles. In addition, there was internal labor used for construction oversight that was not planned. **Increased by $46K**

Outside Service – The electrical high voltage contractor bids came in much higher than estimated at $1,305K. There were additional tree trimming and traffic control costs from outside vendors above estimates due to additional time needed to replace the additional poles. **Increased by $1,056K**

Materials/Supplies – The increase in material cost was primarily due to pole replacements not originally planned for, but the decision was made to upgrade many of the class 3 poles to class 2. **Increased by $36K**

Other/Contingency – This was less than estimated. **Decreased by $33K**

Indirects/AFUDC – Increases to these are attributed to the direct costs that were higher than estimated. **Increased by $231K**

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 813	$ 1,105	$ 1,918
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 813	$ 1,105	$ 1,918
Capital Additions - Indirect	299	237	536
AFUDC	11	(6)	5
Total Capital Request	$ 1,123	$ 1,336	$ 2,459
O&M	-	-	-
Total Request	**$ 1,123**	**$ 1,336**	**$ 2,459**

Note: Dollar values are in thousands:

	Year 2015	Year 2016	Year 2017+	Total
Capital Additions - Direct	$ -	$ 600	$ 494	$ 1,094
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ -	$ 600	$ 494	$ 1,094
Capital Additions - Indirect	-	124	116	240
AFUDC	-	1	1	2
Total Capital Request	$ -	$ 725	$ 611	$ 1,336
O&M	-	-	-	-
Total Request	**$ -**	**$ 725**	**$ 611**	**$ 1,336**

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Project Authorization Form

General Information

Date Prepared: 4/5/2016	Project Title: Convert Messer St. 4.16 kV to 12.47 kV
Company: Eversource - NH	Project ID Number: A15N01
Organization: NH Operations	Class(es) of Plant: Distribution
Project Initiator: Bill Steff	Project Category: Reliability (Dist. Lines)
Project Owner/Manager: Marc Geaumont/Sam Bosse	Project Purpose: part of regulatory tracked program? No
Project Sponsor: Jim Eilenberger	Project Type: Specific
Estimated in service date: 12/31/2016	Capital Investment Part of Original Operating Plan? Yes
If Transmission Project: N/A	Supplement to Existing Authorization? Yes
	O&M Expenses Part of the Original Operating Plan? Yes

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____
FP&A: _____

Executive Summary

The 4 KV equipment at Messer Street Substation ranges in age from 55 years old (transformer) to 73 years old for three oil circuit breakers. The transformer is also loaded to over 100% of its nameplate rating. The Laconia Area Distribution System Study has recommended converting the area from 4 KV to 12 KV to retire this old equipment and create an interconnected 12 KV system with other circuits and substations. To accomplish this, a new 10 MVA 34.5/12 KV transformer was recently installed at Messer Street (TB68) to handle the converted load and half of the 4 KV load has already been converted in a previous phase. This project will convert the remaining two 4 KV circuits (38H1 & 38H3) to 12 KV and then the 4 KV substation equipment will all be retired. These new 12 KV circuits will then tie into other area 12 KV circuits providing a more reliable electric system for the Laconia area. The anticipated cost of conversion of these two circuits is $609,000.

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APS 1 - Project Authorization Policy

Supplement Request Form

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized	Prior Spend	2016	2017	2018	Totals	Supplemental Authorization
Capital Additions - Direct		$299	$417	$0	$0	$716	
Customer Contribution		$0	$0	$0	$0	$0	
Removals net of Salvage		$80	$17	$0	$0	$97	
Total - Direct Spending	$144	$380	$434	$0	$0	$814	$670
Capital Additions - Indirect		$131	$166	$0	$0	$297	
Subtotal Request		$511	$600	$0	$0	$1,111	
AFUDC (half-year convention)		$1	$10	$0	$0	$11	
Total Request		$512	$609	$0	$0	$1,122	

The prior amount authorized and prior spend was for previous phases of this project. The supplemental amount is needed to complete the last phase of the project in 2016.

Summary Project Description

Convert the remaining two 4.16 kV circuits in Messer Street S/S to 12.47 kV and remove all old 4.16 kV equipment from the substation. Upgrade circuit conductors which tie to other circuits/substations to allow the shifting of load segments between circuits and substations to reduce outage times and improve reliability. DA will eventually be applied to these circuits under the Reliability Enhancement Program (REP). These subjects are discussed in greater detail within the "Laconia Area Distribution System Study".

Project Authorization

Approver	Approver Name	Approver Signature	Date
Project Initiator	Bill Steff		
Project Manager	Marc Geaumont		
Plant Accounting	Michele Roncaioli		
Manager	Sam Bosse		
Director	James Eilenberger		
Sr. Vice President	Peter Clarke		

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Overall Justification

This project will replace aging infrastructure including all 4.16 kV equipment and circuits out of Messer Street Substation. Conversion of the 4 KV circuits to 12 KV and tying them to other existing circuits will create a robust 12.47 kV interconnected system with adequate transformer capacity and adequate circuit ties to allow load shifts in the event of a major outage within the Laconia 12.47 kV system. DA will eventually be applied to these circuits as part of the REP program.

Project Scope

38H1 Circuit: Convert circuit from 4.16 kV to 12.47 kV. Convert 33 OH transformers and 3 pad-mount transformers from 4.16 kV to 12.47 kV. Replace several #6 copper side taps with 1/0 ACSR. Install three step transformers on Harvard Street to serve neighborhood east of North Main Street. Existing main line conductor between Messer Street Substation and North Main Street (Route 106) is 336 ACSR.

38H3 Circuit: Convert 47 pole sections of three phase circuit from 4.16 kV to 12.47 kV. Convert 14 pole sections of single phase circuit from 2.4 kV to 7.2 kV. The conversion of the 47 pole sections of three phase line involves 'up-converting' to an existing 12.47 kV three phase line which runs above the 38H3 Circuit along Union Ave. Replace 4/0 jacketed ACSR with 477 Hendrix spacer cable along 29 spans of the 12.47 kV 70W1 Circuit to accept the new load and improve the ability to tie the circuit to the 68W6 on Union Ave and Fair Street.

Project Objectives

Proactively retire aged equipment to prevent catastrophic failure. Improve reliability through 12.47 KV system upgrades and improvements.

Business Process and / or Technical Improvements

Costs, benefits and assumptions used to estimate benefits and customer impacts are contained in the "Laconia Area Distribution System Study".

Assumptions

It is assumed that the replacement of aged substation equipment ranging from 55 years to 73 years in age will have a net positive affect on customer reliability. It is assumed that upgrading portions of main line conductor and creating more robust circuit ties at 12.47 kV will increase reliability by allowing large line segments to be swapped between circuits/substations in the event of an outage on a main feeder line.

Alternatives Considered

The "Laconia Area Distribution System Study" examined keeping the 4.16 kV system throughout the downtown Laconia area. This included performing necessary infrastructure upgrades at 4.16 kV both within Messer Street Substation and out along the four 4.16 kV circuits fed out of the station. The lack of flexibility to serve future load at 4 KV and the desire to create an interconnected 12 KV system led to the decision to convert the four 4 KV circuits and eliminate the very old 4 KV equipment within Messer Street. The 38H2 and 38H4 Circuits were converted in late 2015 and early 2016.

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APS 1 - Project Authorization Policy

Supplement Request Form

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Complete Engineering	1/30/16
Complete Design	5/1/16
Bid Package	7/1/16
Job completion	12/15/16

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Prior Spend	2016	2017	2018	Total
Straight Time Labor	$7	$6	$0	$0	$13
Overtime Labor	$5	$0	$0	$0	$5
Outside Services	$322	$294	$0	$0	$616
Materials	$44	$121	$0	$0	$165
Other, including contingency amounts (describe) Vehicle	$2	$13	$0	$0	$15
Total	$380	$434	$0	$0	$814

Indirect Capital Costs	Prior Spend	2016	2017	2018	Total
Benefits / Loaders	$131	$166	$0	$0	$297
Capitalized interest or AFUDC, if any	$1	$10	$0	$0	$11
Total	$133	$175	$0	$0	$308

Total Capital Costs	512	$609	$0	$0	$1122
Total O&M Costs	62	$0	$0	$0	$62
Total Project Costs	574	$609	$0	$0	$1184

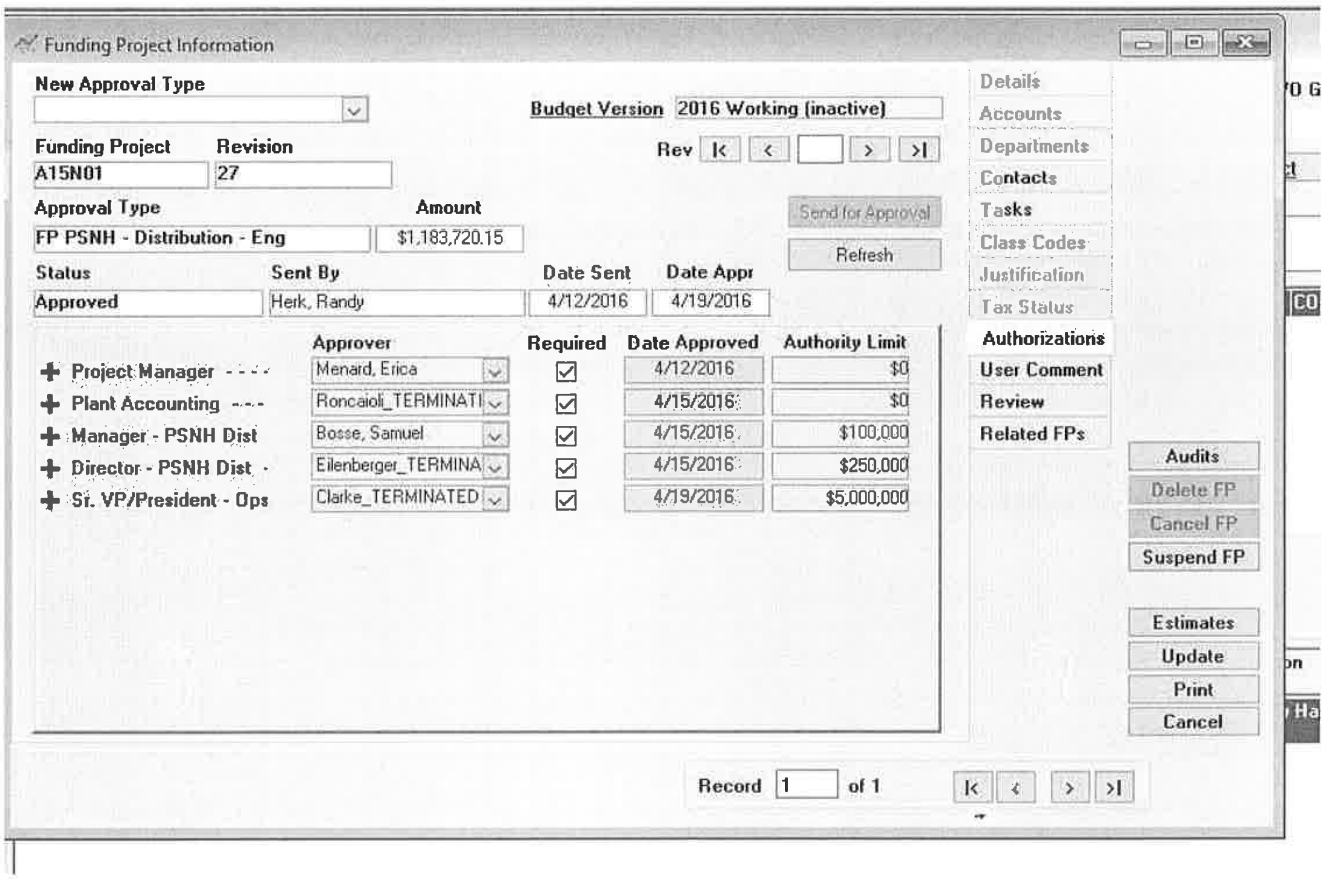
Note: Explain unique payment provisions, if applicable

Regulatory Approvals

None

Risks and Risk Mitigation Plans

None


Funding Project Information
New Approval Type
Budget Version 2016 Working (inactive)
Rev
Funding Project
A15N01
Revision
27
Approval Type
FP PSNH - Distribution - Eng
Amount
$1,183,720.15
Send for Approval
Refresh
Status
Approved
Sent By
Herk, Randy
Date Sent
4/12/2016
Date Appr
4/19/2016
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
4/12/2016
$0
Plant Accounting
Roncaioli_TERMINATI
4/15/2016
$0
Manager - PSNH Dist
Bosse, Samuel
4/15/2016
$100,000
Director - PSNH Dist
Eilenberger_TERMINA
4/15/2016
$250,000
Sr. VP/President - Ops
Clarke_TERMINATED
4/19/2016
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Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/21/2019**
Request No. TS 2-063 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Convert Laconia 4kV to 12.47kV, #A15N01, 12-045Q. Please provide the following information for this project:

a. Re: Supplement Justification at page 2: Explain why project controls were put into place to monitor the funding for this project and describe what those controls were. At what point during the project were these controls put into place?
b. Re: Justification for Additional Resources at pages 2-3: How much decision-making authority does Eversource delegate to Construction Reps and contractors for a project such as this? Are there any contractual limits (e.g. dollar amounts, notification requirements) placed on their exercise of that authority? Provide the details for the decision on pole replacements by the Construction Rep. Did Eversource engineers review the Construction Rep's decision prior to replacement and inspect the poles to be replaced?
c. Please provide an itemized break-out of overheads, AFUDC, and other costs leading up to the variance.

Response:

a. Additional project controls for distribution line projects were put in place after this project was complete, partly as a result of this project. The bid from the low price bidder for this work exceeded the design estimate by approximately $689,000. The additional process controls include a feedback loop so that project estimates are revised to include actual contractor bid prices and the project authorization is revised prior to construction. This process improvement was put into place after this project was completed.

b. The Construction Reps and contractors have limited authority for making decisions which will affect cost of a project. This authority is limited to small design changes, required due to field conditions, which will not materially affect cost, scope, or schedule. A process is in place for these decisions to be brought to their supervision, project sponsors, project engineers, or any other persons who would need to be involved in the decision. Specifically in this project, between the time when the project was designed and when the construction started, Eversource had increase our standard pole to a more robust 45 foot Class 2 pole as part of the Company's effort to harden the system. The Construction Rep assigned to this project took it upon himself to comply with this change in Standards, and replaced poles not originally included to be replaced. The Construction Rep acted in what they thought to be of the best interests of Eversource in making these decisions without following the proper approval process and therefore without providing Engineering the opportunity to review the changes, which increased cost, scope, and schedule. These pole changes and the associated work increased the cost of the project by approximately $420,000. This Construction Rep was terminated by Eversource.

c. See Excel Attachment TS 2-063.

funding_project	A15N01

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Values Sum of quantity	Sum of amount
9L520603	**EWR 15-020-41 Elec Proj Reconduc**	Admin and Eng OH- Acct Use Only		2015	0	$ 884.33
				2016	0	$ (30.49)
		AFUDC Debt		2015	0	$ 153.39
				2016	0	$ 33.12
		AFUDC Equity		2015	0	$ 236.94
				2016	0	$ 52.28
		Contractor Labor	**EVANS LINE CONSTRUCTION INC**	2015	0	$ -
		Contractor Services- Other		2016	0	$ (0.00)
			EVANS LINE CONSTRUCTION INC	2015	1.51	$ 50,073.09
		Contractor Vehicles + Equip		2016	0	$ (0.00)
			EVANS LINE CONSTRUCTION INC	2015	0.45	$ 14,648.50
		Engin and Super OH- Acct Use Only		2015	0	$ 21,811.78
				2016	0	$ 159.72
		Joint Line Billing		2016	-5	$ (3,100.00)
		Labor Overtime Non-Exempt		2015	68	$ 3,854.40
				2016	0	$ 0.00
		Labor Premium and Special Non-Exempt		2015	2	$ 72.20
				2016	0	$ (0.00)
		Labor Straight Time Exempt		2015	30.5	$ 1,205.91
				2016	2	$ 84.34
		Labor Straight Time Non-Exempt		2015	10.5	$ 450.67
				2016	1	$ 39.44
		Lobby Stock Loader-Acct Use Only		2015	0	$ 1,085.61
		Materials- Stores	**ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN**	2015	2	$ 49.09
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	4	$ 143.25
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2015	75	$ 17.22
			CABLE, INSULATED, AERIAL TRIPLEX, 600 V, AAC, 1/0, 7-STR, TRIPLEX WI	2015	270	$ 197.97
			CABLE, INSULATED, UG, EPR, 600V, CU, 500KCMIL, 1/C	2015	30	$ 206.00
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER	2015	7	$ 134.60
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8,	2015	1	$ 219.76
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 I	2015	5	$ 528.30
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2015	10	$ 688.15
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2015	1	$ 170.18
			POLE, SYP, 35 FT, CL 2, CCA	2015	1	$ 249.33
			POLE, SYP, 40 FT, CL 2, CCA	2015	1	$ 325.61
			POLE, SYP, 45 FT, CL 2, CCA	2015	3	$ 1,192.53
		Meals		2015	0	$ 30.00
				2016	0	$ (0.00)
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 2,980.18
				2016	0	$ 12.56
		Miscellaneous Accounting Adjustments		2016	0	$ 0.00
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 879.89
				2016	0	$ 19.16
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 2,505.10
				2016	0	$ 44.97
		Police Services and Traffic Control		2016	0	$ (0.00)
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.28	$ 1,258.00
				2016	0.19	$ 1,036.00
		Stores Loader- Acct Use Only		2015	0	$ 710.99
		UVL-Contractor Services- Other		2016	0	$ -
			0094345 - MISC CONTRACTOR WORK	2015	0	$ -
			0095383 - MISC CONTRACTOR WORK	2015	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 1,036.00
				2016	0	$ (1,036.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ (0.01)
		Vehicles-Class 2		2015	102.5	$ 1,037.48
				2016	3	$ 27.98
9L520603 Total					**626.93**	**$ 106,379.52**
9L520676	**EWR 15-020-41 Elec Proj Reconduc**	Admin and Eng OH- Acct Use Only		2015	0	$ 176.53
				2016	0	$ (1.99)
		AFUDC Debt		2015	0	$ 25.62

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520676	**EWR 15-020-41 Elec Proj Reconduc**	AFUDC Debt		2016	0	$ 5.47
		AFUDC Equity		2015	0	$ 37.89
				2016	0	$ 8.64
		Contractor Services- Other		2016	0	$ -
			EVANS LINE CONSTRUCTION INC	2015	0.22	$ 8,432.95
		Contractor Vehicles + Equip		2016	0	$ -
			EVANS LINE CONSTRUCTION INC	2015	0.06	$ 2,203.90
		Engin and Super OH- Acct Use Only		2015	0	$ 3,477.54
				2016	0	$ 100.99
		Labor Overtime Non-Exempt		2015	9.5	$ 439.47
				2016	0	$ -
		Labor Straight Time Exempt		2015	23.5	$ 995.05
				2016	0	$ -
		Lobby Stock Loader-Acct Use Only		2015	0	$ 828.88
				2016	0	$ (75.21)
		Materials- Stores	**BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I**	2015	5	$ 179.06
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2015	1	$ 126.29
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR, 4	2015	86	$ 147.74
				2016	-86	$ (147.74)
			CABLE, INSULATED, UG, EPR, 600V, CU, 500KCMIL, 1/C	2015	30	$ 206.00
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	11	$ 211.52
			**CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, **	2015	5	$ 1,098.92
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	6	$ 633.77
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2015	8	$ 550.53
			MOUNT, TRANSFORMER CLUSTER, SMALL, ALUMINUM, 5 - 25 KVA, 3 POS	2015	1	$ 93.52
			POLE, SYP, 45 FT, CL 2, CCA	2015	1	$ 397.51
				2016	-1	$ (397.51)
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 361.04
				2016	0	$ 22.02
		Miscellaneous Accounting Adjustments		2016	0	$ -
				2017	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 226.07
				2016	0	$ (0.01)
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 643.63
				2016	0	$ 0.01
		Police Services and Traffic Control		2016	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.1	$ 647.50
				2016	0.1	$ 592.00
		Stores Loader- Acct Use Only		2015	0	$ 455.02
				2016	0	$ 207.61
		UVL-Contractor Services- Other		2016	0	$ -
			0095383 - MISC CONTRACTOR WORK	2015	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 592.00
				2016	0	$ (592.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 0.01
		Vehicles-Class 2		2015	21.5	$ 192.86
				2016	0	$ (0.00)
9L520676 Total					**121.98**	**$ 23,103.10**
9L520705	**EWR 15-020-41 Elec Proj Reconduc**	Admin and Eng OH- Acct Use Only		2015	0	$ 1,039.74
				2016	0	$ (3.61)
				2017	0	$ (31.01)
		AFUDC Debt		2015	0	$ 120.25
				2016	0	$ 42.21
		AFUDC Equity		2015	0	$ 187.25
				2016	0	$ 66.62
		Contractor Services- Other		2016	0	$ 0.00
			EVANS LINE CONSTRUCTION INC	2015	1.68	$ 64,078.63
		Contractor Vehicles + Equip		2016	0	$ 0.00
			EVANS LINE CONSTRUCTION INC	2015	0.41	$ 15,918.55
		Engin and Super OH- Acct Use Only		2015	0	$ 25,415.01
				2016	0	$ 505.69
		Joint Line Billing		2017	-5	$ (3,100.00)
		Labor Overtime Non-Exempt		2015	2.5	$ 115.65
				2016	0	$ 0.00
		Labor Straight Time Exempt		2015	17	$ 716.86

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520705	EWR 15-020-41 Elec Proj Reconduc	Labor Straight Time Exempt		2016	0	$ (0.00)
		Lobby Stock Loader-Acct Use Only		2015	0	$ 1,747.74
				2016	0	$ (190.08)
		Materials- Stores		2016	0	$ -
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2015	2	$ 49.92
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	5	$ 179.13
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2015	4	$ 503.98
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2015	2438	$ 559.78
				2016	-548	$ (125.83)
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR, 4	2015	869	$ 1,492.82
				2016	-689	$ (1,183.60)
			CABLE, INSULATED, AERIAL QUADRAPLEX, XLP, 600V, AAC, 1/0, 7-STR, Q	2015	20	$ 19.89
			CABLE, INSULATED, UG, EPR, 600V, CU, 500KCMIL, 1/C	2015	30	$ 206.00
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	17	$ 326.89
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	5	$ 528.30
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 .	2015	20	$ 1,372.54
				2016	-1	$ (68.63)
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2015	2	$ 342.83
			MOUNT, TRANSFORMER CLUSTER, SMALL, ALUMINUM, 5 - 25 KVA, 3 POS	2015	1	$ 93.82
			POLE, SYP, 45 FT, CL 2, CCA	2015	4	$ 1,590.04
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 2,366.94
				2016	0	$ 125.91
		Miscellaneous Accounting Adjustments		2016	0	$ -
				2017	0	$ 0.00
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 131.22
				2016	0	$ -
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 373.54
				2016	0	$ (0.02)
		Police Services and Traffic Control		2016	0	$ -
			CITY OF LACONIA	2015	2	$ 570.00
				2016	1	$ 285.00
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.4	$ 2,973.88
				2016	0.41	$ 2,608.50
		Refuse Removal and Recycling		2016	0	$ -
			WASTE MANAGEMENT	2016	1	$ 451.54
		Stores Loader- Acct Use Only		2015	0	$ 975.20
				2016	0	$ 215.17
		UVL-Contractor Services- Other		2016	0	$ -
			0094345 - MISC CONTRACTOR WORK	2015	0	$ -
			0095383 - 38H4 CONVERSION	2015	0	$ -
			0095383 - MISC CONTRACTOR WORK	2015	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 2,608.50
				2016	0	$ (2,608.50)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ (0.02)
		Vehicles-Class 2		2015	17	$ 152.49
				2016	0	$ -
9L520705 Total					2217.4	$ 123,746.73
9L520744	EWR 15-020-41 Elec Proj Reconduc	Admin and Eng OH- Acct Use Only		2015	0	$ 463.72
				2016	0	$ (5.03)
		AFUDC Debt		2015	0	$ 46.41
				2016	0	$ 14.95
		AFUDC Equity		2015	0	$ 69.30
				2016	0	$ 23.60
		Contractor Services- Other		2016	0	$ -
			EVANS LINE CONSTRUCTION INC	2015	0.85	$ 27,967.76
		Contractor Vehicles + Equip		2016	0	$ 0.00
			EVANS LINE CONSTRUCTION INC	2015	0.21	$ 6,944.50
		Engin and Super OH- Acct Use Only		2015	0	$ 11,153.13
				2016	0	$ 174.37
		Labor Overtime Non-Exempt		2015	1.5	$ 69.39
				2016	0	$ -
		Labor Straight Time Exempt		2015	29	$ 1,222.88
				2016	0	$ -
		Lobby Stock Loader-Acct Use Only		2015	0	$ 925.27

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520744	EWR 15-020-41 Elec Proj Reconduc	Lobby Stock Loader-Acct Use Only		2016	0	$ (94.63)
		Materials- Stores		2016	0	$ -
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2015	1	$ 24.54
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	1	$ 35.82
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2015	2	$ 251.80
			CABLE, INSULATED, DB, XLP, 600V, AL, 350 KCMIL, STR, 3CT, 4/0 AWG NE	2015	20	$ 37.38
			CABLE, INSULATED, DB, XLP, 600V, AL, 4/0 AWG, UNILAY COMPRESSED, 3	2015	20	$ 24.03
			CABLE, INSULATED, UG, EPR, 600V, CU, 500KCMIL, 1/C	2015	30	$ 206.00
			CONDUIT, ELECTRICAL, PVC, 3 IN, 10 FT, SCHEDULE 40, BELLED ONE END	2015	20	$ 20.85
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	6	$ 115.37
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, V	2015	2	$ 439.58
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	3	$ 316.98
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 .	2015	20	$ 1,372.03
				2016	-10	$ (686.04)
			POLE, SYP, 40 FT, CL 2, CCA	2015	1	$ 325.61
			POLE, SYP, 45 FT, CL 2, CCA	2015	2	$ 795.02
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 844.73
				2016	0	$ 17.27
		Miscellaneous Accounting Adjustments		2016	0	$ -
				2017	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 203.66
				2016	0	$ (0.02)
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 579.82
				2016	0	$ (0.01)
		Police Services and Traffic Control		2016	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.2	$ 1,253.38
				2016	0.2	$ 1,110.00
		Stores Loader- Acct Use Only		2015	0	$ 476.05
				2016	0	$ 107.11
		UVL-Contractor Services- Other		2016	0	$ -
			0094345 - MISC CONTRACTOR WORK	2015	0	$ -
			0095383 - MISC CONTRACTOR WORK	2015	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 1,110.00
				2016	0	$ (1,110.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ (0.02)
		Vehicles-Class 2		2015	29	$ 260.13
				2016	0	$ -
9L520744 Total					**178.96**	**$ 57,106.69**
9L520773	EWR 15-020-41 Elec Proj Reconduc	Admin and Eng OH- Acct Use Only		2015	0	$ 464.17
				2016	0	$ (4.70)
		AFUDC Debt		2015	0	$ 30.82
				2016	0	$ 11.19
		AFUDC Equity		2015	0	$ 46.34
				2016	0	$ 17.67
		Contractor Services- Other		2016	0	$ -
			EVANS LINE CONSTRUCTION INC	2015	1.97	$ 34,560.78
		Contractor Vehicles + Equip		2016	0	$ -
			EVANS LINE CONSTRUCTION INC	2015	0.46	$ 8,391.55
		Engin and Super OH- Acct Use Only		2015	0	$ 11,689.99
				2016	0	$ 41.21
		Joint Line Billing		2016	-1	$ (620.00)
		Labor Overtime Non-Exempt		2015	3.5	$ 169.19
				2016	0	$ (0.00)
		Labor Straight Time Exempt		2015	22	$ 942.08
				2016	0	$ -
		Labor Straight Time Non-Exempt		2015	2.5	$ 78.50
				2016	0	$ 0.00
		Lobby Stock Loader-Acct Use Only		2015	0	$ 544.85
		Materials- Stores	BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	6	$ 214.96
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2015	3	$ 367.30
			CABLE, INSULATED, UG, EPR, 600V, CU, 500KCMIL, 1/C	2015	30	$ 206.00
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	13	$ 249.50
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	2	$ 211.32
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 .	2015	12	$ 823.84

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520773	**EWR 15-020-41 Elec Proj Reconduc**	Materials- Stores	**POLE, SYP, 45 FT, CL 2, CCA**	2015	1	$ 397.51
		Mileage		2015	0	$ 11.50
				2016	0	$ -
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 816.40
				2016	0	$ 5.28
		Miscellaneous Accounting Adjustments		2016	0	$ -
				2017	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 187.49
				2016	0	$ (0.01)
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 533.82
				2016	0	$ (0.01)
		Police Services and Traffic Control		2016	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.43	$ 2,812.00
				2016	0.03	$ 222.00
		Stores Loader- Acct Use Only		2015	0	$ 262.01
		UVL-Contractor Services- Other		2016	0	$ -
			0094345 - MISC CONTRACTOR WORK	2015	0	$ -
			0095383 - MISC CONTRACTOR WORK	2015	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 222.00
				2016	0	$ (222.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ (0.01)
		Vehicles-Class 2		2015	15	$ 134.55
				2016	0	$ -
9L520773 Total					**111.89**	**$ 63,819.09**
9L520836	**EWR 15-014-41 Elec Proj Reconduc**	Admin and Eng OH- Acct Use Only		2015	0	$ 370.06
				2016	0	$ 209.12
				2017	0	$ 155.32
		AFUDC Debt		2015	0	$ 67.75
				2016	0	$ 171.29
		AFUDC Equity		2015	0	$ 102.42
				2016	0	$ 177.87
		Contractor Labor	**I C REED & SONS INC**	2015	0	$ -
		Contractor Services- Other		2017	0	$ (0.00)
			I C REED & SONS INC	2015	0.46	$ 8,065.66
				2016	0.56	$ 9,800.59
		Contractor Vehicles + Equip		2017	0	$ -
			I C REED & SONS INC	2015	0.07	$ 699.98
				2016	0.22	$ 3,916.83
		Engin and Super OH- Acct Use Only		2015	0	$ 3,698.04
				2016	0	$ 6,996.76
				2017	0	$ 1,013.26
		Joint Line Billing		2016	-12	$ (7,440.00)
				2017	0	$ -
		Labor Overtime Non-Exempt		2015	12	$ 677.39
				2016	39.75	$ 2,311.82
				2017	0	$ -
		Labor Premium and Special Non-Exempt		2016	5	$ 196.65
				2017	0	$ (0.00)
		Labor Straight Time Exempt		2015	50.5	$ 2,139.76
				2016	7	$ 306.89
				2017	0	$ (0.00)
		Labor Straight Time Non-Exempt		2015	9	$ 344.06
				2016	15	$ 577.04
				2017	0	$ 0.00
		Lobby Stock Loader-Acct Use Only		2015	0	$ 1,538.02
				2016	0	$ 35.81
		Materials- Stores		2017	0	$ 0.00
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2015	2	$ 50.12
			BLADE, CONTACT, BRONZE, 25/27 KV, 300 AMP, SOLID DOOR, FITS CHAN(	2016	3	$ 98.37
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	15	$ 537.29
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2015	5837	$ 1,371.13
				2016	-2000	$ (469.81)
			CABLE, INSULATED, AERIAL TRIPLEX, 600 V, AAC, 1/0, 7-STR, TRIPLEX WI	2016	488	$ 377.08
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	14	$ 269.20

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520836	EWR 15-014-41 Elec Proj Reconduc	Materials- Stores	CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, \	2016	2	$ 439.13
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	5	$ 528.10
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 .	2015	17	$ 1,166.15
				2016	-3	$ (205.79)
			POLE, SYP, 40 FT, CL 2, CCA	2015	8	$ 2,585.80
				2016	1	$ 321.54
			POLE, SYP, 45 FT, CL 2, CCA	2015	4	$ 1,575.92
				2016	-1	$ (395.47)
			SPLICE, INSULATED, COMPRESSION/URD, 1/0 STR, 35 KV, SUB 287805 & 3	2016	3	$ 210.70
		Mileage		2015	0	$ 21.28
				2016	0	$ 8.64
				2017	0	$ -
		Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 193.22
				2016	0	$ 1,018.80
				2017	0	$ 46.05
		Miscellaneous Accounting Adjustments		2017	0	$ (0.00)
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2015	0	$ 498.20
				2016	0	$ 550.57
				2017	0	$ 0.02
		Other Outside Services- Tree Planned		2015	0	$ -
				2017	0	$ 0.00
			ASPLUNDH TREE EXPERT CO	2015	10.89	$ 18,073.29
				2016	1	$ 885.33
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 1,418.40
				2016	0	$ 1,240.46
				2017	0	$ 0.01
		Police Services and Traffic Control		2017	0	$ (0.00)
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.06	$ 323.76
				2016	0.96	$ 6,438.04
		Shared Lease Vehicles-Class 4		2015	1	$ 3.65
				2017	0	$ -
		Stores Loader- Acct Use Only		2015	0	$ 636.70
				2016	0	$ 641.82
		Unvouchered Liablities		2017	0	$ -
			0093637 - TREE TRIMMING	2015	0	$ -
		UVL-Contractor Services- Other		2015	0	$ -
				2017	0	$ -
			0092552 - TRIMMING	2015	0	$ -
			0093313 - TREE TRIMMING	2015	0	$ -
			0095383 - 38H2 CONVERSION	2015	0	$ -
			0095383 - 38H4 CONVERSION	2015	0	$ -
			0095798 - 38H2 CONVERSION	2015	0	$ 32,000.00
				2016	0	$ (32,000.00)
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 6,328.50
				2016	0	$ (6,328.50)
			0097214 - MISC CONTRACTOR WORK	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2017	0	$ -
		Vehicles-Class 2		2015	61.5	$ 580.31
				2016	53.75	$ 483.75
				2017	0	$ (0.00)
		Vehicles-Class 4A		2015	2	$ 68.44
				2016	3	$ 73.92
				2017	0	$ 0.00
9L520836 Total					4656.72	$ 77,796.51
9L520929	EWR 15-014-41 Elec Proj Reconduc	Admin and Eng OH- Acct Use Only		2015	0	$ 847.06
				2016	0	$ 2,013.87
		AFUDC Debt		2015	0	$ 87.56
				2016	0	$ 231.83
		AFUDC Equity		2015	0	$ 134.98
				2016	0	$ 249.55
		Contractor Labor	I C REED & SONS INC	2015	1	$ 25,622.73
				2016	-1	$ (25,622.73)
		Contractor Materials		2016	0	$ (0.00)
			I C REED & SONS INC	2016	1	$ 211.27

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520929	EWR 15-014-41 Elec Proj Reconduc	Contractor Services- Other		2016	0	$ 0.00
			I C REED & SONS INC	2015	0.95	$ 18,658.05
				2016	6.16	$ 147,631.62
		Contractor Vehicles + Equip		2016	0	$ -
			I C REED & SONS INC	2015	0.46	$ 11,269.76
				2016	2.09	$ 48,658.95
		Engin and Super OH- Acct Use Only		2015	0	$ 17,284.18
				2016	0	$ 51,923.27
		Fees + Payments- Other		2016	0	$ -
			SUNBELT RENTALS INC	2016	1	$ 7,123.47
		Joint Line Billing		2016	-13	$ (8,060.00)
		Labor Overtime Non-Exempt		2015	1.5	$ 69.39
				2016	0	$ 0.00
		Labor Straight Time Exempt		2015	32.5	$ 1,370.46
				2016	5	$ 217.17
		Lobby Stock Loader-Acct Use Only		2015	0	$ 3,943.62
				2016	0	$ 448.31
		Materials- Stores		2016	0	$ -
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2015	2	$ 49.76
			ARRESTER, SURGE, 12.47 KV MGY SYSTEM VOLTAGE, 9 KV ARRESTER R	2015	6	$ 349.59
				2016	-6	$ (349.59)
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2015	3	$ 147.96
			BLADE, CONTACT, BRONZE, 25/27 KV, 300 AMP, SOLID DOOR, FITS CHAN	2015	3	$ 97.66
				2016	-3	$ (97.66)
			BRACKET, ANGLE, EXTENDED TAP, HENDRIX, SPACER CABLE SINGLE CI	2015	2	$ 304.94
				2016	-2	$ (304.94)
			BRACKET, CABLE, TERMINATOR MOUNTING, ALUM, 0.75 THRU 3.00 IN D C	2016	0	$ -
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2015	11	$ 392.77
				2016	-4	$ (148.94)
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2015	4	$ 449.47
				2016	-2	$ (213.43)
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2015	3	$ 215.84
			CABLE, INSULATED, 1 PH PRIMARY URD, JACKETED, 35 KV, AL, 1/0, W/ CC	2016	0	$ -
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR, 4	2016	165	$ 303.44
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR, 4	2015	0	$ -
			CABLE, INSULATED, AERIAL TRIPLEX, 600 V, AAC, 1/0, 7-STR, TRIPLEX WI	2015	0	$ (0.01)
				2016	478	$ 369.67
			CABLE, INSULATED, AERIAL TRIPLEX, 600V, AAC, #2, 7 STR, WITH #4 7 ST	2016	120	$ 52.78
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600V, #2 AAC CONDUCTOR, #2	2015	0	$ -
			CONDUIT, ELECTRICAL, PVC, 3 IN, 10 FT, SCHEDULE 40, BELLED ONE END	2016	0	$ -
			CONDUIT, ELECTRICAL, PVC, 4 IN DIA, 10 FT LG, SCH 40, BELLED ONE EN	2016	0	$ -
			CONDUIT, ELECTRICAL, PVC, 5 IN DIA, 10 FT LG, SCH 40, BELLED ONE EN	2016	20	$ 37.43
			CONNECTOR, ELBOW, LOADBREAK, AL, 1/0 STR AWG, 345 MIL, 1.095" - 1.	2015	6	$ 143.65
				2016	-3	$ (71.81)
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER (	2015	17	$ 326.48
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, V	2015	1	$ 220.09
				2016	0	$ (0.24)
			CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN	2015	10	$ 1,056.25
				2016	3	$ 316.69
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 .	2015	23	$ 1,577.27
				2016	2	$ 137.12
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2015	1	$ 172.55
				2016	-1	$ (172.55)
			MOUNT, TRANSFORMER CLUSTER, SMALL, ALUMINUM, 5 - 25 KVA, 3 POS	2016	1	$ 94.77
			POLE, SYP, 40 FT, CL 2, CCA	2015	0	$ -
			POLE, SYP, 45 FT, CL 2, CCA	2015	13	$ 5,127.65
				2016	0	$ (7.77)
			RECLOSER, VAC, 3PH, ELEC, 34.5KV, 560A, 12KA, HIGH VOLT, TYPE VWVE	2016	0	$ -
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2015	32	$ 810.86
				2016	2	$ 53.35
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 477 ACSR (18/1), 556.5 AA(	2015	5	$ 3,380.87
				2016	1	$ 675.44
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 477KCMIL ACSR (18/1)(26/	2015	1	$ 707.32
				2016	-1	$ (707.32)
			TERMINATOR, CABLE, COLD SHRINK, JACKETED, 1/0 ALUM, 35 KV, W/PIN	2016	3	$ 333.75

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L520929	EWR 15-014-41 Elec Proj Reconduc	Misc Dist Exp Capitalized OH-Acct Use Only		2015	0	$ 656.18
				2016	0	$ 7,523.86
		Miscellaneous Accounting Adjustments		2016	0	$ 0.00
				2017	0	$ -
				2019	0	$ (0.00)
		Non Productive Time Loader- Acct Use Only		2015	0	$ 226.90
				2016	0	$ 37.38
		Payroll Benefit Loader- Acct Use Only		2015	0	$ 646.04
				2016	0	$ 80.08
		Police Services and Traffic Control		2016	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2015	0.14	$ 730.76
				2016	1.18	$ 7,323.75
		Stores Loader- Acct Use Only		2015	0	$ 3,330.59
				2016	0	$ 9,139.93
		UVL-Contractor Services- Other		2016	0	$ -
			0095798 - MISC CONTRACTOR WORK	2015	0	$ 6,761.30
				2016	0	$ (6,761.30)
			0097214 - 38H2 CONVERSION	2016	0	$ -
			0097214 - MISC CONTRACTOR WORK	2016	0	$ -
			0098054 - 38H2 CONVERSION	2016	0	$ -
			0098054 - MISC CONTRACTOR WORK	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ (0.00)
		Vehicles-Class 2		2015	32.5	$ 291.53
				2016	4	$ 25.84
9L520929 Total					991.48	$ 350,158.37
9L620518	EWR 15-093-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2016	0	$ 1,435.56
				2017	0	$ 1,564.21
		AFUDC Debt		2016	0	$ 259.80
				2017	0	$ 195.25
		AFUDC Equity		2016	0	$ 0.34
		Contractor Services		2017	0	$ -
			LJM CONSTRUCTION LLC	2017	2	$ 18,316.60
		Contractor Services- Other		2017	0	$ -
			HAUGLAND ENERGY GROUP LLC	2016	0.64	$ 54,047.07
				2017	1.04	$ 127,571.50
		Engin and Super OH- Acct Use Only		2016	0	$ 24,599.27
				2017	0	$ 10,006.38
		Labor Overtime Non-Exempt		2016	15	$ 1,198.53
				2017	21.5	$ 1,661.93
		Labor Straight Time Exempt		2016	75	$ 3,270.20
				2017	3	$ 130.32
		Labor Straight Time Non-Exempt		2016	65.5	$ 2,977.52
				2017	7	$ 226.38
		Lobby Stock Loader-Acct Use Only		2016	0	$ 8,430.20
				2017	0	$ (1,496.81)
		Materials- Purchased		2017	0	$ -
			JP MORGAN CHASE BANK	2016	4	$ 159.92
		Materials- Stores		2017	0	$ -
			ANCHOR, EXPANDING 12 IN, FOR 1 IN RODS	2016	1	$ 34.40
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2016	3	$ 75.90
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	38	$ 1,838.30
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER, 7	2017	3	$ 141.10
			BAR, ANTI-SWAY, CABLE SPACERS ON TANGENT CABLES, POLYETHYLE	2016	32	$ 524.43
			BRACKET, ANGLE, EXTENDED TAP, HENDRIX, SPACER CABLE SINGLE CI	2016	27	$ 4,442.67
				2017	-14	$ (2,303.92)
			BRACKET, CABLE, TERMINATOR MOUNTING, ALUM, 0.75 THRU 3.00 IN D C	2016	6	$ 100.27
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	9	$ 287.22
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	4	$ 443.66
				2017	-2	$ (221.83)
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2016	22	$ 1,577.66
			CABLE, BARE, 052 AWA MESSENGER FOR SPACER CABLE	2017	1205	$ 1,128.18
			CABLE, BARE, ACSR, #2, 6/1, USE STOCK CODE 177589	2017	100	$ 33.41
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2017	60	$ 14.49
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN/AW	2017	203	$ 93.10
			CABLE, BARE, ACSR/AW, 477 KCMIL, 0.814 IN DIA, 18/1 STR, PELICAN/AW	2017	100	$ 90.09

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620518	EWR 15-093-41 Elec Svc Conv-Rec-	Materials- Stores	CABLE, BARE, SD/ANNEALED, CU, #2, 7 STR	2017	9	$ 6.88
			CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 STR,	2016	4200	$ 7,314.97
				2017	-585	$ (1,025.22)
			CABLE, INSULATED, AERIAL TRIPLEX, 600V, 4/0 AAC CONDUCTOR, 2/0 AL	2017	1265	$ 1,525.77
			CLAMP, MESSENGER, AERIAL CABLE, GALVANIZED STEEL, 3/8 - 9/16 IN M	2016	8	$ 285.17
			CLAMP, STRAIN, STRT GROOVE, 336.4-795 AL, 300-636 ACSR, W/LIFTING E	2016	13	$ 231.07
			CONDUIT, ELECTRICAL, PVC, 5 IN DIA, 10 FT LG, SCH 40, BELLED ONE EN	2017	40	$ 77.93
			CROSSARM, DOUGLAS FIR, WOOD, 10 FT, 4-3/4 X 5-3/4 IN, "JUMBO", PHAS	2016	1	$ 64.79
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	14	$ 2,900.40
				2017	-14	$ (2,900.40)
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	10	$ 1,055.10
			CROSSARM, FIBERGLASS, 10 FT TANGENT, JUMBO, BROWN, WITH JUMB	2016	1	$ 104.07
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	42	$ 2,879.42
				2017	3	$ 204.50
			GUARD, ELECTRICAL, PRIMARY CONDUCTOR /TREE/BRANCH, 8 FT. LG, 1	2016	4	$ 107.30
			LINK, STRIRRUP, FOR SPACER CABLE TANGENT BRACKET	2016	7	$ 61.80
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2016	2	$ 346.65
			POLE, SYP, 45 FT, CL 2, CCA	2016	3	$ 1,223.83
				2017	1	$ 410.59
			POLE, SYP, 50 FT, CL 1, CCA	2016	10	$ 5,110.44
			POLE, WESTERN RED CEDAR, 55 FT L, CL 2	2016	1	$ 1,202.11
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2016	118	$ 3,139.28
				2017	-57	$ (1,517.06)
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.629--0.741 IN DIA, 34.5 K	2016	3	$ 2,208.70
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.741-0.814 IN DIA, 35 KV,	2016	3	$ 2,057.10
				2017	-3	$ (2,057.10)
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.772-0.860 IN DIA, 34.5 KV	2016	3	$ 2,106.91
			TERMINATOR, CABLE, COLD SHRINK, JACKETED, 1/0 ALUM, 35 KV, W/PIN	2016	7	$ 796.49
			WIRE, TIE, COPPER, SOFT DRAWN, 6 AWG, 25 LB / SPOOL	2016	150	$ 729.23
		Meals		2017	2	$ 40.00
		Mileage		2016	46	$ 24.84
				2017	0	$ 0.00
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 2,264.04
				2017	0	$ 328.22
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 1,281.53
				2017	0	$ 337.15
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 2,745.77
				2017	0	$ 775.54
		Stores Loader- Acct Use Only		2016	0	$ 2,814.19
				2017	0	$ 426.78
		UVL-Contractor Labor		2017	0	$ -
			0103006 - 38H3 COVNERSION	2016	0	$ -
			0103649 - 38H3 CONVERSION	2016	0	$ -
			0104296 - 38H3 COVNERSION	2016	0	$ -
			0104985 - 38H3 CONVERSION	2016	0	$ 101,841.00
				2017	0	$ (101,841.00)
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 2,058.93
				2017	0	$ 627.64
		Vehicles-Class 2		2016	61	$ 404.62
				2017	0	$ -
9L620518 Total					7359.68	$ 305,633.27
9L620688	EWR 15-093-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2016	0	$ 938.16
				2017	0	$ 658.49
				2018	0	$ 113.52
		AFUDC Debt		2016	0	$ 153.91
				2017	0	$ 42.51
		AFUDC Equity		2016	0	$ 0.01
		Contractor Services- Other		2018	0	$ -
			HAUGLAND ENERGY GROUP LLC	2016	0.44	$ 40,665.02
				2017	0.84	$ 104,150.22
		Engin and Super OH- Acct Use Only		2016	0	$ 6,738.61
				2017	0	$ 15,172.38
				2018	0	$ 2,072.85

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620688	EWR 15-093-41 Elec Svc Conv-Rec-	Labor Overtime Non-Exempt		2016	11	$ 756.49
				2018	0	$ -
		Labor Straight Time Exempt		2016	22	$ 980.92
				2017	3	$ 130.32
				2018	15	$ 735.22
		Labor Straight Time Non-Exempt		2016	55	$ 2,521.54
				2018	0	$ 0.00
		Lobby Stock Loader-Acct Use Only		2016	0	$ 6,175.22
				2017	0	$ (5,350.48)
				2018	0	$ 2,526.79
		Materials- Stores		2016	0	$ (0.00)
				2018	0	$ -
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2016	1	$ 25.30
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	3	$ 145.52
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER,	2017	-3	$ (145.52)
			ARRESTER,SURGE, DISTRIBUTION CLASS, METAL OXIDE VARISTOR (MOV	2018	12	$ 565.48
			BAR, ANTI-SWAY, CABLE SPACERS ON TANGENT CABLES, POLYETHYLE	2016	7	$ 114.78
				2017	0	$ (0.01)
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING	2016	7	$ 227.91
				2017	0	$ -
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	4	$ 441.75
				2017	-4	$ (441.76)
			BRACKET, NEUTRAL OFFSET, 5/8 IN X 25 IN, GALV	2016	1	$ 21.58
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2016	1	$ 71.80
				2017	0	$ -
			CABLE, BARE, 052 AWA MESSENGER FOR SPACER CABLE	2017	1555	$ 1,455.87
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN/AW	2017	245	$ 112.37
			CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 STR,	2016	12520	$ 21,783.26
				2017	-14457	$ (25,131.32)
			CABLE, COVERED, AAC, 1/C, 477 KCMIL, 19 STR, 15 KV, 90 DEG C, 150 MIL	2018	4076	$ 7,117.80
			CABLE, INSULATED, 3CT, 1/0 AWG, STRANDED, 600 V, W/ #2 AWG NEUTR/	2018	60	$ 48.19
			CABLE, INSULATED, AERIAL, AAC, 4/0 AWG, 600 V, W/ 4/0 AWG ALLOY NE	2018	104	$ 203.06
			CABLE, INSULATED, AERIAL, AAC, QUADRUPLEX, 1/0 AWG, 7 STR, 600 V,	2018	134	$ 133.26
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 4/0 AWG 6	2018	1415	$ 1,841.58
			CLAMP, STRAIN, STRT GROOVE, 336.4-795 AL, 300-636 ACSR, W/LIFTING E	2017	0	$ -
			CONDUIT, ELECTRICAL, PVC, 3 IN, 10 FT, SCHEDULE 40, BELLED ONE END	2017	30	$ 29.27
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	8	$ 1,692.52
				2017	9	$ 1,770.02
			CUTOUT, FUSE, OPEN, 100 A, 12 KA INTERRUPTING CURRENT ASYMMETR	2018	27	$ 1,778.01
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	-27	$ (1,851.07)
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	27	$ 1,851.07
				2017	0	$ -
			LINK, STRIRRUP, FOR SPACER CABLE TANGENT BRACKET	2017	0	$ -
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3	2016	3	$ 519.97
			POLE, SYP, 45 FT, CL 2, CCA	2016	1	$ 407.94
			POLE, SYP, 50 FT, CL 1, CCA	2016	10	$ 5,110.44
			POLE, SYP, 55 FT, CL 1, PENTA	2016	2	$ 1,340.70
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2016	62	$ 1,650.13
				2017	0	$ -
		Mileage		2016	12	$ 6.48
				2018	16	$ 8.72
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 54.12
				2017	0	$ 97.85
				2018	0	$ 174.84
		Miscellaneous Accounting Adjustments		2018	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 732.98
				2017	0	$ 21.76
				2018	0	$ 102.96
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 1,570.47
				2017	0	$ 49.44
				2018	0	$ 286.99
		Stores Loader- Acct Use Only		2016	0	$ 1,652.25
				2017	0	$ 163.34
				2018	0	$ 872.31
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 1,242.02

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620688	**EWR 15-093-41 Elec Svc Conv-Rec-**	Vehicle Costs Clearing- Acct Use Only		2017	0	$ 16.09
				2018	0	$ 43.06
		Vehicles-Class 2		2016	10	$ 66.52
				2018	0	$ -
9L620688 Total					**5978.28**	**$ 209,233.80**
9L620718	**EWR 15-093-41 Elec Svc Conv-Rec-**	Admin and Eng OH- Acct Use Only		2016	0	$ 819.97
				2017	0	$ 1,548.82
				2018	0	$ 26.68
		AFUDC Debt		2016	0	$ 132.38
				2017	0	$ 134.13
		Contractor Services- Other		2018	0	$ -
			HAUGLAND ENERGY GROUP LLC	2016	0.4	$ 42,070.25
				2017	0.9	$ 116,874.05
		Engin and Super OH- Acct Use Only		2016	0	$ 6,787.54
				2017	0	$ 17,721.47
				2018	0	$ 1,358.46
		Labor Straight Time Exempt		2016	34.5	$ 1,511.16
				2017	2.5	$ 108.60
				2018	2	$ 103.85
		Lobby Stock Loader-Acct Use Only		2016	0	$ 4,584.31
				2017	0	$ 1,036.11
				2018	0	$ 30.12
		Materials- Purchased	**MARMON UTILITY LLC**	2016	0	$ 34.81
		Materials- Stores	**ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN**	2016	3	$ 75.90
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	3	$ 145.52
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER,	2017	4	$ 185.18
			BAR, ANTI-SWAY, CABLE SPACERS ON TANGENT CABLES, POLYETHYLE	2016	6	$ 98.39
			BLADE, CONTACT, BRONZE, 25/27 KV, 300 AMP, SOLID DOOR, FITS CHAN	2016	2	$ 65.61
			BRACKET, ANGLE, EXTENDED TAP, HENDRIX, SPACER CABLE SINGLE CI	2016	2	$ 329.13
			BRACKET, CABLE, TERMINATOR MOUNTING, ALUM, 0.75 THRU 3.00 IN D C	2016	1	$ 16.67
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	6	$ 189.67
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	6	$ 662.64
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2016	6	$ 430.45
			CABLE, BARE, 052 AWA MESSENGER FOR SPACER CABLE	2017	1384	$ 1,295.77
			CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 STR	2016	4200	$ 7,314.97
				2017	1422	$ 2,488.43
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR,	2017	114	$ 217.20
			CABLE, INSULATED, AERIAL TRIPLEX, 600V, 4/0 AAC CONDUCTOR, 2/0 AL	2017	1462	$ 1,763.39
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 2/0 AWG	2018	-1462	$ (1,763.39)
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 4/0 AWG	2018	1462	$ 1,902.74
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	10	$ 2,115.65
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	2	$ 211.07
				2017	2	$ 211.20
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	-4	$ (274.23)
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	13	$ 891.25
			EXTENSION, POLE DIAMETER RANGE, 14-1/2 IN, FOR USE WITH SMALL MO	2016	3	$ 163.20
			EXTENSION, POLE TOP, SPACER CABLE, 75 IN L, GALV STEEL, HEAVY DU	2017	1	$ 190.00
			FITTING, SIDEWALK GUY, 2-1/2 IN, CLAMP END, GALVANIZED STEEL	2016	1	$ 8.65
			FITTING, SIDEWALK GUY, 2-1/2 IN, POLE END, GALVANIZED STEEL	2016	1	$ 8.69
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3	2016	1	$ 173.32
			POLE, SYP, 50 FT, CL 1, CCA	2016	13	$ 6,678.69
			POLE, SYP, 55 FT, CL 1, PENTA	2016	1	$ 670.35
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2016	68	$ 1,809.82
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, (0.642-0.723 IN DIA), 35 KV	2016	3	$ 1,980.15
				2017	-1	$ (660.05)
			SWITCH, DISCONNECT, OUTDOOR, AIR, 35 KV, 900A, LOADBUSTER, VERT	2016	3	$ 2,048.47
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 96.00
				2017	0	$ 101.58
				2018	0	$ 105.85
		Miscellaneous Accounting Adjustments		2018	0	$ 0.00
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 260.07
				2017	0	$ 18.15
				2018	0	$ 14.55
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 557.23

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620718	**EWR 15-093-41 Elec Svc Conv-Rec-**	Payroll Benefit Loader- Acct Use Only		2017	0	$ 41.32
				2018	0	$ 40.54
		Stores Loader- Acct Use Only		2016	0	$ 1,221.38
				2017	0	$ (8.97)
				2018	0	$ 171.27
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 61.54
				2017	0	$ 13.46
				2018	0	$ 6.97
		Vehicles-Class 2		2016	24.5	$ 181.79
				2018	0	$ -
9L620718 Total					**8802.8**	**$ 229,409.94**
9L620788	**EWR 15-093-41 Elec Svc Conv-Rec-**	Admin and Eng OH- Acct Use Only		2016	0	$ 720.89
				2017	0	$ 763.45
				2018	0	$ 22.51
		AFUDC Debt		2016	0	$ 108.60
				2017	0	$ 115.67
		Contractor Services		2017	0	$ -
				2018	0	$ (0.00)
			LJM CONSTRUCTION LLC	2016	1	$ 795.00
		Contractor Services- Other		2017	0	$ 0.00
				2018	0	$ (0.00)
			HAUGLAND ENERGY GROUP LLC	2016	0.3	$ 27,726.15
				2017	0.68	$ 73,330.62
		Contractor- Unit Price		2017	0	$ -
				2018	0	$ -
			JCR CONSTRUCTION CO INC	2016	1	$ 547.00
		Engin and Super OH- Acct Use Only		2016	0	$ 6,500.67
				2017	0	$ 10,566.56
				2018	0	$ 1,214.53
		Labor Overtime Non-Exempt		2016	19.75	$ 1,476.14
				2018	0	$ (0.00)
		Labor Straight Time Exempt		2016	38.5	$ 1,701.49
				2017	3.5	$ 152.03
				2018	0	$ (0.00)
		Labor Straight Time Non-Exempt		2016	93	$ 4,674.01
				2017	8	$ 402.25
				2018	0	$ -
		Lobby Stock Loader-Acct Use Only		2016	0	$ 3,466.65
				2017	0	$ (671.63)
				2018	0	$ 12.41
		Materials- Purchased	**GRAYBAR ELECTRIC CO INC**	2017	0	$ (2.89)
			STANDARD REGISTER COMPANY	2017	3	$ 394.29
		Materials- Stores	**ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN**	2016	5	$ 126.50
			ARRESTER, SURGE, 12.47 KV MGY SYSTEM VOLTAGE, 9 KV ARRESTER R	2016	0	$ -
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	3	$ 145.52
			BAR, ANTI-SWAY, CABLE SPACERS ON TANGENT CABLES, POLYETHYLE	2016	1	$ 16.40
			BRACKET, ANGLE, EXTENDED TAP, HENDRIX, SPACER CABLE SINGLE CI	2016	3	$ 493.70
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	2	$ 59.54
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	1	$ 110.44
			BRACKET, TANGENT/ HENDRIX, 24 IN W/MC-2 MESSENGER CLAMP	2016	8	$ 573.93
			CABLE, BARE, 052 AWA MESSENGER FOR SPACER CABLE	2017	686	$ 642.27
			CABLE, BARE, SD/ANNEALED, CU, #2, 7 STR	2017	27	$ 20.64
			CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 STR,	2016	4200	$ 7,314.97
				2017	-2142	$ (3,730.64)
			CABLE, INSULATED, AERIAL TRIPLEX, 600V, 4/0 AAC CONDUCTOR, 2/0 AL	2016	1000	$ 1,206.15
				2017	-398	$ (480.05)
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 2/0 AWG A	2018	-602	$ (726.10)
			CABLE, INSULATED, AERIAL, AAC, TRIPLEX, 4/0 AWG, 600 V, W/ 4/0 AWG 6	2018	602	$ 783.48
			CONDUIT, ELECTRICAL, PVC, 4 IN DIA, 10 FT LG, SCH 40, BELLED ONE EN	2016	20	$ 27.23
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	4	$ 846.26
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	2	$ 211.10
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	13	$ 891.32
			FITTING, SIDEWALK GUY, 2-1/2 IN, CLAMP END, GALVANIZED STEEL	2016	2	$ 17.79
			FITTING, SIDEWALK GUY, 2-1/2 IN, POLE END, GALVANIZED STEEL	2016	2	$ 17.75
			GRIP, CABLE, UNDERGROUND, EYE DIAMETER: 1- 7/8", 3.00" - 3.49", ROTA	2017	2	$ 289.20

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620788	**EWR 15-093-41 Elec Svc Conv-Rec-**	Materials- Stores	**MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I**	2016	1	$ 173.32
			POLE, SYP, 40 FT, CL 1, CCA	2016	1	$ 368.56
			POLE, SYP, 40 FT, CL 2, CCA	2016	5	$ 1,681.11
			POLE, SYP, 45 FT, CL 2, CCA	2016	1	$ 407.94
			POLE, SYP, 50 FT, CL 1, CCA	2016	7	$ 3,582.36
			SPACER, CABLE, HENDRIX - 46KV, POLYETHYLENE W/CONDUCTOR CLAM	2016	39	$ 1,037.99
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 91.38
				2017	0	$ 42.00
				2018	0	$ 91.08
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 1,351.27
				2017	0	$ 92.56
				2018	0	$ -
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 2,895.23
				2017	0	$ 212.02
				2018	0	$ (0.00)
		Refuse Removal and Recycling		2017	0	$ -
				2018	0	$ (0.00)
			WASTE MANAGEMENT	2016	1	$ 597.85
				2017	3	$ 90.00
		Stores Loader- Acct Use Only		2016	0	$ 984.69
				2017	0	$ (29.48)
				2018	0	$ 70.52
		UVL-Contractor Labor		2017	0	$ -
				2018	0	$ -
			0104296 - MISC CONTRACTOR WORK	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 2,323.04
				2017	0	$ 211.83
				2018	0	$ 0.01
		Vehicles-Class 2		2016	24	$ 178.08
				2018	0	$ -
9L620788 Total					**3691.73**	**$ 159,327.16**
9L620811	**Elec Svc Conv-Rec-Rel Due To Loa**	Admin and Eng OH- Acct Use Only		2016	0	$ 285.70
				2017	0	$ 773.07
				2018	0	$ (3.17)
		AFUDC Debt		2016	0	$ 41.00
				2017	0	$ 603.86
				2018	0	$ (145.03)
		AFUDC Equity		2017	0	$ 1.59
		Contractor Services- Other		2018	0	$ -
			HAUGLAND ENERGY GROUP LLC	2016	0.22	$ 20,332.51
				2017	0.54	$ 54,863.09
		Engin and Super OH- Acct Use Only		2016	0	$ 3,372.18
				2017	0	$ 9,300.55
				2018	0	$ (703.60)
		Engineering Design Services		2018	0	$ -
			CHA CONSULTING INC	2017	0.07	$ 408.00
		Labor Overtime Non-Exempt		2017	18.5	$ 1,556.14
				2018	0	$ -
		Labor Straight Time Exempt		2016	30.5	$ 1,345.71
				2017	5	$ 217.19
				2018	4	$ 207.70
		Labor Straight Time Non-Exempt		2017	91	$ 4,349.20
				2018	0	$ -
		Lobby Stock Loader-Acct Use Only		2016	0	$ 706.81
				2017	0	$ (8.61)
				2018	0	$ 314.59
		Materials- Stores		2016	0	$ -
				2018	0	$ -
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2016	1	$ 25.30
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	6	$ 195.35
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	2	$ 220.88
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2017	384	$ 92.74
			CABLE, COVERED, ACSR/AW, 1/C, 1/0 AWG, 6/1 STR, 75 DEG C, 175 MILS P	2018	1164	$ 972.02

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L620811	Elec Svc Conv-Rec-Rel Due To Loa	Materials- Stores	CABLE, COVERED, POLY 175 MIL, ACSR/AW, 1/0, 75C, 6/1 STR, 1 COND, MC	2017	28	$ 23.41
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600 V, AAC, 1/0, 7-STR, TRIPLE	2017	52	$ 40.57
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	1	$ 211.57
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	3	$ 316.63
			CUTOUT, FUSE, OPEN, 100 A, 12 KA INTERRUPTING CURRENT ASYMMETR	2018	1	$ 65.87
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	12	$ 822.70
			FITTING, SIDEWALK GUY, 2-1/2 IN, CLAMP END, GALVANIZED STEEL	2016	1	$ 8.65
			FITTING, SIDEWALK GUY, 2-1/2 IN, POLE END, GALVANIZED STEEL	2016	1	$ 8.69
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2016	2	$ 346.54
			POLE, 45 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	1	$ 417.21
			POLE, SYP, 40 FT, CL 2, CCA	2016	3	$ 1,008.67
			POLE, SYP, 45 FT, CL 2, CCA	2016	2	$ 815.89
		Meals		2017	2	$ 40.00
				2018	0	$ -
			JP MORGAN CHASE BANK	2017	1	$ 46.72
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 83.61
				2017	0	$ 75.70
				2018	0	$ (52.61)
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 231.60
				2017	0	$ 1,021.13
				2018	0	$ 29.05
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 496.23
				2017	0	$ 2,352.95
				2018	0	$ 81.06
		Reimbursables- Other		2017	0	$ (3,328.72)
				2018	0	$ -
		Reimbursements		2017	0	$ -
		Stores Loader- Acct Use Only		2016	0	$ 190.90
				2017	0	$ 41.26
				2018	0	$ 67.99
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 17.01
				2017	0	$ 2,647.09
				2018	0	$ 12.09
		Vehicles-Class 2		2016	24	$ 178.08
				2017	3.5	$ 37.66
				2018	0	$ (0.00)
9L620811 Total					1844.33	$ 107,679.97
9L621020	EWR 16-018-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2016	0	$ 3,007.06
				2017	0	$ (37.25)
				2018	0	$ 13.38
		AFUDC Debt		2016	0	$ 445.22
				2017	0	$ 91.06
		Contractor Materials		2018	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2017	1	$ 977.54
		Contractor Services- Other		2018	0	$ (0.00)
			GRATTAN LINE CONSTRUCTION CORP	2016	6.72	$ 136,731.73
				2017	-0.08	$ (784.16)
		Contractor- Unit Price		2018	0	$ -
			JCR CONSTRUCTION CO INC	2016	1	$ 944.00
				2017	1	$ 497.00
		Contractor Vehicles + Equip		2018	0	$ 0.00
			GRATTAN LINE CONSTRUCTION CORP	2016	3.88	$ 76,485.09
				2017	0.08	$ 824.00
		Engin and Super OH- Acct Use Only		2016	0	$ 33,924.81
				2017	0	$ (734.66)
				2018	0	$ 610.32
		Labor Overtime Non-Exempt		2016	22	$ 1,489.57
				2018	0	$ -
		Labor Straight Time Exempt		2016	58.5	$ 2,547.16
				2018	2	$ 103.85
		Labor Straight Time Non-Exempt		2016	96.5	$ 4,368.98
				2018	0	$ 0.00
		Lobby Stock Loader-Acct Use Only		2016	0	$ 3,988.02

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L621020	EWR 16-018-41 Elec Svc Conv-Rec-	Lobby Stock Loader-Acct Use Only		2017	0	$ (149.80)
				2018	0	$ 65.09
		Materials- Purchased		2018	0	$ -
			ARRESTER, SURGE, 12.47 KV MGY SYSTEM VOLTAGE, 9 KV ARRESTER R	2016	-1	$ (59.38)
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	-1	$ (31.04)
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2016	-1	$ (173.27)
		Materials- Stores		2018	0	$ -
			BLADE, CONTACT, BRONZE, 25/27 KV, 300 AMP, SOLID DOOR, FITS CHAN	2016	3	$ 99.80
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	12	$ 364.11
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	0	$ 0.01
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2016	51	$ 12.29
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN/AW	2016	98	$ 45.33
			CABLE, BARE, ACSR/AW, 477 KCMIL, 0.814 IN DIA, 18/1 STR, PELICAN/AW	2016	294	$ 264.85
			CABLE, INSULATED, AERIAL QUADRAPLEX, 600V, 4/0 AAC CONDUCTOR, 4	2016	150	$ 283.09
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600 V, AAC, 1/0, 7-STR, TRIPLE	2016	210	$ 162.81
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600V, #2 AAC CONDUCTOR, #2	2016	3	$ 1.53
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	8	$ 1,644.57
				2017	-3	$ (616.72)
			CROSSARM, FIBERGLASS, 10 FT LG, 3 5/8 IN X 4 5/8 IN, W/ALLEY ARM BRA	2016	0	$ -
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	18	$ 1,899.76
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100 A	2016	15	$ 1,029.60
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2016	0	$ (0.01)
			POLE, 40 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	1	$ 353.88
			POLE, 45 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	1	$ 417.21
			POLE, 50 FT LG, CLASS 2, SOUTHREN YELLOW PINE, CCA TREATED	2018	-1	$ (470.03)
			POLE, SYP, 40 FT, CL 2, CCA	2016	5	$ 1,679.59
			POLE, SYP, 45 FT, CL 2, CCA	2016	9	$ 3,662.47
			POLE, SYP, 50 FT, CL 2, CCA	2016	2	$ 911.76
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, (0.642-0.723 IN DIA), 35 KV	2016	15	$ 9,986.76
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.772-0.860 IN DIA, 34.5 KV	2016	0	$ -
		Meals		2016	3	$ 60.00
				2018	0	$ -
		Mileage		2016	68	$ 36.72
				2018	0	$ -
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 2,277.95
				2017	0	$ 3.50
				2018	0	$ 45.77
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 1,446.63
				2018	0	$ 14.55
		Other Outside Services- Tree Planned		2018	0	$ 0.00
			ASPLUNDH TREE EXPERT CO	2016	5.27	$ 13,922.77
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 3,099.53
				2018	0	$ 40.55
		Police Services and Traffic Control		2018	0	$ -
			CITY OF LACONIA	2016	1	$ 285.00
			NEW ENGLAND TRAFFIC CONTR SVCS	2016	2.01	$ 12,205.40
				2017	-0.55	$ (3,829.50)
		Refuse Removal and Recycling		2018	0	$ (0.00)
			WASTE MANAGEMENT	2016	5	$ 964.84
		Stores Loader- Acct Use Only		2016	0	$ 1,739.23
				2017	0	$ 33.42
				2018	0	$ 57.98
		UVL- Police Serv + Traffic Cntrl		2018	0	$ -
			0103006 - MISC CONTRACTOR WORK	2016	0	$ -
			0103649 - MISC CONTRACTOR WORK	2016	0	$ -
			0104985 - MISC CONTRACTOR WORK	2016	0	$ 1,674.26
				2017	0	$ (1,674.26)
			0106237 - MISC CONTRACTOR WORK	2017	0	$ -
			0106973 - MISC CONTRACTOR WORK	2017	0	$ -
		UVL-Contractor Labor		2018	0	$ -
			0103006 - 16-018: 38H1 CONVERSION	2016	0	$ -
			0103649 - MISC CONTRACTOR WORK	2016	0	$ -
			0104296 - MISC CONTRACTOR WORK	2016	0	$ -

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L621020	EWR 16-018-41 Elec Svc Conv-Rec-	UVL-Contractor Labor	0104985 - MISC CONTRACTOR WORK	2016	0	$ 497.00
				2017	0	$ (497.00)
		UVL-Other Outside Serv-Tree Hr		2018	0	$ -
			0102085 - TREE TRIMMING	2016	0	$ -
			0102888 - TREE TRIMMING	2016	0	$ -
			0103577 - MISC TREE TRIMMING	2016	0	$ -
			0104202 - MISC TREE TRIMMING	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 2,585.01
				2018	0	$ 5.14
		Vehicles-Class 2		2016	13	$ 96.46
				2018	0	$ -
9L621020 Total					**1177.33**	**$ 321,967.93**
9L621052	EWR 16-018-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2016	0	$ 1,307.23
				2017	0	$ 1.82
				2018	0	$ 11.35
		AFUDC Debt		2016	0	$ 172.55
				2017	0	$ 38.63
		Contractor Services- Other		2018	0	$ 0.00
			GRATTAN LINE CONSTRUCTION CORP	2016	7.73	$ 87,380.79
		Contractor Vehicles + Equip		2018	0	$ 0.00
			GRATTAN LINE CONSTRUCTION CORP	2016	3.27	$ 34,314.65
		Engin and Super OH- Acct Use Only		2016	0	$ 16,096.50
				2018	0	$ 617.75
		Labor Overtime Non-Exempt		2016	8	$ 550.20
				2018	0	$ -
		Labor Straight Time Exempt		2016	23.5	$ 1,058.82
				2018	0	$ -
		Labor Straight Time Non-Exempt		2016	58	$ 2,636.60
				2018	0	$ -
		Lobby Stock Loader-Acct Use Only		2016	0	$ 998.38
				2017	0	$ 16.05
		Materials- Stores	ARRESTER, SURGE, 12.47 KV MGY SYSTEM VOLTAGE, 9 KV ARRESTER R	2016	3	$ 177.93
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	3	$ 144.75
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	11	$ 341.84
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2016	388	$ 93.48
				2017	-180	$ (43.37)
			CABLE, COVERED, POLY 175 MIL, ACSR/AW, 1/0, 75C, 6/1 STR, 1 COND, MC	2016	388	$ 323.72
				2017	-180	$ (150.18)
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600 V, AAC, 1/0, 7-STR, TRIPLE	2016	80	$ 62.02
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	2	$ 211.09
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	10	$ 685.36
				2017	4	$ 273.15
			FITTING, SIDEWALK GUY, 2-1/2 IN, CLAMP END, GALVANIZED STEEL	2016	1	$ 8.99
			FITTING, SIDEWALK GUY, 2-1/2 IN, POLE END, GALVANIZED STEEL	2016	1	$ 9.06
			POLE, SYP, 40 FT, CL 2, CCA	2016	8	$ 2,687.35
			POLE, SYP, 45 FT, CL 2, CCA	2016	2	$ 814.81
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 482.78
				2018	0	$ 48.14
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ -
		Non Productive Time Loader- Acct Use Only		2016	0	$ 730.67
				2018	0	$ -
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 1,565.55
				2018	0	$ -
		Police Services and Traffic Control		2018	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2016	0.13	$ 823.26
		Stores Loader- Acct Use Only		2016	0	$ 274.88
				2017	0	$ (4.74)
		UVL-Contractor Labor		2018	0	$ -
			0103649 - MISC CONTRACTOR WORK	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 1,170.12
				2018	0	$ (0.00)
9L621052 Total					**641.63**	**$ 155,931.98**
9L621077	EWR 16-018-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2016	0	$ 1,653.85
				2017	0	$ 63.64

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L621077	EWR 16-018-41 Elec Svc Conv-Rec-	Admin and Eng OH- Acct Use Only		2018	0	$ 85.15
		AFUDC Debt		2016	0	$ 197.96
				2017	0	$ 49.07
		Contractor Services- Other		2018	0	$ (0.00)
			GRATTAN LINE CONSTRUCTION CORP	2016	7.23	$ 121,299.23
				2017	-0.52	$ (16,226.80)
		Contractor Vehicles + Equip		2018	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2016	2.76	$ 26,058.07
				2017	0.52	$ 18,011.00
		Employee Expense Other		2016	0	$ 34.96
				2018	0	$ -
		Engin and Super OH- Acct Use Only		2016	0	$ 19,698.31
				2017	0	$ 651.88
				2018	0	$ 4,631.74
		Labor Overtime Non-Exempt		2016	29	$ 1,802.55
				2018	0	$ 0.00
		Labor Straight Time Exempt		2016	22	$ 957.66
				2018	0	$ 0.00
		Labor Straight Time Non-Exempt		2016	27	$ 1,237.86
				2018	0	$ -
		Lobby Stock Loader-Acct Use Only		2016	0	$ 2,042.31
				2017	0	$ 50.30
		Materials- Purchased	ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER,	2016	-1	$ (48.19)
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	-1	$ (68.54)
		Materials- Stores	ARRESTER, SURGE, 12.47 KV MGY SYSTEM VOLTAGE, 9 KV ARRESTER R	2016	9	$ 534.01
			ARRESTER, SURGE, DISTRIBUTION CLASS, 9 KV, POLYMER, MOV, 7.65KV	2016	9	$ 434.25
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER,	2016	5	$ 240.42
			BRACKET, CUTOUT & ARRESTER, FERR / ALUM FITTINGS W/ MOUNTING I	2016	4	$ 121.55
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2016	3	$ 332.17
			CABLE, BARE, ACSR/AW, 1/0 AWG, (6/1 STR), RAVEN/AW	2017	85	$ 20.53
			CABLE, BARE, ACSR/AW, 4/0 AWG, 6/1 STR, PENGUIN/AW	2016	111	$ 51.35
			CABLE, BARE, ACSR/AW, 477 KCMIL, 0.814 IN DIA, 18/1 STR, PELICAN/AW	2016	335	$ 301.79
			CABLE, COVERED, POLY 175 MIL, ACSR/AW, 1/0, 75C, 6/1 STR, 1 COND, MC	2017	85	$ 71.04
			CABLE, INSULATED, 1 PH PRIMARY URD, JACKETED, 35 KV, AL, 1/0, W/ CC	2016	30	$ 65.91
			CABLE, INSULATED, AERIAL TRIPLEX, XLP, 600 V, AAC, 1/0, 7-STR, TRIPLE	2016	91	$ 70.55
				2017	219	$ 169.74
			CONNECTOR, ELBOW, LOADBREAK, AL, 1/0 STR AWG, 345 MIL, 1.095" - 1.	2016	6	$ 143.68
			CONNECTOR, ELBOW, LOADBREAK, AL, 1/0 STR, 345 MIL, 1.095" - 1.155",	2016	2	$ 187.99
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2016	1	$ 208.11
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTER	2016	4	$ 422.65
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2016	30	$ 2,056.09
				2017	-1	$ (68.54)
			MOUNT, TRANSFORMER CLUSTER, LG, AL, 250-500 KVA, 3 POS, NEMA TY	2016	1	$ 426.82
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2016	4	$ 693.74
			POLE, SYP, 40 FT, CL 2, CCA	2016	1	$ 335.92
			POLE, SYP, 45 FT, CL 1, CCA	2016	1	$ 445.99
			POLE, SYP, 45 FT, CL 2, CCA	2016	4	$ 1,629.15
				2017	-1	$ (407.40)
			POLE, SYP, 50 FT, CL 2, CCA	2016	1	$ 453.98
				2017	1	$ 464.17
			SPLICE, INSULATED, COMPRESSION/URD, 1/0 STR, 35 KV, SUB 287805 & 3	2016	3	$ 215.02
			SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 0.741-0.814 IN DIA, 35 KV,	2016	3	$ 2,078.89
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 312.32
				2017	0	$ 6.15
				2018	0	$ 360.91
		Miscellaneous Accounting Adjustments		2018	0	$ -
				2019	0	$ 0.00
		Non Productive Time Loader- Acct Use Only		2016	0	$ 688.03
				2018	0	$ (0.01)
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 1,474.25
				2018	0	$ (0.01)
		Police Services and Traffic Control		2018	0	$ -
			NEW ENGLAND TRAFFIC CONTR SVCS	2016	1.2	$ 8,320.43
				2017	0.61	$ 3,542.76
		Stores Loader- Acct Use Only		2016	0	$ 817.60

accounting_work_order	accounting_work_order_descript	cost_element_description	Description	year	Sum of quantity	Sum of amount
9L621077	EWR 16-018-41 Elec Svc Conv-Rec-	Stores Loader- Acct Use Only		2017	0	$ (12.21)
		UVL- Police Serv + Traffic Cntrl		2018	0	$ -
			0103006 - MISC CONTRACTOR WORK	2016	0	$ -
			0103649 - MISC CONTRACTOR WORK	2016	0	$ -
			0104985 - MISC CONTRACTOR WORK	2016	0	$ 296.00
				2017	0	$ (296.00)
			0106237 - MISC CONTRACTOR WORK	2017	0	$ -
			0106973 - MISC CONTRACTOR WORK	2017	0	$ -
		UVL-Contractor Labor		2018	0	$ -
			0103649 - MISC CONTRACTOR WORK	2016	0	$ -
			0104296 - MISC CONTRACTOR WORK	2016	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 1,181.35
				2018	0	$ -
9L621077 Total					1133.8	$ 210,573.15
9L622124	Elec Svc Conv-Rec-Rel Due To Loa	Admin and Eng OH- Acct Use Only		2016	0	$ 3.41
				2017	0	$ 2,587.22
		AFUDC Debt		2016	0	$ 0.11
				2017	0	$ 22.06
		Contractor Services- Other		2017	0	$ -
			GRATTAN LINE CONSTRUCTION CORP	2017	4.73	$ 74,741.24
		Contractor Vehicles + Equip		2017	0	$ 0.00
			GRATTAN LINE CONSTRUCTION CORP	2017	1.77	$ 28,022.00
		Engin and Super OH- Acct Use Only		2016	0	$ 44.45
				2017	0	$ 21,883.14
		Labor Straight Time Exempt		2016	5	$ 192.31
				2017	11	$ 469.74
		Labor Straight Time Non-Exempt		2017	3	$ 107.76
		Lobby Stock Loader-Acct Use Only		2017	0	$ 1,525.56
		Materials- Stores		2017	0	$ 0.00
			ANCHOR, SINGLE HELIX, SOCKET DRIVE, 8000#, 10 IN	2017	1	$ 24.01
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 15 KV, SILICONE	2017	0	$ -
			ARRESTER, SURGE, LIGHTNING, DISTRIBUTION CLASS, 9 KV, POLYMER,	2017	3	$ 140.61
			BRACKET, CUTOUT OR TERM CBL & ARRESTER 3 PHASE, FIBERGLASS W	2017	1	$ 90.12
			CABLE, COVERED, 2 LAYER POLY, 150 MIL, 90 C, AAC, 477 KCMIL, 19 STR	2017	1400	$ 2,430.60
			CONNECTOR, TRANSFORMER,ROD TO 4 HOLE NEMA PAD, FOR COPPER	2017	8	$ 158.25
			CROSSARM, FIBERGLASS, 10 FT DEADEND, 3-5/8 X 4-5/8, WITH CENTER M	2017	3	$ 580.61
			CROSSARM, FIBERGLASS, 10 FT TANGENT, 3-5/8 X 4-5/8 IN, WITH CENTEF	2017	6	$ 633.26
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	10	$ 681.68
			CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE, 25 KV, 150 KV BIL, 100	2017	7	$ 478.64
			MOUNT, TRANSFORMER CLUSTER, MEDIUM, ALUMINUM, 37.5-167 KVA, 3 I	2017	1	$ 173.31
			POLE, SYP, 35 FT, CL 2, CCA	2017	1	$ 255.77
			POLE, SYP, 50 FT, CL 2, CCA	2017	3	$ 1,392.61
			POLE, SYP, 50 FT, CL 2, PENTA	2017	0	$ -
		Mileage		2017	12	$ 6.42
		Misc Dist Exp Capitalized OH-Acct Use Only		2016	0	$ 0.03
				2017	0	$ 993.07
		Miscellaneous Accounting Adjustments		2017	0	$ -
				2018	0	$ -
				2019	0	$ (0.00)
		Non Productive Time Loader- Acct Use Only		2016	0	$ 33.10
				2017	0	$ 96.48
		Payroll Benefit Loader- Acct Use Only		2016	0	$ 70.91
				2017	0	$ 219.23
		Police Services and Traffic Control		2017	0	$ 0.00
			NEW ENGLAND TRAFFIC CONTR SVCS	2017	1.56	$ 3,681.54
		Stores Loader- Acct Use Only		2017	0	$ 100.24
		UVL-Contractor Labor		2017	0	$ -
			0108059 - 38H3 EXTENSION	2017	0	$ -
			0108059 - MISC CONTRACTOR WORK	2017	0	$ -
			0108868 - FINAL PHASE OF 38H3 CONVERSION	2017	0	$ -
		Vehicle Costs Clearing- Acct Use Only		2016	0	$ 18.61
				2017	0	$ 113.73
9L622124 Total					1483.06	$ 141,971.83
Grand Total					41018	$ 2,643,839.04

Project	Version	Charge Types	May 2015	Jun 2015
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Materials	$0	$0
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Other	$0	$12
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Outside Services	$0	$0
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Overtime Labor	$0	$0
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Straight Time Labor	$911	$3,677
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Total Direct Costs	$911	$3,688
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	AFUDC	$1	$8
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	AS&E	($4)	$57
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	E&S	$697	$2,672
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	MDEC	$155	$190
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Payroll	$552	$2,229
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Stores & Lobby Stock	$0	$0
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Vehicle	$295	$775
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Total Allocations	$1,696	$5,931
A15N01:CONVERT LACONIA 4KV TO 12.47KV	Actual	Total Costs	$2,607	$9,619

Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016
$0	$0	$23,997	$1,938	$7,202	$10,958	$394	($4,782)	$22,840
$0	($3)	$1,124	($1,124)	$38	$0	$0	($3,100)	$6,503
$543	$1,684	$5,105	$55,638	$205,972	$52,753	$39,564	$98,029	($3,444)
$0	$0	$263	$1,145	$2,293	$703	$751	$606	$0
$2,351	($716)	$441	$34	$558	$84	$96	$173	$319
$2,894	$965	$30,930	$57,631	$216,063	$64,498	$40,805	$90,926	$26,218
$16	$17	$71	$166	$379	$688	$583	$324	$286
$59	$20	$432	$303	$2,025	$1,354	$289	$1,284	$1,017
$1,137	($314)	$187	$8,824	$49,411	$31,916	$7,419	$35,718	$17,925
$166	($33)	$58	$680	$5,743	$1,261	$1,080	$5,201	$2,610
$1,425	($434)	$427	$714	$1,729	$477	$430	$421	$172
$0	$0	$11,225	$4,550	$3,038	($1,631)	$384	$149	$7,484
$382	($167)	$62	$238	$452	$101	$165	$97	$70
$3,186	($912)	$12,463	$15,475	$62,776	$34,166	$10,350	$43,193	$29,565
$6,080	$53	$43,393	$73,105	$278,839	$98,664	$51,155	$134,119	$55,782

Apr 2016	May 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
($20,352)	($50)	$0	$0	$64,650	$80,115	$18,446	$559	$2,769
$5	($8,060)	$0	$0	$0	($161)	$34	($7,361)	$6
$503	$0	$778	$0	$9,593	$152,505	$465,431	$187,906	($94,550)
$0	$0	$0	$0	$0	$375	$376	$3,594	$2,179
$1,821	$3,566	$2,132	$2,606	$166	$2,750	$2,766	$5,745	$8,097
($18,023)	($4,544)	$2,910	$2,606	$74,410	$235,584	$487,054	$190,443	($81,498)
$98	$48	($217)	$12	$42	$123	$259	$464	$597
($148)	($0)	$79	$47	$901	$1,658	$2,796	$4,145	$280
$1,053	$1,853	$1,108	$602	$38	$23,627	$70,541	$29,799	($12,018)
$153	$270	$161	$120	$8	$4,725	$47	$20	($8)
$985	$1,928	$1,153	$1,410	$90	$1,690	$1,699	$5,051	$5,558
($634)	($4)	$2,985	$0	$25,152	$6,850	$8,428	$777	($1,130)
$416	$464	$267	$219	$25	$1,018	$573	$4,229	$3,535
$1,924	$4,558	$5,535	$2,410	$26,256	$39,692	$84,342	$44,484	($3,186)
($16,099)	$14	$8,445	$5,016	$100,665	$275,276	$571,396	$234,927	($84,684)

Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Oct 2017
$1,123	($2,261)	($1,700)	($17,756)	$0	$0	$0	$22	$0
($5,878)	$0	$52	$6	$0	$0	$0	$0	$0
$326,248	($2,875)	$28,291	$61,797	$57,447	$0	$0	$222	$0
$2,986	$0	$998	$0	$0	$0	$0	$0	$0
$5,076	$431	$1,190	$257	$0	$0	$0	$2	$0
$329,555	($4,706)	$28,831	$44,304	$57,447	$0	$0	$246	$0
$531	$233	$59	$68	$55	$58	$58	$58	$58
$4,873	$36	$64	$1,087	$2,005	($58)	$0	$3	($0)
$50,679	($480)	$6,789	$13,683	$12,621	$0	$0	$49	($1)
$34	($22)	$309	$622	$574	$0	$0	$3	($0)
$4,460	$233	$1,184	$139	$0	$0	$0	$1	($7)
$1,184	$7,511	($10,284)	$86	$0	($2,922)	$0	$0	$0
$3,237	$52	$725	$83	$0	$0	$0	$0	$0
$64,998	$7,563	($1,156)	$15,767	$15,255	($2,922)	$58	$115	$50
$394,553	$2,858	$27,675	$60,071	$72,702	($2,922)	$58	$361	$50

Nov 2017	Dec 2017	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Aug 2018	Total Costs
$0	($585)	$197	$13,426	$0	$0	$0	($444)	$200,705
$0	$2	$7	($461)	$0	$0	$0	$1	($18,358)
$0	$5,432	$15,716	$1,714	$0	$0	($0)	$4,229	$1,676,231
$0	$78	$349	$101	$0	$0	$0	$53	$16,849
$0	$179	$1,037	$792	$0	$0	$145	$308	$46,993
$0	$5,106	$17,305	$15,571	$0	$0	$145	$4,147	$1,922,420
$58	$58	$58	$59	$59	$59	($380)	$0	$5,114
$0	$38	$131	$106	$0	$0	$2	$31	$24,912
$0	$2,241	$6,867	$1,184	$0	$0	$78	$1,674	$367,577
$0	$175	$535	$89	$0	$0	$7	$143	$25,075
$0	$133	$735	$457	$0	$0	$77	$192	$35,311
$0	$0	$766	$3,415	$0	$0	$0	$0	$67,379
$0	$56	$314	$110	$0	$0	$7	$116	$17,914
$58	$2,701	$9,406	$5,419	$59	$59	($211)	$2,155	$543,281
$58	$7,807	$26,711	$20,990	$59	$59	($66)	$6,302	$2,465,701

funding_project	DL9R

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Values Sum of quantity	Sum of amount
2016	DL7TD113	DISTRIBUTION LINE ANNUAL - 20:	Miscellaneous Accounting Adjustments		0	$ 0.00
	DL7TD113 Total				0	$ 0.00
	DL7TD114	DISTRIBUTION LINE ANNUAL - 20:	Admin and Eng OH- Acct Use Only		0	$ 15.85
			Engin and Super OH- Acct Use Only		0	$ 250.59
			Labor Straight Time Non-Exempt		20	$ 761.00
			Materials- Purchased	MILL METALS CORP	1	$ 694.00
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ 36.49
			Miscellaneous Accounting Adjustments		0	$ 0.00
			Non Productive Time Loader- Acct Use Only		0	$ 111.79
			Payroll Benefit Loader- Acct Use Only		0	$ 274.58
	DL7TD114 Total				21	$ 2,144.30
	DL7TD115	Distribution line annual - 2015	Admin and Eng OH- Acct Use Only		0	$ 13,886.25
			Compliance Assistance-Fees-Plans	STATE OF NEW HAMPSHIRE TREASURER	0	$ 1,390.27
			Contractor Labor	I C REED & SONS INC	1	$ 31,907.22
				UTILITY SERVICE & ASSISTANCE	0	$ -
			Contractor Materials	JCR CONSTRUCTION CO INC	0	$ 70.20
				UTILITY SERVICE & ASSISTANCE	0	$ 30.25
			Contractor Services- Other	I C REED & SONS INC	2.62	$ 71,394.37
				JCR CONSTRUCTION CO INC	2.26	$ 68,533.99
				THREE PHASE LINE CONST INC	1.36	$ 28,248.36
				UTILITY SERVICE & ASSISTANCE	17.39	$ 299,111.99
			Contractor- Unit Price	UTILITY SERVICE & ASSISTANCE	0.01	$ 164.00
			Contractor Vehicles + Equip	I C REED & SONS INC	3.39	$ 119,584.77
				JCR CONSTRUCTION CO INC	2.67	$ 138,227.08
				THREE PHASE LINE CONST INC	0.75	$ 14,815.40
				UTILITY SERVICE & ASSISTANCE	11.31	$ 218,657.30
			Employee Expense Other	COOS MOTOR INN	2	$ 457.74
			Engin and Super OH- Acct Use Only		0	$ 250,348.65
			Environmental Outside Services	TIGHE & BOND CONS ENG	0.04	$ 619.75
			Exempt Hours Beyond Schedule-Unpaid		17.5	$ 655.34
			Fees + Payments- Other	COOS MOTOR INN	0.5	$ 76.29
			IT Outside Services	JCR CONSTRUCTION CO INC	0.02	$ 850.00
			Labor Overtime Non-Exempt		67.5	$ 4,553.62
			Labor Straight Time Exempt		507.4	$ 23,193.44
			Labor Straight Time Non-Exempt		70.5	$ 2,492.06
			Lobby Stock Loader-Acct Use Only		0	$ 16,865.85
			Materials- Stores	ANCHOR, SCREW, 10-12 DOUBLE HELIX, W/ TWINE	1	$ 107.04
				ANCHOR, SCREW, TRIPLE HELIX, TWIN EYE FITTIN	2	$ 334.16
				ANCHOR, SINGLE HELIX, 10,000#, 12 IN	38	$ 1,589.34
				BALL, CLEVIS, Y, HOT LINE TYPE, LONG, GALV STE	15	$ 202.42
				BOLT, DOUBLE ARM, 3/4 IN, 24 IN L, GALV STEEL, V	9	$ 36.78
				BOLT, DOUBLE ARM, 3/4 IN, 26 IN L, GALV STEEL, V	6	$ 27.03
				BOLT, EYE, 3/4 IN X 12 IN, GALV STEEL	1	$ 8.98
				BOLT, EYE, 3/4 IN X 14 IN, GALV STEEL	4	$ 37.50
				BOLT, MACHINE, 1/2 IN, 8 IN L, GALV STEEL, W/SQ	18	$ 13.03
				BOLT, MACHINE, 3/4 IN, 10 IN L, GALV STEEL, W/SQ	3	$ 4.08
				BOLT, MACHINE, 3/4 IN, 12 IN L, GALV STEEL, PER	38	$ 68.89
				BOLT, MACHINE, 3/4 IN, 14 IN L, GALV STEEL, SQ H	72	$ 118.06
				BOLT, MACHINE, 3/4 IN, 16 IN L, GALV STEEL, SQ H	42	$ 83.16
				BOLT, MACHINE, 3/4 IN, 18 IN L, GALV STEEL, W/SQ	38	$ 82.91
				BOLT, MACHINE, 5/8 IN, 10 IN L, GALV STEEL, W/SQ	18	$ 16.21
				BOLT, MACHINE, 5/8 IN, 12 IN L, GALV STEEL, SQ H	36	$ 38.75
				BOLT, MACHINE, 5/8 IN, 14 IN L, GALV STEEL, W/SQ	46	$ 54.20
				BOLT, MACHINE, 5/8 IN, 16 IN L, GALV STEEL, W/SQ	16	$ 19.17
				BOLT, MACHINE, 7/8 IN, 18 IN L, GALV STEEL, W/SQ	24	$ 145.63
				BRACE, CROSSARM, WOOD, 1-3/4 IN X 1-3/4 IN, 60	9	$ 133.86
				BRACKET, NEUTRAL OFFSET, 5/8 IN X 25 IN, GALV	14	$ 301.30
				CABLE, BARE, ALUMOWELD, 19-#10 AWG, (19 STR)	3403	$ 1,905.09
				CABLE, BARE, COPPERWELD, COPPER, #2, SOLID,	200	$ 795.98
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWEI	0	$ -
				CABLE, BARE, GUY WIRE, 125 FT COIL, ALUMOWEI	1500	$ 565.37
				CLAMP, QUADRANT, ALUMINUM, 3/0 - 795 ACSR, .5	12	$ 692.01

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2016	DL7TD115	Distribution line annual - 2015	Materials- Stores	CLAMP, STRAIN, STRT SIDE OPENING, 3/0 - 556.5 A	8	$ 87.65
				CLAMP, SUSP, AL, 0.70 TO 1.118, W/SOCKET EYE	10	$ 221.07
				CLEVIS, SHORT, 'Y' BALL, 30 K, GALV STEEL	1	$ 8.10
				CLEVIS, THIMBLE, GALV STEEL, 36K	4	$ 38.24
				CONNECTOR, GROUND, ROD, 3/4 IN, #8 TO 1/0	10	$ 18.50
				CONNECTOR, PARALLEL GROVE, AL, RUN : 3/0 TO	11	$ 39.40
				CONNECTOR, PARALLEL GROVE, W/ INHIBTOR, AL	11	$ 10.56
				CONNECTOR, WEDGE TAP, SHELL DRIVEN, INLINE	18	$ 598.14
				COVERING, OSMOWELD MPF 600, EPOXY MIX FOR	60	$ 1,584.20
				CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT D	5	$ 1,085.12
				CROSSARM, DISTRIBUTION, FIBERGLASS, 10 FT T/	1	$ 105.58
				CROSSARM, FIBERGLASS, 10 FT TANGENT, JUMBO	22	$ 2,286.95
				CUTOUT, FUSED, OPEN, LOADBUSTER, SILICONE,	3	$ 205.67
				DEADEND, AUTOMATIC, LONG BAIL, FOR 7/16" STR	96	$ 2,209.33
				DEADEND, AUTOMATIC, SHORT BAIL, FOR 7/16" ST	27	$ 527.63
				EYENUT, FOR 3/4 IN BOLT, GALVANIZED STEEL	3	$ 4.99
				GRIP, GUY, PREFORMED, FOR ALUMOWELD CABL	36	$ 618.36
				INSULATOR, PIN, POLYMER, VISE TOP, 35 KV, 1 IN	1	$ 23.02
				INSULATOR, POST, (PINEAPPLE), TIE TOP, POLYE	195	$ 8,125.49
				INSULATOR, SPOOL, CLASS 53-2, 750V	14	$ 12.14
				INSULATOR, STRAIN, FIBERGLASS, 78 IN, LT GRAY	56	$ 1,064.54
				INSULATOR, SUSPENSION, DEADEND, POLY, 23 IN	30	$ 1,470.34
				LINK, STRAIGHT, GALV STEEL, 5/8 IN, 40,000 LB	70	$ 335.49
				LUBRICANT, GREASE, FILM SILICON DRY, SPRAY C	1	$ 14.84
				MARKER, AERIAL, 5 IN X 10 IN, "1", BLK ON YELLOV	3	$ 42.70
				MARKER, AERIAL, 5 IN X 10 IN, "4", BLK ON YELLOV	1	$ 12.09
				MARKER, AERIAL, 5 IN X 10 IN, "5", BLK ON YELLOV	4	$ 54.62
				MARKER, AERIAL, 5 IN X 10 IN, "6" or "9", BLK ON YE	50	$ 679.52
				MARKER, AERIAL, 5 IN X 10 IN, "7", BLK ON YELLOV	10	$ 136.93
				MARKER, AERIAL, 5 IN X 10 IN, "O", BLK ON YELLOV	61	$ 794.17
				MARKER, GUY, FULL ROUND, PLASTIC, 8 FT L, YEL	73	$ 215.73
				PIN, INSULATOR, LINE POST, 3/4" X 7" SHANK, 8-1/2	112	$ 482.18
				PIN, INSULATOR, SHORT STUD, 3/4 IN D, 1-3/4 IN L,	31	$ 112.09
				PIN, POLE TOP, LINE POST, BRACKET, 4 X 4 X 13 IN	43	$ 637.14
				PLATE, CLAMP, CENTER, FOR X BRACE ASSEMBLI	4	$ 67.36
				PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16	5	$ 31.65
				PLATE, GUY/ POLE EYE, 13/16 IN. BOLT HOLE- 9/16	11	$ 66.10
				POLE, TRANSMISSION, WOOD LAMINATED, 70 FT L	1	$ 2,700.00
				POLE, TRASMISSION, WOOD LAMINATED, 65 FT LG	1	$ 2,600.00
				POLE, WESTERN RED CEDAR, 40 FT, CL 2	1	$ 813.18
				POLE, WESTERN RED CEDAR, 45 FT, CL 2	36	$ 33,786.47
				POLE, WESTERN RED CEDAR, 55 FT L, CL 2	1	$ 1,202.11
				ROD, ANCHOR, GALVANIZED STEEL, 1 IN DIA, 7 FT	34	$ 764.95
				ROD, GROUND, HOT DIPPED GALVANIZED, MINIMU	10	$ 50.28
				SCREW, LAG, 1/2 IN, 4 IN LG, STEEL, GALVANIZED,	22	$ 6.53
				SHACKLE, ANCHOR, 3/4 IN, BOLT/ NUT / KEY, GALV	44	$ 540.18
				SHACKLE, ANCHOR-CLEVIS, GALVANIZED STEEL, 3	27	$ 106.20
				SIGN, IDENTIFICATION, PHASE, 1, 4 X 4 IN, WHITE (	5	$ 36.93
				SIGN, IDENTIFICATION, PHASE, 2, 4 X 4 IN, BLUE O	5	$ 36.93
				SIGN, IDENTIFICATION, PHASE, 3, 4 X 4 IN, WHITE (	5	$ 36.93
				SOCKET, EYE 1/2 IN DIA.- GALV. STEEL, 20,000# RA	9	$ 45.76
				SPLICE, AUTOMATIC, FULL TENSION, 336 ACSR, 18	8	$ 116.64
				STAKE, MARKING, 1 IN X 1-1/8 IN X 4 FT, HARD WO	25	$ 15.00
				SWITCH, DISCONNECT, OUTDOOR, AIR IN LINE, 33	3	$ 2,226.62
				TEE, MOUNTING DEADEND, CURVED BASE FOR RO	26	$ 604.13
				TERMINAL, TAP LUG, BRONZE, 1/0 SOLID - 500MCM	6	$ 69.12
				WASHER, COIL SPRING, GALV STEEL, 1/2 IN	18	$ 2.50
				WASHER, COIL SPRING, GALV STEEL, 3/4 IN	218	$ 66.87
				WASHER, COIL SPRING, GALVANIZED, 5/8 IN	130	$ 23.22
				WASHER, SQUARE, 2-1/4 IN X 2-1/4 IN, FLAT, FLAT,	124	$ 27.24
				WASHER, SQUARE, CURVED, GALVANIZED, 3 IN X	354	$ 196.05
				WASHER, SQUARE, CURVED, GALVANIZED, 4 IN X	4	$ 6.14
				WASHER, SQUARE, FLAT 3 X 3 IN X 1/4 IN, GALVAN	230	$ 284.65
				WASHER, SQUARE, FLAT, GALVANIZED, 1/2 IN BOL	18	$ 3.92
				WASHER, SQUARE, FLAT, STEEL, 4 X 4 IN (FOR 7/8	60	$ 83.74

year	accounting_work_order	accounting_work_order_descript	cost_element_description	Description	Sum of quantity	Sum of amount
2016	DL7TD115	Distribution line annual - 2015	**Materials- Stores**	WIRE, TIE, BARE, ALUMINUM, #4, (50 LB COILS) SO	50	$ 91.00
				WIRE, TIE, COPPER, SOFT DRAWN, 6 AWG, 25 LB /	0	$ 1.02
			Meals		1	$ 20.00
				UTILITY SERVICE & ASSISTANCE	0.16	$ 3,075.00
			Mileage		82	$ 44.28
			Misc Dist Exp Capitalized OH-Acct Use Only		0	$ 15,959.87
			Non Productive Time Loader- Acct Use Only		0	$ 5,316.95
			Other Costs	CON-TEST ANALYTICAL LABORATORY	0.5	$ 198.51
			Other Outside Services- Other	WASTE MANAGEMENT	1	$ 953.08
			Payroll Benefit Loader- Acct Use Only		0	$ 11,392.10
			Refuse Removal and Recycling	WASTE MANAGEMENT	5	$ 3,662.73
			Stores Loader- Acct Use Only		0	$ 7,525.01
			Telephone		0	$ 50.06
			Travel	JCR CONSTRUCTION CO INC	0.06	$ 3,060.00
				UTILITY SERVICE & ASSISTANCE	0.13	$ 2,850.00
			UVL-Contractor Labor	0100054 - MISC CONTRACTOR WORK	0	$ -
				0100054 - ROW HARDENING	0	$ -
				0101098 - MISC CONTRACTOR WORK	0	$ -
				0101098 - ROW HARDENING	0	$ -
				0101484 - MISC CONTRACTOR WORK	0	$ -
				0101484 - ROW HARDENING	0	$ -
				0101484 - ROW HARDENING- FRANCONIA	0	$ -
				0102111 - MISC CONTRACTOR WORK	0	$ -
				0103006 - MISC CONTRACTOR WORK	0	$ -
				0103649 - 3110 LINE NASHUA	0	$ -
				0103649 - 317 LINE ROW WORK	0	$ -
				0103649 - MISC CONTRACTOR WORK	0	$ -
				0104296 - 314 ROW REPRS MILFORD	0	$ -
				0104296 - 399 LINE ROW	0	$ -
				0104296 - BERLIN CIRCUIT PATROL REPAIRS	0	$ -
				0104296 - MISC CONTRACTOR WORK	0	$ -
				0104296 - OFF-ROAD REPAIRS LANCASTER	0	$ -
				0104985 - 3525X2 LINE (BERLIN)	0	$ 8,000.00
				0104985 - 3525X2 LINE (CHOCORUA)	0	$ 16,000.00
				0104985 - LANCASTER OFF-ROAD CKT PATROL	0	$ 4,000.00
				0104985 - MISC CONTRACTOR WORK	0	$ 62,524.83
				0104985 - OFF-ROAD REPAIRS LANCASTER	0	$ 112,000.00
				0104985 - REPLACING DAVIT ARMS (TILTON)	0	$ 4,000.00
			UVL-Contractor Services- Other	0095798 - MISC CONTRACTOR WORK	0	$ (18,462.00)
				0095798 - ROW MAINT	0	$ (32,000.00)
				0097214 - MISC CONTRACTOR WORK	0	$ -
				0098054 - 351 LINE WHITEFIELD	0	$ -
				0098054 - MISC CONTRACTOR WORK	0	$ -
				0098054 - ROW MAINTENANCE	0	$ -
				0098982 - MISC CONTRACTOR WORK	0	$ -
				0098982 - ROW MAINTENANCE	0	$ -
				0099357 - MISC CONTRACTOR WORK	0	$ -
				0099375 - ROW HARDENING	0	$ -
			Vehicle Costs Clearing- Acct Use Only		0	$ 9,953.07
			Vehicles-Class 2		79.5	$ 567.32
			Vehicles-Class 3		6	$ 114.36
	DL7TD115 Total				**9024.57**	**$ 1,604,892.25**
	DL7TD116	NH: Distribution line annual - 2016	**Admin and Eng OH- Acct Use Only**		0	$ 0.30
			AFUDC Debt		0	$ 0.12
			AFUDC Equity		0	$ 0.08
			Lobby Stock Loader-Acct Use Only		0	$ 3.50
			Materials- Stores	TAG, IDENTIFICATION, HORIZONTAL, "I," INJECTIOI	100	$ 25.37
			Stores Loader- Acct Use Only		0	$ 3.97
	DL7TD116 Total				**100**	**$ 33.34**
	RE201601	Davisville Forest Easement	**Admin and Eng OH- Acct Use Only**		0	$ 332.45
			Fees + Payments- Other	STATE OF NEW HAMPSHIRE TREASURER	0	$ 36,116.47
			Postage and Delivery Services	UNITED PARCEL SERVICE	0	$ 17.99
	RE201601 Total				**0**	**$ 36,466.91**
2016 Total					**9145.57**	**$ 1,643,536.80**
Grand Total					**9145.57**	**$ 1,643,536.80**

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number R15RPR **Status** open **Revision** 17

Project Title Reject Pole Replacement **Operating Unit**

Initiated By Lynne Godbout **Initiated Date** 7/17/2015 15:25:41

Description of Work Replace poles which require replacement as part of pole inspection program. This Project is part of the 2015 regulatory approved REP program

Location UNSPECIFIED MAJOR LOCATION-NH

Project Schedule / Expenditures **Est Start Date :** 7/1/2015 **Est Complete Date :** 1/31/2018

2015	2016	2017	2018	2019	Future Years	Total
$144,625.09	$1,912,544.87	$6,637,830.04	$0.00	$0.00	$0.00	$8,695,000

	Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown	$7,454,926	$0	$1,240,074	$0	$0	$8,695,000.00

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	3/8/2019
Plant Accounting	Salbinski, Chris	$0	3/8/2019
Manager - PSNH Dist	Lajoie, Lee	$100,000	3/11/2019
Director - PSNH Dist	Geaumont, Marc	$250,000	3/11/2019
Vice President - PSNH	Purington, Joseph	$1,000,000	5/31/2019
Sr. VP/President - Ops	Quinlan, William	$5,000,000	6/25/2019
Executive VP - COO	Schweiger, Werner	$12,500,000	6/28/2019

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Date Prepared: 2/13/19	Project Title: Reject Pole Replacement (REP3)
Company/Companies: Eversource NH	Project ID Number: R15RPR
Organization: NH Operations	Plant Class/(F.P.Type): Distribution - Line
Project Initiator: Eric Sutton	Project Type: Specific
Project Manager: Eric Sutton	Capital Investment Part of Original Operating Plan? Y
Project Sponsor: Marc Geaumont	O&M Expenses Part of the Original Operating Plan? Y
Current Authorized Amount: $3,001,000	Estimated in service date(s): January 2018
Supplement Request: $5,694,000	Other:
Total Request: $8,695,000	

Supplement Justification

Justification for Additional Resources

The Eversource Maintenance Program (EMP) and the Intercompany Operating Procedures (IOPs) both require all wood poles in Eversource maintenance territory to be inspected every 10 years. This project was part of the 2015-2017 Reliability Enhancement Program (REP 3) approved as part of the global settlement agreement related to the Generation divestiture. It was intended to fund the replacement decayed or damaged poles identified through the Company's annual inspection program.

The initial budget for the reject pole replacement is funded based on historical spending and/or known future investment needed within the overall distribution budget constraints of the REP 3 program. Program spending is monitored throughout the year through a budget review committee. As work is identified throughout the year, the budget committee determines whether the additional investment needed can be funded by reducing funding in other projects within the REP 3 program or whether the additional investment must be deferred to a future year to stay within the budget.

Investment in the reject pole replacement program was higher than originally budgeted due to the decision to replace older class 4 poles with new Class 2 poles rather than treat the smaller poles with insecticides to prolong their service life. The change to Class 2 poles serves to harden the distribution system and reduce damage during weather events. Eversource inspects approximately 35,000 wood poles each year as part of its annual pole inspection program with an average failure rate of 1.5-2% failure rate. Over the two years of the REP 3 program, approximately 1,497 poles were replaced under this R15RPR project. The cost of this work is currently being recovered through rates approved by the NHPUC.

Additional spending under this program was approved as part of the Company's capital budget process, however the supplemental authorization was never submitted. This form is intended to address that oversight.

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APS 1 - Project Authorization Policy

Supplement Cost Summary

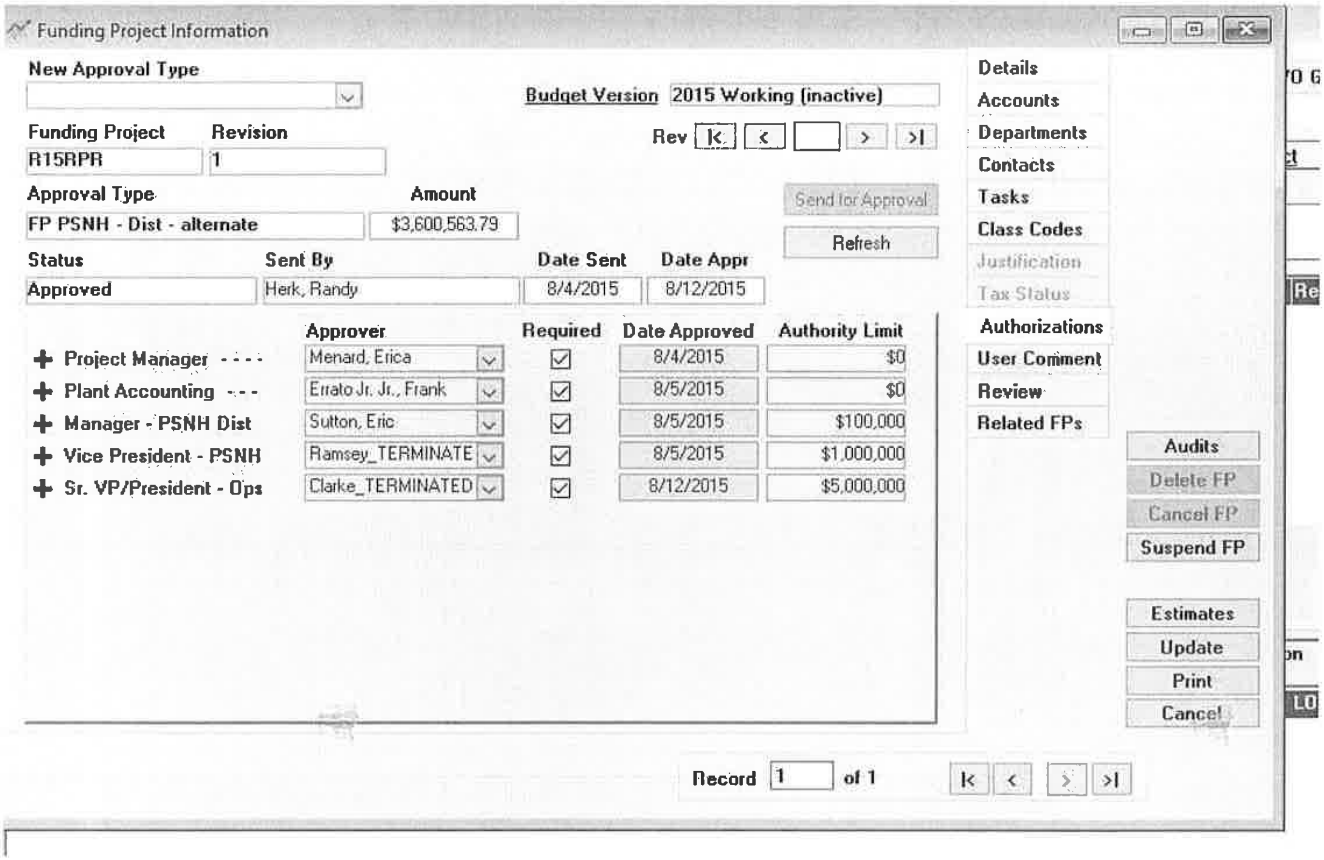
Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,626	$ 3,829	$ 5,455
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	170	728	898
Total Direct Spending	$ 1,796	$ 4,557	$ 6,353
Capital Additions - Indirect	1,177	1,159	2,336
AFUDC	28	(22)	6
Total Capital Request	$ 3,001	$ 5,694	$ 8,695
O&M			
Total Request	**$ 3,001**	**$ 5,694**	**$ 8,695**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 3,829	$ -	$ -	$ 3,829
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	728	-	-	728
Total Direct Spending	$ 4,557	$ -	$ -	$ 4,557
Capital Additions - Indirect	1,159	-	-	1,159
AFUDC	(22)	-	-	(22)
Total Capital Request	$ 5,694	$ -	$ -	$ 5,694
O&M	-	-	-	-
Total Request	**$ 5,694**	**$ -**	**$ -**	**$ 5,694**


Funding Project Information
New Approval Type
Budget Version
2015 Working (inactive)
Funding Project
Revision
R15RPR
1
Rev
Approval Type
Amount
FP PSNH - Dist - alternate
$3,600,563.79
Send for Approval
Refresh
Status
Sent By
Date Sent
Date Appr
Approved
Herk, Randy
8/4/2015
8/12/2015
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
8/4/2015
$0
Plant Accounting
Errato Jr. Jr., Frank
8/5/2015
$0
Manager - PSNH Dist
Sutton, Eric
8/5/2015
$100,000
Vice President - PSNH
Ramsey_TERMINATE
8/5/2015
$1,000,000
Sr. VP/President - Ops
Clarke_TERMINATED
8/12/2015
$5,000,000
Details
Accounts
Departments
Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record
1
of 1

EVERSOURCE

APS 1 - Project Authorization Policy

Project Authorization Form

General Information

Date Prepared: 7/28/15	Project Title: Reject Pole Replacement
Company: Eversource - NH	Project ID Number: R15RPR
Organization: Electric Operations	Class(es) of Plant: Distribution
Project Initiator: Eric Sutton	Project Category: Regulatory Commitments
Project Owner/Manager: Eric Sutton	Project Purpose: part of regulatory tracked program? Yes – Reliability Enhancement Program 3
Project Sponsor: Paul Ramsey	Project Type: Annual
Estimated in service date: 6/30/17	Capital Investment Part of Original Operating Plan? No
If Transmission Project: N/A	Supplement to Existing Authorization? No
	O&M Expenses Part of the Original Operating Plan? No

If Chief Executive Officer or subsidiary board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

Replace defective poles identified through the pole inspection program.

This project is part of the 2015-2017 Reliability Enhancement Program (REP) approved as part of the global settlement agreement related to the Generation divestiture

Project Costs Summary

($000)	Prior Authorized*	2015	2016	2017+	Totals
Capital Additions - Direct		$ 459	$ 876	$ 291	$ 1,626
Customer Contribution		$ -	$ -	$ -	$ -
Removals net of Salvage		$ 54	$ 84	$ 32	$ 170
Total - Direct Spending	$ -	$ 513	$ 960	$ 323	$ 1,796
Capital Additions - Indirect		$ 336	$ 625	$ 216	$ 1,177
Subtotal Request	$ -	$ 849	$ 1,585	$ 539	$ 2,973
AFUDC (half-year convention)		$ 1	$ 15	$ 11	$ 27
Total Request	$ -	$ 850	$ 1,600	$ 550	$ 3,000

* to be completed if supplemental authorization is required

EVERSOURCE

APS 1 - Project Authorization Policy

Summary Project Description

Approximately 24,000 poles are inspected each year with an estimated rejection rate of 2%. This project funds the replacement of the rejected poles.

($000s)	Total Project Costs	Amount in Operating Plan	Difference
Capital	$3,000	$0	$3,000
O&M	$600	$0	$600
Total	$3,600	$0	$3,600

The funding for this program is part of a 2 year Reliability Enhancement Program (REP) extension granted as part of the Generation divestiture global settlement agreement.

Project Authorization

Project authorization below must be in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

Approver	Approver Name	Approver Signature	Date
Project initiator	Robert Mission		
Project manager	Eric Sutton		
Plant Accounting	Frank Errato, Jr.		
Vice President	Paul Ramsey		
Sr. Vice President	Peter Clarke		

Overall Justification

25,666 poles were inspected in 2014 and 440 were found to be defective(1.7% defective rate)

This project is part of the 2015-2017 Reliability Enhancement Program 3

Project Scope

For program year 2015-2016, 320 poles are expected to be replaced.

Project Objectives

Continue the pole inspection program by inspecting 24,000 poles and replace the defective poles to prevent pole failures and harden the system thereby improving reliability.

Business Process and / or Technical Improvements:

Improve the reliable performance and safety of the poles in high winds, limb/tree contact, ice loading, heavy wet snow, pole accidents or other events that result in loss of service.

Assumptions

Approximately 24,000 poles are inspected each year with an estimated rejection rate of 2%

Alternatives Considered

Reinforcement. Where appropriate, reinforcement will be evaluated. In most cases replacing the pole with a higher class pole to improve system resiliency is preferred.

Project Schedule

Describe the project schedule and milestones. Include estimated start and end dates.

Milestone/Phase Name	Estimated Completion Date
120 poles expected to be replaced in 2015 ($850K)	12/31/2015
250 poles expected to be replaced in 2016 ($1,600,000)	12/31/2016
100 poles expected to be replaced in 2017 ($550K)	6/30/2017

EVERSOURCE

APS 1 - Project Authorization Policy

Financial Evaluation

Direct Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$204	$380	$133	$717
Overtime Labor	$28	$42	$14	$84
Outside Services	$52	$101	$34	$187
Materials	$204	$380	$133	$717
Other, including contingency amounts (describe)	$25	$57	$9	$91
Total	$513	$960	$323	$1,796

Indirect Capital Costs ($000)	Year 1	Year 2	Year 3+	Total
Benefits / Loaders	$336	$625	$216	$1,177
Capitalized interest or AFUDC, if any	$1	$15	$11	$28
Total	$337	$640	$227	$1,205

Total Capital Costs	$850	$1,600	$550	$3,000
Total O&M Costs	$176	$312	$112	$600
Total Project Costs ($000)	$1,026	$1,912	$662	$3,600

Note: Explain unique payment provisions, if applicable

Regulatory Approvals

This project is a part of the REP 3 program and will be audited at the end of each program year.

Risks and Risk Mitigation Plans

Not applicable

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 10/28/2019 **Date of Response: 11/18/2019**
Request No. TS 2-070 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Joseph A. Purington, Lee G. Lajoie

Request:
Re: Reject Pole Replacement, #R15RPR, 12-045M. Please provide the following information for this project:

a. Re: Supplemental Request Form at page 2: Explain why this form was submitted on 2/13/19 and not in 2015.
b. Re: Justification for Additional Resources at page 2: Please provide a detailed explanation for the significant increase ($3.0 million budget v. $5.6 million) in pole replacement costs in 2015. Why was it cheaper to install new Class 2 poles rather than treating the existing poles to prolong their life? What was the remaining life of the existing poles that were replaced by the new poles.
c. Please confirm the total number of poles replaced including:
    i. Total number of poles rejected by the pole inspection contractor.
    ii. Total number of poles rejected by others – please indicate the number and identities of other contractors.
e. Were any of the class 4 poles replaced by steel or composite poles?
d. Please provide an itemized breakout of overheads, AFUDC, and other costs leading up to the variance.
e. Re: Eversource 2016 REP Report to the Commission, at pages 23 and 39: Please reconcile and explain the differences in the amounts reported in the REP Report with the amounts referenced in Staff Attachment 12-045M.

Response:

a) As stated on page 2 of Excel Attachment TS 2-070, contained within this response, this was an oversight which the form was intended to address.
b) The supplemental funding request was submitted to formally authorize spending for work which had been approved by Eversource management. New Class 2 poles were installed in an effort to harden the distribution system. A new class 2 pole is 50% stronger than a new class 4 pole and the difference is even greater when compared to a partially decayed, insect infested pole which is treated. The Company does not track the history of individual poles installed at a location, only the current pole at a location. When a pole is replaced with a new one the old unit is retired in the Plant Accounting system.
c) All 1,497 poles discussed in the attachment were rejected by the Company's contractor, Smith Mountain Investments.
e) No steel or composite poles were installed under this project.
d) See Attachment TS 2-070
e) Page 23 of the 2016 REP Report to the Commission deals with base REP and not project R15RPR which is Attachment 12-045M so there is no reconciliation to be made. Page 39 of the 2016 REP Report to the Commission reports on plant in service for the period July 1, 2015 through June 30, 2016. Attachment 12-045M reflects spending for the entire period the project was in use: August 2015 through September of 2017.

Project	Version	Charge Type	Jan 2014	Feb 2014	Mar 2014
R15RPR:Reject Pole Replacement	Actual	Materials	$364.71	$477.07	$330.93
R15RPR:Reject Pole Replacement	Actual	Other	$0.00	$0.00	$0.00
R15RPR:Reject Pole Replacement	Actual	Outside Services	$0.00	$0.00	$288.47
R15RPR:Reject Pole Replacement	Actual	Overtime Labor	$0.00	$0.00	$0.00
R15RPR:Reject Pole Replacement	Actual	Straight Time Labor	$491.48	$61.41	$604.86
R15RPR:Reject Pole Replacement	Actual	Total Direct Costs	$856.19	$538.48	$1,224.26
R15RPR:Reject Pole Replacement	Actual	AFUDC	$7.62	$1.69	$4.09
R15RPR:Reject Pole Replacement	Actual	AS&E	$31.98	$24.69	$32.66
R15RPR:Reject Pole Replacement	Actual	E&S	$214.26	$26.88	$269.51
R15RPR:Reject Pole Replacement	Actual	MDEC	$0.00	$0.00	$0.00
R15RPR:Reject Pole Replacement	Actual	Payroll	$365.41	$46.12	$454.26
R15RPR:Reject Pole Replacement	Actual	Stores & Lobby Stock	$210.74	$481.31	$228.26
R15RPR:Reject Pole Replacement	Actual	Vehicle	$179.58	$317.53	$0.91
R15RPR:Reject Pole Replacement	Actual	Total Allocations	$1,009.59	$898.22	$989.69
R15RPR:Reject Pole Replacement	Actual	Total Cost	$1,865.78	$1,436.70	$2,213.95

Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014
$731.50	$474.32	$0.50	$0.00	$288.39	$387.86	$2,132.55	$6,077.83	$7,378.97
$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8,811.11
$0.00	$0.00	$1,448.40	$0.00	$0.00	$0.00	$179.03	$3,558.35	$3,875.32
$0.00	$43.17	$0.00	$0.00	$0.00	$0.00	$0.00	$686.73	$0.00
$0.00	$158.29	$47.80	$0.00	$148.87	$394.19	$2,040.98	$1,700.07	$78.93
$731.50	$675.78	$1,496.70	$0.00	$437.26	$782.05	$4,352.56	$12,022.98	$20,144.33
$16.00	$20.84	$26.62	$17.92	$4.33	$4.87	$5.22	$18.36	$37.50
$22.02	$8.83	$11.77	$1.24	$70.93	$190.78	($137.29)	$203.01	$65.41
$0.00	$84.76	$20.11	$0.00	$0.00	$355.47	$1,362.59	$1,216.09	$1,105.80
$0.00	$0.00	$0.00	$0.00	$0.00	$74.10	$379.79	$313.51	$1,096.93
$0.00	$137.54	$32.64	$0.00	$104.32	$268.60	$1,378.35	$1,613.40	($18.97)
$736.67	$227.01	$6.25	$164.68	$193.14	$76.79	$1,700.51	($47.19)	$1,896.20
$0.00	$53.95	$13.78	$0.00	$38.63	$86.37	$594.27	$1,016.73	$14.76
$774.69	$532.93	$111.17	$183.84	$411.35	$1,056.98	$5,283.44	$4,333.91	$4,197.63
$1,506.19	$1,208.71	$1,607.87	$183.84	$848.61	$1,839.03	$9,636.00	$16,356.89	$24,341.96

Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015
$105.50	$272.08	$414.92	$0.00	$0.00	$278.84	$2,325.70	$0.00	$167.28
($8,750.36)	($11.24)	$0.00	$0.00	$0.00	$0.00	$9.39	$0.00	$0.00
$11,568.91	($1,710.05)	$57.35	$117.30	$214.48	($237.19)	$559.46	$505.07	($189.67)
$0.00	$0.00	$0.00	$0.00	$0.00	($70.20)	$413.12	$228.89	($8.39)
($12.49)	$182.59	$570.00	$304.53	$428.54	$1,610.33	$1,038.21	$239.45	($45.76)
$2,911.56	($1,266.62)	$1,042.27	$421.83	$643.02	$1,581.78	$4,345.88	$973.41	($76.54)
$37.68	$55.05	$28.64	$33.19	$36.13	$43.46	$50.96	$54.67	$110.45
($943.34)	$372.27	$185.13	$239.72	$112.42	$146.33	$94.06	$80.48	$21.85
$2,853.37	($410.59)	$3,236.53	($25.12)	$146.16	$895.82	$168.63	$769.58	($579.06)
$304.73	($114.65)	$67.26	$55.80	$85.25	$79.52	$102.31	$35.44	($14.25)
($7.59)	$110.71	$345.60	$184.64	$259.82	$933.83	$879.93	$283.95	($32.81)
$41.15	$106.11	$67.54	$0.00	$0.00	$341.54	$894.75	$0.00	$628.83
($6.30)	$82.37	$157.46	$118.55	$0.00	$1,774.36	$235.91	$156.49	($28.30)
$2,279.70	$201.27	$4,088.16	$606.78	$639.78	$4,214.86	$2,426.55	$1,380.61	$106.71
$5,191.26	($1,065.35)	$5,130.43	$1,028.61	$1,282.80	$5,796.64	$6,772.43	$2,354.02	$30.17

Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016	May 2016
$432.53	$0.00	$10,819.92	$30,143.20	$10,964.86	$5,672.06	$12,541.91	$6,545.21
($620.00)	$20.87	$29.48	($2,340.00)	($21,695.86)	($21,700.00)	($29,886.60)	($1,890.82)
$6,713.42	$20,352.89	$59,967.10	$54,820.42	$132,876.97	$82,028.82	$112,050.71	$15,552.69
$48.16	$20.13	$374.22	$6,751.41	$169.05	$369.62	$2,043.68	($0.74)
$597.76	$185.19	$394.40	$732.59	$3,048.59	$5,080.10	$12,544.97	$11,231.90
$7,171.87	$20,579.08	$71,585.12	$90,107.62	$125,363.61	$71,450.60	$109,294.67	$31,438.24
$136.51	$180.30	$233.26	$332.03	$228.57	$180.92	$739.46	$101.97
$81.06	$309.38	$368.95	$1,302.44	$1,351.34	$1,211.73	$2,027.10	$784.11
$2,709.56	$7,276.48	$15,027.73	$16,012.35	$35,739.95	$33,466.41	$57,436.90	$17,373.53
$223.30	$875.81	$574.56	$2,331.61	$5,205.04	$4,873.06	$8,406.07	$2,529.75
$391.60	$124.48	$466.01	$3,799.74	$1,721.12	$3,318.01	$8,321.03	$6,100.83
$168.68	$0.00	$2,526.23	$12,525.14	$4,779.42	$559.39	$4,549.37	$2,950.87
$176.26	$312.24	$213.53	$3,031.31	$961.39	$1,512.70	$5,198.03	$4,814.25
$3,886.97	$9,078.69	$19,410.27	$39,334.62	$49,986.83	$45,122.22	$86,677.96	$34,655.31
$11,058.84	$29,657.77	$90,995.39	$129,442.24	$175,350.44	$116,572.82	$195,972.63	$66,093.55

Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016	Nov 2016	Dec 2016
$1,478.23	$8,540.54	$10,678.44	$6,984.19	$2,263.84	$43,282.44	$7,516.16
($4,310.97)	($3,132.20)	($4,203.15)	($4,340.00)	$31.15	$1,097.05	($3,720.00)
$87,254.64	$132,384.64	$140,207.00	$79,090.25	$95,810.56	$61,882.84	$47,648.25
$56.56	$816.65	$24.41	$1,801.75	$103.93	$190.88	$1,061.34
$6,453.81	$11,500.06	$1,006.35	$15,840.96	$4,633.29	$4,954.69	$9,709.61
$90,932.27	$150,109.69	$147,713.05	$99,377.15	$102,842.77	$111,407.90	$62,215.36
$74.78	$105.18	$94.62	$83.70	$82.18	$53.81	$34.54
$815.73	$2,111.02	$1,598.79	$1,475.87	$1,116.22	$1,577.53	$570.59
$30,139.69	$21,259.78	$19,321.56	$15,336.18	$13,962.22	$9,350.64	$9,266.03
$4,388.64	$4,263.22	$3,864.27	$3,067.29	$9.24	$4.64	$6.06
$3,579.88	$6,678.85	$518.12	$9,548.98	$2,581.62	$2,779.27	$5,814.18
$1,617.87	$4,598.52	$4,624.78	($2,721.96)	$869.66	$17,763.62	($1,170.58)
$1,801.87	$3,801.37	$619.67	$5,746.89	$1,315.26	$2,297.47	$2,905.75
$42,418.46	$42,817.94	$30,641.81	$32,536.95	$19,936.40	$33,826.98	$17,426.57
$133,350.73	$192,927.63	$178,354.86	$131,914.10	$122,779.17	$145,234.88	$79,641.93

Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017
$33,510.63	$33,821.66	$41,747.51	$44,465.05	$71,135.97	$85,867.86	$76,529.69
($5,039.56)	$753.03	$454.30	($59.62)	$788.95	($4,619.73)	($40,397.65)
$147,416.96	$464,739.34	$150,415.90	$283,996.14	$419,143.09	$1,124,033.22	$564,888.78
$5,252.40	$3,542.40	$2,195.99	$226.15	$1,003.98	$3,855.84	$574.82
$9,360.37	$22,420.58	$20,708.54	$12,678.12	$10,478.36	$19,696.81	$44,184.94
$190,500.80	$525,277.01	$215,522.24	$341,305.84	$502,550.35	$1,228,834.00	$645,780.58
$82.82	$193.30	$258.83	$260.19	$318.01	$349.33	$348.68
$1,866.50	$11,560.56	$7,481.80	$5,658.43	$9,148.94	$13,083.89	$17,422.44
$25,185.51	$109,380.95	$38,511.12	$65,288.68	$94,454.05	$253,274.71	$138,478.81
$16.56	$4,976.18	$1,750.96	$2,967.68	$4,293.44	$11,513.96	$6,289.62
$8,721.33	$13,888.65	$12,309.58	$6,944.36	$6,226.90	$12,748.10	$24,226.52
$12,046.15	$12,500.08	($3,620.99)	$16,241.05	$26,058.65	$18,669.13	$27,785.20
$3,724.78	$9,033.44	$5,565.77	$4,365.37	$4,379.06	$9,226.00	$13,760.59
$51,643.65	$161,533.16	$62,257.07	$101,725.76	$144,879.05	$318,865.12	$228,311.86
$242,144.45	$686,810.17	$277,779.31	$443,031.60	$647,429.40	$1,547,699.12	$874,092.44

Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018
$104,000.92	$40,904.23	$5,015.56	$6,258.82	$3,807.96	($3,902.83)	$7,497.44
($14,239.66)	($23,214.26)	($27,280.01)	($38,544.99)	($8,532.56)	($27,280.00)	($20,034.00)
$593,583.33	($141,928.24)	$260,428.28	$21,119.78	$196,049.18	$121,924.49	($24,067.40)
$16.61	$237.40	$114.67	$468.97	$644.11	$116.95	$127.22
$7,177.39	$5,167.69	$2,066.78	$2,800.79	$996.69	$431.21	$9,643.93
$690,538.59	($118,833.18)	$240,345.28	($7,896.63)	$192,965.38	$91,289.82	($26,832.81)
$233.80	$14.79	$3.60	$11.96	$29.36	$39.13	$31.42
$12,484.53	$6,161.06	$3,367.93	$114.33	$1,528.27	$1,812.65	($79.45)
$131,057.36	($31,432.64)	$52,553.51	$4,517.76	$76,366.35	$47,267.60	($3,766.13)
$9,089.56	($2,053.17)	$3,949.82	$338.85	$5,950.72	$3,683.22	($293.45)
$3,946.55	$2,925.52	$1,060.07	$1,706.21	$843.77	$291.35	$5,181.93
$46,574.20	$170,085.66	$2,981.36	$2,451.54	$5,756.71	$292.05	$3,066.02
$2,670.00	$2,091.01	$982.49	$525.65	$350.83	$81.66	$4,739.03
$206,056.00	$147,792.23	$64,898.78	$9,666.30	$90,826.01	$53,467.66	$8,879.37
$896,594.59	$28,959.05	$305,244.06	$1,769.67	$283,791.39	$144,757.48	($17,953.44)

Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018
$1,508.97	($105.13)	$9,019.26	$837.44	$1,773.98	($367.32)	$0.00
($24,700.03)	($12,250.00)	$14.40	($13,957.34)	($4,340.00)	($4,339.72)	($8,010.00)
$41,318.16	$4,568.82	$72,814.18	$78,140.41	$156,530.59	($10,147.86)	($269.79)
$13.82	($14.00)	$345.77	$840.16	$374.39	$0.01	$0.00
$793.18	$648.56	$2,952.19	$3,427.12	$879.87	$363.26	$132.64
$18,934.10	($7,151.75)	$85,145.80	$69,287.79	$155,218.83	($14,491.63)	($8,147.15)
$23.26	$28.02	$52.62	$57.11	($12.66)	($1.19)	($5.46)
($1,334.28)	$54.35	$1,919.38	$774.27	$1,042.56	($46.16)	($413.51)
$15,899.37	$1,965.34	$42,846.18	$29,125.19	$51,930.27	($3,841.29)	($4,389.07)
$1,192.37	$107.41	$2,335.80	$2,503.68	$4,745.70	($329.26)	($264.41)
$428.70	$334.79	$1,749.09	$2,270.76	$665.19	$144.45	$68.81
($678.66)	$344.77	$3,126.87	$1,764.59	$593.74	($10.35)	($196.83)
$165.38	$202.72	$939.12	$1,229.21	$482.76	$128.92	$16.99
$15,696.14	$3,037.40	$52,969.06	$37,724.81	$59,447.56	($3,954.88)	($5,183.48)
$34,630.24	($4,114.35)	$138,114.86	$107,012.60	$214,666.39	($18,446.51)	($13,330.63)

Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019
$143.20	$0.00	$34.26	$0.00	($4,310.40)	($8,793.74)	$0.41	$0.00
($1,140.00)	$0.00	($4,290.00)	($1,857.01)	$0.00	$0.00	$0.00	($619.99)
$2,562.25	$172.61	($295.74)	$32.89	($1,055.36)	($43,292.99)	($1,681.22)	($30.66)
$0.59	$0.62	$14.36	($5.48)	$121.97	($1,426.46)	$0.00	$0.00
$1.01	$0.00	$28.71	$66.80	$860.85	($13,867.01)	$1.80	$0.00
$1,567.05	$173.23	($4,508.41)	($1,762.80)	($4,382.94)	($67,380.20)	($1,679.01)	($650.65)
$0.00	$0.00	$0.00	$0.00	$6.81	($153.62)	$0.00	$0.00
($646.40)	($150.17)	($187.91)	($895.90)	($719.74)	($1,092.33)	($109.61)	($54.31)
($7,486.07)	($1,734.32)	($2,987.42)	($10,549.85)	($520.06)	($11,204.57)	($4,526.75)	($1,222.88)
($475.32)	($102.05)	($171.85)	($572.94)	($62.36)	($1,507.00)	($307.69)	($49.00)
($1.89)	$0.34	$22.26	$38.07	$547.05	($8,242.22)	$0.96	$0.00
$87.69	$0.00	$20.59	$0.00	($4,451.19)	($2,186.37)	$0.12	$0.00
$7.55	$0.18	$4.56	$1.71	$119.89	($5,678.56)	$0.82	$0.00
($8,514.44)	($1,986.02)	($3,299.77)	($11,978.91)	($5,079.60)	($30,064.67)	($4,942.15)	($1,326.19)
($6,947.39)	($1,812.79)	($7,808.18)	($13,741.71)	($9,462.54)	($97,444.87)	($6,621.16)	($1,976.84)

Jul 2019	Aug 2019	Sep 2019	Oct 2019	Total Cost
$0.00	($83.76)	($0.29)	$0.88	$730,390.71
$17.39	$0.00	$0.00	$0.00	($379,320.21)
$0.03	$3,548.55	($64.00)	$395.62	$5,633,865.77
$320.17	$0.00	($6.02)	$0.01	$34,081.79
$0.00	$186.01	($6.32)	$18.82	$262,256.24
$337.59	$3,650.80	($76.63)	$415.33	$6,281,274.30
$0.00	$0.00	$0.00	$0.00	$5,447.23
($13.48)	($228.28)	($64.77)	($169.28)	$106,813.12
$71.15	($3,334.95)	($465.56)	($2,305.07)	$1,403,797.08
($7.79)	($239.21)	($19.33)	($159.11)	$102,179.89
$196.43	$114.14	($6.66)	$9.96	$162,444.54
$0.00	($104.08)	$0.15	$0.92	$400,794.07
$0.00	$80.53	($1.42)	$5.76	$98,716.84
$246.31	($3,711.85)	($557.59)	($2,616.82)	$2,280,192.77
$583.90	($61.05)	($634.22)	($2,201.49)	$8,561,467.07

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-005 **Page 1 of 2**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Joseph A. Purington

Request:
Reference Purington Rebuttal Testimony at Bates 017, Lines 4-7, describing benefits of steel poles in right of ways (ROW) as including resistance to bugs, woodpeckers, dry rot, and moisture rot. Please describe how many of the Company's wooden poles located in ROWs have been removed in each of the last ten years due to problems associated with: (1) bugs; (2) woodpeckers; (3) dry rot; and (4) moisture rot. Please also provide who made that determination.

Response:
Ground Line Inspection results from 2010 through 2019 are shown below and these poles have been replaced. The Company contracted for Ground Line Inspection with Utility Pole Technolgies Inc (UPT) in 2010 through 2012, Osmose in 2013, and Smith Mountain Investments since 2014.

Year	Decay	Insects	External Damage	Split
2010	3	0	0	1
2011	5	2	0	0
2012	0	0	0	0
2013	18	4	2	2
2014	17	0	0	0
2015	0	0	0	0
2016	196	0	14	30
2017	18	0	0	27
2018	41	0	0	0
2019	11	0	1	1

Additional ROW poles were replaced each year as a result of routine Company aerial and foot patrols. Need for replacement of these poles was determined by Company employees, typically Construction Representatives who perform the aerial patrols.

	Decay	Insects	External Damage	Split	Woodpecker
2010	0	0	0	0	0
2011	1	0	0	0	0
2012	5	1	5	0	2
2013	20	4	6	2	4
2014	0	0	1	4	1
2015	7	0	3	4	7
2016	3	0	2	5	17
2017	9	1	17	3	3
2018	2	1	0	1	4
2019	4	0	3	1	4

Examples of damage are shown in Attachment STAFF 16-005, which was assembled for another purpose but is included here for illustrative purposes.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/27/2020**
Request No. STAFF 16-006 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Joseph A. Purington

Request:
Reference Purington Rebuttal Testimony at Bates 023, Line 12 through Bates 024, Line 5, describing Mr. Demmer's analysis as lacking consideration of life cycle cost related to steel and wooden poles, composite and wooden cross arms, and class two and class four poles.

a. Please provide any lifecycle analysis completed by the Company showing any incremental benefit to ratepayers of the above-mentioned materials that might justify the incremental cost, stating when such analysis was conducted by the Company.

b. How does the Company account for risk associated with long-term investments (50+ years) that could "tether [customers] to particular technologies that may become outmoded or provide only partial solutions" to a customer need within their projected lifecycle? (citing Eversource April 2019 Comment in IR 15-296)

Response:

a. The installation of steel poles in rights-of-way will provide financial and environmental benefits, The poles are more durable and last twice as long as wood poles; therefore the cost of installing and accessing these poles is reduced effectively by half. For example, the cost of wetlands matting to limit the impact of heavy equipment has proven to be significant, as regulations and permitting requirements have become more burdensome. Although wood was the construction material of choice in the last century, it has been displaced by steel and composite materials in many cases due to the strength and resilience, including resistance to rot, of these other products. Steel poles also allow for longer spans and fewer pole sets. The Company's calculation of life-cycle benefits for steel poles is as follows:

Labor to install is the same, whether steel or wood. A valid assumption of installation cost is $5,000.

Material cost of a steel pole is $2,152. A steel pole installed today lasts for 59 years, on average. Thus, total cost is $7,152.

Material cost of a wood pole is $899. A wood pole installed today lasts for 30 years, on average. Thus, for a 59-year span to match the life-cycle of the steel pole, the cost is double or $1,798, without consideration of inflation and installation costs are incurred twice. This means that, over the course of the 59 years, the cost of the wood pole is $11,798, without inflation (which would make the cost higher) and holding all other costs constant (such as any costs arising from new environmental requirements associated with placement).Attachment STAFF 16-006 provides further information and examples of the benefits of steel poles versus wood poles.

b. The Company expects that poles, cross-arms, and electric lines will still be required in 50+ years and does not see that the proposed investments would become outmoded within their projected lifecycle.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-010 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 091, Lines 20-21, describing the refurbished Viper reclosers as having been redeployed in the field. Please describe the accounting treatment of the costs associated with the Viper recloser purchase, installation, removal, and redeployment. If costs associated with removal and redeployment were booked as capital expenses, rather than maintenance, please explain why that is the case.

Response:
Viper reclosers were purchased into inventory, installed as a capital plant addition (FERC Account 101 Electric Plant in Service), and removed under FERC Account 108. Redeployment was done at no material cost for the redeployed units. The reimbursement from G&W for the cost to install and remove the defective units was applied to the individual work orders to offset the labor associated with removal and replacement.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-011 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 092, Line 9, "negotiated arrangement." Please provide any and all copies of the referenced negotiated arrangement between Eversource and the Viper manufacturer.

Response:
Please see the attached confidential documents for the requested information.

Pursuant to Puc 203.08(d) and RSA 363:28, VI, Eversource provides this response on a confidential basis to the Commission Staff and the Office of Consumer Advocate. Eversource submits that it has a good faith basis for seeking confidential treatment of the documents in this response and that it intends to submit a motion for confidential treatment of the documents prior to the commencement of any hearing in this proceeding.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/19/2020**
Request No. STAFF 16-012 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 088 – 090, describing "significant negative impact to reliability" and "address an urgent reliability and safety issue" involving the defective Viper reclosers. Please provide any and all failure and safety reports that describe in detail the number, nature, and location of the actual incidents that negatively impacted reliability and safety occurring prior to replacement of the defective Viper reclosers.

Response:
Details on Viper recloser failures in 2016, 2017, and 2018 and the associated reliability impact are shown it the attached Excel spreadsheet, Attachment Staff 16-012.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-013 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 066. Are projects included by the Company for recovery in this rate case, and designated by Eversource to be in service and "used and useful," exempt from any type of prudence review undertaken by Staff? If so, under what circumstances (and project type) would such an exemption be triggered?

Response:
The Company is not requesting, and does not expect, any sort of "exemption" from a review of prudence for projects that were completed, are "used and useful" and presented for cost recovery in this case. The Company presented detailed authorizations and project documentation on more than 100 capital projects in this proceeding through the discovery and audit process for the sole purpose of enabling a prudence review. There is no statement or language on Bates 066 that indicates anything to the contrary and none is intended.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-015 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Lee G. Lajoie, David L. Plante

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 078, "forecast load growth." Please provide any studies or reports that update and/or substantiate the load growth forecasted for the "Lakes Region" from the date of the original forecast to present.

Response:
The annual forecasts for the Lakes Region for years 2010 through 2017 used in planning studies is provided in Attachment Staff 16-015. A specific customer name has been redacted within the attachment. The Company transitioned from a planning region forecast to a substation level forecast after 2017, therefore a "Lakes Region" forecast is not available after 2017.

Pursuant to Puc 203.08(d) and RSA 363:28, VI, Eversource provides this response on a confidential basis to the Commission Staff and the Office of Consumer Advocate. Eversource submits that it has a good faith basis for seeking confidential treatment of the documents in this response and that it intends to submit a motion for confidential treatment of the documents prior to the commencement of any hearing in this proceeding.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-005 **Page 1 of 2**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Joseph A. Purington

Request:
Reference Purington Rebuttal Testimony at Bates 017, Lines 4-7, describing benefits of steel poles in right of ways (ROW) as including resistance to bugs, woodpeckers, dry rot, and moisture rot. Please describe how many of the Company's wooden poles located in ROWs have been removed in each of the last ten years due to problems associated with: (1) bugs; (2) woodpeckers; (3) dry rot; and (4) moisture rot. Please also provide who made that determination.

Response:
Ground Line Inspection results from 2010 through 2019 are shown below and these poles have been replaced. The Company contracted for Ground Line Inspection with Utility Pole Technolgies Inc (UPT) in 2010 through 2012, Osmose in 2013, and Smith Mountain Investments since 2014.

Year	Decay	Insects	External Damage	Split
2010	3	0	0	1
2011	5	2	0	0
2012	0	0	0	0
2013	18	4	2	2
2014	17	0	0	0
2015	0	0	0	0
2016	196	0	14	30
2017	18	0	0	27
2018	41	0	0	0
2019	11	0	1	1

Additional ROW poles were replaced each year as a result of routine Company aerial and foot patrols. Need for replacement of these poles was determined by Company employees, typically Construction Representatives who perform the aerial patrols.

	Decay	Insects	External Damage	Split	Woodpecker
2010	0	0	0	0	0
2011	1	0	0	0	0
2012	5	1	5	0	2
2013	20	4	6	2	4
2014	0	0	1	4	1
2015	7	0	3	4	7
2016	3	0	2	5	17
2017	9	1	17	3	3
2018	2	1	0	1	4
2019	4	0	3	1	4

Examples of damage are shown in Attachment STAFF 16-005, which was assembled for another purpose but is included here for illustrative purposes.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/27/2020**
Request No. STAFF 16-006 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Joseph A. Purington

Request:
Reference Purington Rebuttal Testimony at Bates 023, Line 12 through Bates 024, Line 5, describing Mr. Demmer's analysis as lacking consideration of life cycle cost related to steel and wooden poles, composite and wooden cross arms, and class two and class four poles.

a. Please provide any lifecycle analysis completed by the Company showing any incremental benefit to ratepayers of the above-mentioned materials that might justify the incremental cost, stating when such analysis was conducted by the Company.

b. How does the Company account for risk associated with long-term investments (50+ years) that could "tether [customers] to particular technologies that may become outmoded or provide only partial solutions" to a customer need within their projected lifecycle? (citing Eversource April 2019 Comment in IR 15-296)

Response:

a. The installation of steel poles in rights-of-way will provide financial and environmental benefits, The poles are more durable and last twice as long as wood poles; therefore the cost of installing and accessing these poles is reduced effectively by half. For example, the cost of wetlands matting to limit the impact of heavy equipment has proven to be significant, as regulations and permitting requirements have become more burdensome. Although wood was the construction material of choice in the last century, it has been displaced by steel and composite materials in many cases due to the strength and resilience, including resistance to rot, of these other products. Steel poles also allow for longer spans and fewer pole sets. The Company's calculation of life-cycle benefits for steel poles is as follows:

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b. The Company expects that poles, cross-arms, and electric lines will still be required in 50+ years and does not see that the proposed investments would become outmoded within their projected lifecycle.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-010 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 091, Lines 20-21, describing the refurbished Viper reclosers as having been redeployed in the field. Please describe the accounting treatment of the costs associated with the Viper recloser purchase, installation, removal, and redeployment. If costs associated with removal and redeployment were booked as capital expenses, rather than maintenance, please explain why that is the case.

Response:
Viper reclosers were purchased into inventory, installed as a capital plant addition (FERC Account 101 Electric Plant in Service), and removed under FERC Account 108. Redeployment was done at no material cost for the redeployed units. The reimbursement from G&W for the cost to install and remove the defective units was applied to the individual work orders to offset the labor associated with removal and replacement.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-011 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 092, Line 9, "negotiated arrangement." Please provide any and all copies of the referenced negotiated arrangement between Eversource and the Viper manufacturer.

Response:
Please see the attached confidential documents for the requested information.

Pursuant to Puc 203.08(d) and RSA 363:28, VI, Eversource provides this response on a confidential basis to the Commission Staff and the Office of Consumer Advocate. Eversource submits that it has a good faith basis for seeking confidential treatment of the documents in this response and that it intends to submit a motion for confidential treatment of the documents prior to the commencement of any hearing in this proceeding.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/19/2020**
Request No. STAFF 16-012 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 088 – 090, describing "significant negative impact to reliability" and "address an urgent reliability and safety issue" involving the defective Viper reclosers. Please provide any and all failure and safety reports that describe in detail the number, nature, and location of the actual incidents that negatively impacted reliability and safety occurring prior to replacement of the defective Viper reclosers.

Response:
Details on Viper recloser failures in 2016, 2017, and 2018 and the associated reliability impact are shown it the attached Excel spreadsheet, Attachment Staff 16-012.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-013 **Page 1 of 1**
Request from: **New Hampshire Public Utilities Commission Staff**

Witness: **Erica L. Menard, Lee G. Lajoie, David L. Plante**

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 066. Are projects included by the Company for recovery in this rate case, and designated by Eversource to be in service and "used and useful," exempt from any type of prudence review undertaken by Staff? If so, under what circumstances (and project type) would such an exemption be triggered?

Response:
The Company is not requesting, and does not expect, any sort of "exemption" from a review of prudence for projects that were completed, are "used and useful" and presented for cost recovery in this case. The Company presented detailed authorizations and project documentation on more than 100 capital projects in this proceeding through the discovery and audit process for the sole purpose of enabling a prudence review. There is no statement or language on Bates 066 that indicates anything to the contrary and none is intended.

Public Service of New Hampshire d/b/a Eversource Energy
Docket No. DE 19-057

Date Request Received: 03/10/2020 **Date of Response: 03/20/2020**
Request No. STAFF 16-015 **Page 1 of 1**
Request from: New Hampshire Public Utilities Commission Staff

Witness: Erica L. Menard, Lee G. Lajoie, David L. Plante

Request:
Reference Menard, Lajoie, and Plante Rebuttal Testimony at Bates 078, "forecast load growth." Please provide any studies or reports that update and/or substantiate the load growth forecasted for the "Lakes Region" from the date of the original forecast to present.

Response:
The annual forecasts for the Lakes Region for years 2010 through 2017 used in planning studies is provided in Attachment Staff 16-015. A specific customer name has been redacted within the attachment. The Company transitioned from a planning region forecast to a substation level forecast after 2017, therefore a "Lakes Region" forecast is not available after 2017.

Pursuant to Puc 203.08(d) and RSA 363:28, VI, Eversource provides this response on a confidential basis to the Commission Staff and the Office of Consumer Advocate. Eversource submits that it has a good faith basis for seeking confidential treatment of the documents in this response and that it intends to submit a motion for confidential treatment of the documents prior to the commencement of any hearing in this proceeding.

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A15CDA **Status** open **Revision** 30

Project Title CENTRAL REGION 2015 DA **Operating Unit**

Initiated By Randy Herk **Initiated Date** 1/2/2015 09:47:35

Description of Work Installation and commisioning of 25 SCADA devices on the 34.5KV system. all asssociated line work deemed to be minor in detail to support the DA deployment.

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/2/2015 **Est Complete Date :** 12/31/2017

	2015	2016	2017	2018	2019	Future Years	Total
	$1,648,945.47	$0.00	$3,936,000.00	$0.00	$0.00	$0.00	$5,584,945
	Capital	Expense	Removal	Retirements	Credits		
Cost Breakdown	$5,584,945	$0	$0	$0	$0	$5,584,945.47	

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	10/24/2017
Plant Accounting	Salbinski, Chris	$0	10/24/2017
Manager - PSNH Dist	Lajoie, Lee	$100,000	10/25/2017
Director - PSNH Dist	Eilenberger_TERMINATED, James	$250,000	11/8/2017
Sr. VP/President - Ops	Clarke_TERMINATED, Peter	$5,000,000	11/9/2017
Executive VP - COO	Schweiger, Werner	$12,500,000	11/10/2017

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Date Prepared: 10/2/17	Project Title: Central Region 2015 DA
Company/Companies: NH	Project ID Number: A15CDA
Organization: NH Engineering	Plant Class/(F.P.Type): Distribution
Project Initiator: Ryan West	Project Type: Specific
Project Manager: Lee Lajoie	Capital Investment Part of Original Operating Plan? N
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N
Current Authorized Amount: $1,649,000	Estimated in service date(s): 12/31/2017
Supplement Request: $3,936,000	Other:
Total Request: $5,585,000	

Supplement Justification

Supplement Request Forms must be completed for projects in accordance with the Project Authorization Policy and approval levels in the Delegation of Authority Policy (DOA) as follows:

For Corporate Shared Services Projects:
For projects $500K to $10M - An increase in total authorized cost > 15% or;
For projects > $10M - An increase in total authorized cost > $1.5M

For Distribution Operations Projects:
For projects <= $250K - An increase in direct costs >= $25K or;
For projects >$250K - An increase in direct costs >10%

For Transmission Operations Projects:
For projects <= $500K – An increase in total authorized cost >= $75K
For projects $500K to $16.5M- An increase in total authorized cost > 15% or;
For projects > $16.5M - An increase in total authorized cost > $2.5M

Justification for Additional Resources

In this section, please provide a detailed and comprehensive justification for the additional resources. Please include, scope changes, dollar changes, the reasons for the changes, etc.

In addition, please attach a copy of the prior authorized PAF as reference

Total Request figure of $5,585,000 reflects total anticipated expenditures to meet targeted installations of pole top Distribution Automation devices in Central Region under Base Budget. When this project was approved, the Company expected the REP to be extended at its existing funding level through the end of 2017. In July of 2017 the NHPUC approved a funding level for REP for the remainder of 2017 at half its previous level. In order to maintain the pole top DA installations at the planned level, the decision was made to change the funding source for non-REP installations to base budget. Original Authorized Amount did not include funding for installations in the July 1 2017 to December 31, 2017 time period. Expenditures have been approved as part of the capital budget tracking process.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Cost Summary

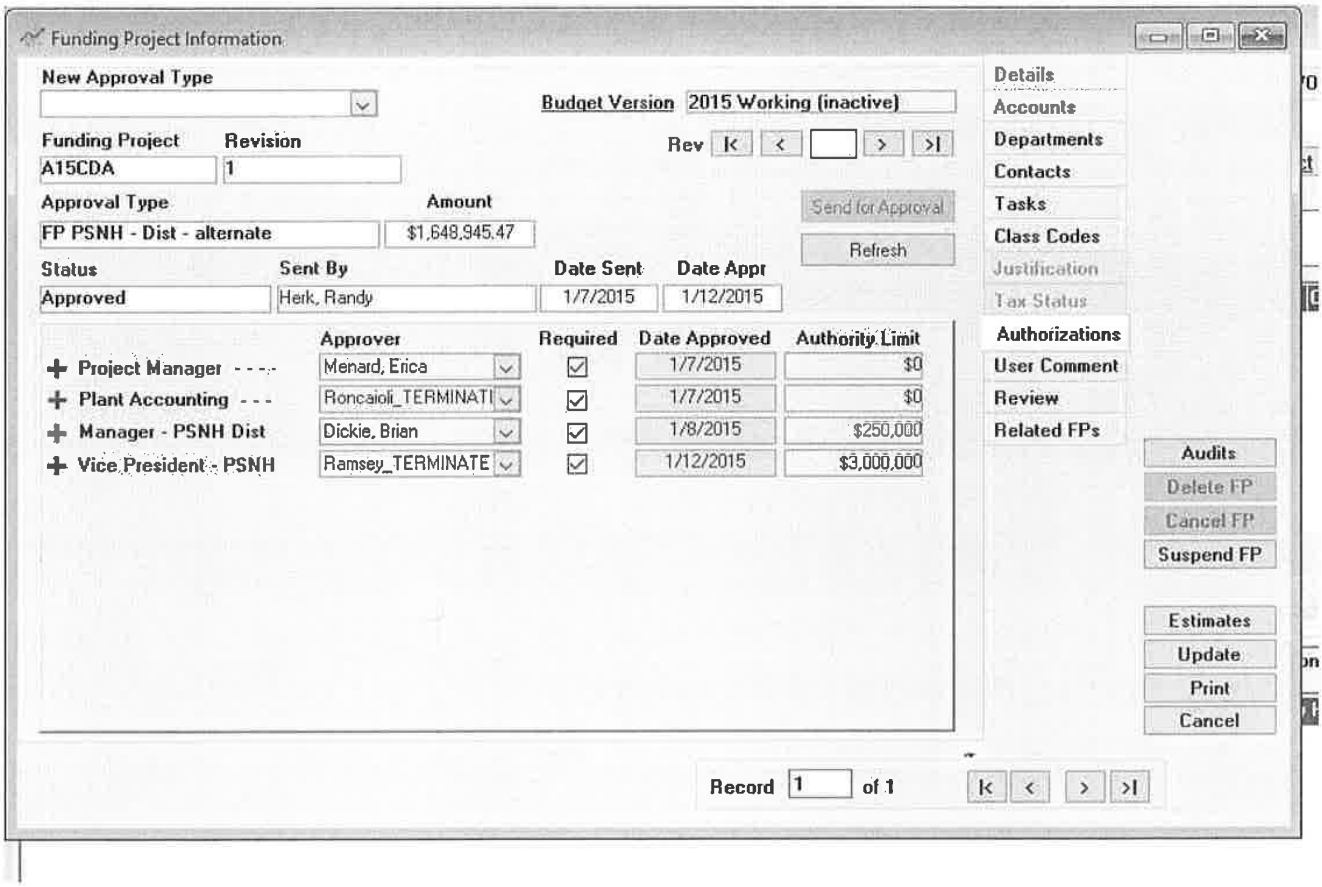
Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 1,649	$ 2,731	$ 4,380
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 1,649	$ 2,731	$ 4,380
Capital Additions - Indirect	-	1,166	1,166
AFUDC	-	39	39
Total Capital Request	$ 1,649	$ 3,936	$ 5,585
O&M	-	-	-
Total Request	**$ 1,649**	**$ 3,936**	**$ 5,585**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 2,731	$ -	$ -	$ 2,731
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 2,731	$ -	$ -	$ 2,731
Capital Additions - Indirect	1,166	-	-	1,166
AFUDC	39	-	-	39
Total Capital Request	$ 3,936	$ -	$ -	$ 3,936
O&M	-	-	-	-
Total Request	**$ 3,936**	**$ -**	**$ -**	**$ 3,936**


Funding Project Information
New Approval Type
Budget Version 2015 Working (inactive)
Rev
Funding Project
A15CDA
Revision
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Approval Type
FP PSNH - Dist - alternate
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Send for Approval
Refresh
Status
Approved
Sent By
Herk, Randy
Date Sent
1/7/2015
Date Appr
1/12/2015
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
1/7/2015
$0
Plant Accounting
Roncaioli_TERMINATI
1/7/2015
$0
Manager - PSNH Dist
Dickie, Brian
1/8/2015
$250,000
Vice President - PSNH
Ramsey_TERMINATE
1/12/2015
$3,000,000
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Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

PSNH
2015 Capital Construction Budget
Project Authorization Form

Project Title:	Central Region 2015 DA				
Business Group:	Distribution		**Project Area:**	Central	
Project Category:	Reliability		**Project ID:**	A15CDA	
Project Cost:			**Budgeted** ☑	**Unbudgeted** ☐	
Current Year	**Capital:**	$1,648,945	**Expense:**	$0	
Total Project	**Capital:**		**Expense:**	$0	
Start Date: (mm/yy)		Jan-15	**In-service Date: (mm/yy)**		Dec-15
Project Initiator:	PSNH DA plan				
Project Owner/Manager	Brian Dickie				

Project Description:

Project includes the following:
Installation and commissioning of 25 SCADA devices on the 34.5 kV system
All associated line work deemed to be minor in detail to support the DA deployment

Project Justification:

Problem Statement

• Project is part of the long term Distribution Automation strategy. This sub-project will Start the 34.5 kV Central area Distribution Automation plan.

Project Objectives

Increase system awareness
Increase reliability
Increase customer satisfaction
Decrease large customer impacts per single outage event and outage duration

PSNH **2014 Capital Construction Budget** **Project Authorization Form**

(complete if over $200K Capital, including contingency and indirects)

Risk: (describe the risk of not doing the work)

- Not completing the PSNH DA strategy

*continued reliability issues associated with large single contingency outage events

Benefit:

*System reliability increase

*Customer satisfication will increase

*efficiencies in line operations and increased system awareness

Alternatives Considered: (if applicable)

N/A

Financial Evaluation: (Describe the project schedule and milestones)

Ongoing yearly five year project

devices installs complete by May 30, 2105.

SCADA comissioning by October 2015

Direct Capital Costs	Year 1	Year 2	Year 3	Total Direct Capital Costs
NU Labor	$200,000			$200,000
Contract Labor	$0			$0
Outside Services				$0
Materials & Supplies	$856,200			$856,200
Other (Fees & Payments, Rents & Leases, Emp Exp, Salvage)				$0
Contingency				$0
Total	$1,056,200	$0	$0	$1,056,200

Indirect Capital Costs	Year 1	Year 2	Year 3	Total Indirect Capital Costs
Benefits	$131,326			$131,326
Loaders	$333,918			$333,918
AFUDC	$9,604			$9,604
Other	$117,897			$117,897
Total	$592,745	$0	$0	$592,745
Total Capital Costs	$1,648,945	$0	$0	$1,648,945
Total O&M Costs				$0

Other Comments:

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A15EDA **Status** open **Revision** 34

Project Title EASTERN REGION 2015 DA **Operating Unit**

Initiated By Randy Herk **Initiated Date** 1/2/2015 11:10:44

Description of Work Installation and commisioning of 4 SCADA devices on the 34.5kv system. alll associated line work deemed to be minor in detail to support the DA deployment.

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/2/2015 **Est Complete Date :** 1/31/2018

	2015	2016	2017	2018	2019	Future Years	Total
	$358,550.71	$0.00	$3,372,449.29	$1,452,000.00	$0.00	$0.00	$5,183,000
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$5,130,000	$0	$53,000	$0	$0	$5,183,000.00

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	2/7/2019
Plant Accounting	Salbinski, Chris	$0	2/7/2019
Manager - PSNH Dist	Lajoie, Lee	$100,000	2/7/2019
Director - PSNH Dist	Eilenberger_TERMINATED, James	$250,000	2/7/2019
Vice President - PSNH	Purington, Joseph	$1,000,000	2/11/2019
Sr. VP/President - Ops	Quinlan, William	$5,000,000	10/9/2019
Executive VP - COO	Schweiger, Werner	$12,500,000	10/9/2019

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Date Prepared: 1/23/2019	Project Title: Eastern Region 2015 DA
Company/Companies: NH	Project ID Number: A15EDA
Organization: NH Engineering	Plant Class/(F.P.Type): Distribution
Project Initiator: Ryan West	Project Type: Specific
Project Manager: Lee Lajoie	Capital Investment Part of Original Operating Plan? Yes
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? Yes
Current Authorized Amount: $3,731,000	Estimated in service date(s): 1/31/2018
Supplement Request: $1,452,000	Other:
Total Request: $5,183,000	

Supplement Justification

Justification for Additional Resources

Total Request figure of $5,183,000 reflects total expenditures under this project to meet targeted installations of pole top Distribution Automation devices in Eastern Region under Base Budget in the 2015 – 2018 timeframe.

The Current Authorized Amount above did not include 17 devices which were installed and commissioned under this project in early 2018. These installations were written under this project in the Work Management System well in advance of the actual installation date and changing the project number would have required extensive work to re-write under a new project number so it was decided to continue with the installations under A15EDA. Processes have been put it place to prevent this situation from occurring again by gaining approval for the next year's expenditures late in the current year.

Expenditures had been approved as part of the capital budget tracking process, but the proper Supplemental Authorization was not completed. This document is intended to address that oversight.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Cost Summary

Note: Dollar values are in thousands:

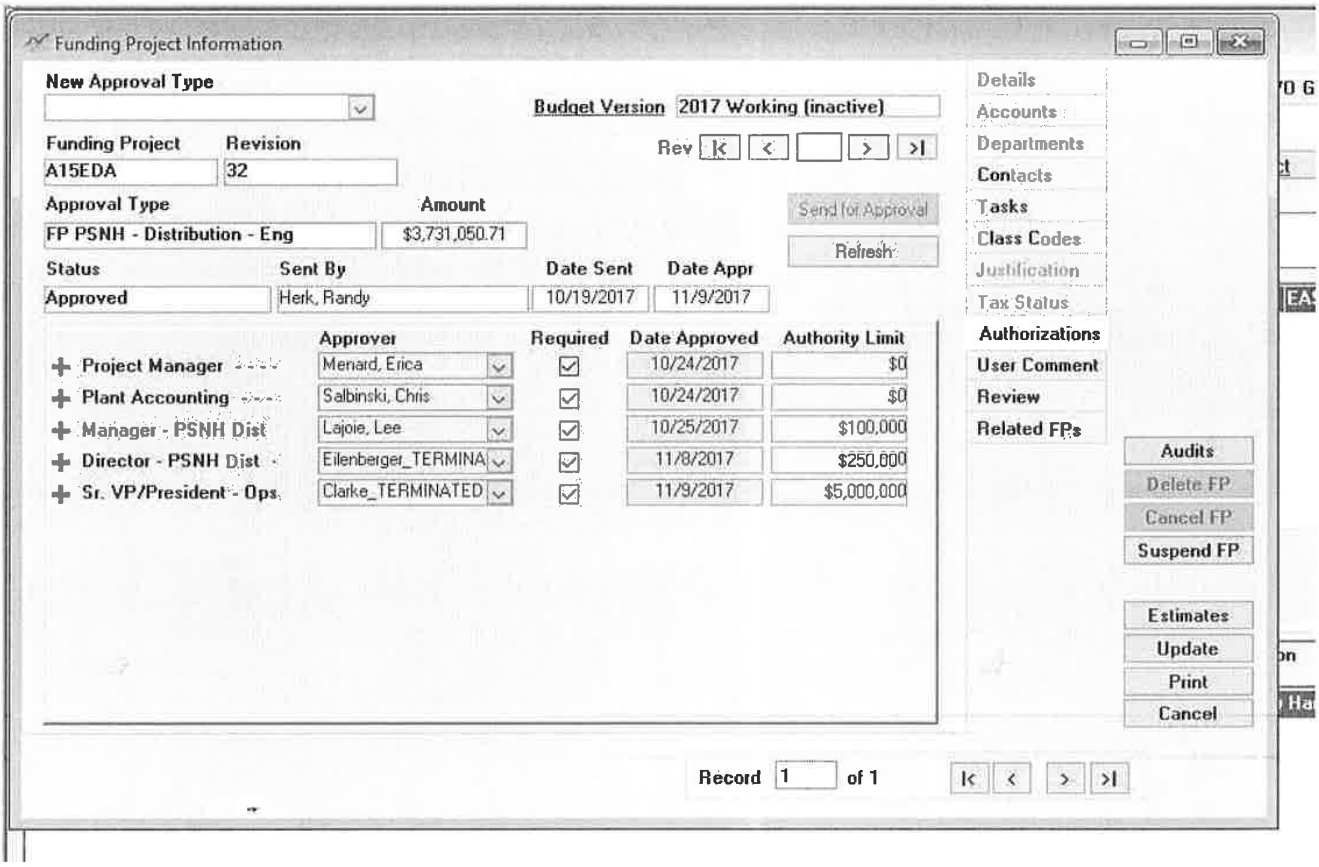
	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 2,845	$ 794	$ 3,639
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	53	53
Total Direct Spending	$ 2,845	$ 847	$ 3,692
Capital Additions - Indirect	850	627	1,477
AFUDC	36	(22)	14
Total Capital Request	$ 3,731	$ 1,452	$ 5,183
O&M	-	-	-
Total Request	**$ 3,731**	**$ 1,452**	**$ 5,183**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2018	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 794	$ -	$ -	$ 794
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	53	-	-	53
Total Direct Spending	$ 847	$ -	$ -	$ 847
Capital Additions - Indirect	627	-	-	627
AFUDC	(22)	-	-	(22)
Total Capital Request	$ 1,452	$ -	$ -	$ 1,452
O&M	-	-	-	-
Total Request	**$ 1,452**	**$ -**	**$ -**	**$ 1,452**

Confirmed Prior Authorized had no removals. LGL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Funding Project
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Revision
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Refresh
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Date Sent
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Date Appr
11/9/2017
Approver
Required
Date Approved
Authority Limit
Project Manager
Menard, Erica
10/24/2017
$0
Plant Accounting
Salbinski, Chris
10/24/2017
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Manager - PSNH Dist
Lajoie, Lee
10/25/2017
$100,000
Director - PSNH Dist
Eilenberger_TERMINA
11/8/2017
$250,000
Sr. VP/President - Ops
Clarke_TERMINATED
11/9/2017
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Contacts
Tasks
Class Codes
Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record 1 of 1

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Date Prepared: 10/2/17	Project Title: Eastern Region 2015 DA
Company/Companies: NH	Project ID Number: A15EDA
Organization: NH Engineering	Plant Class/(F.P.Type): Distribution
Project Initiator: Ryan West	Project Type: Specific
Project Manager: Lee Lajoie	Capital Investment Part of Original Operating Plan? N
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N
Current Authorized Amount: $359,000	Estimated in service date(s): 12/31/2017
Supplement Request: $3,372,000	Other:
Total Request: $3,731,000	

Supplement Justification

Supplement Request Forms must be completed for projects in accordance with the Project Authorization Policy and approval levels in the Delegation of Authority Policy (DOA) as follows:

For Corporate Shared Services Projects:
For projects $500K to $10M - An increase in total authorized cost > 15% or;
For projects > $10M - An increase in total authorized cost > $1.5M

For Distribution Operations Projects:
For projects <= $250K - An increase in direct costs >= $25K or;
For projects >$250K - An increase in direct costs >10%

For Transmission Operations Projects:
For projects <= $500K – An increase in total authorized cost >= $75K
For projects $500K to $16.5M- An increase in total authorized cost > 15% or;
For projects > $16.5M - An increase in total authorized cost > $2.5M

Justification for Additional Resources

In this section, please provide a detailed and comprehensive justification for the additional resources. Please include, scope changes, dollar changes, the reasons for the changes, etc.

In addition, please attach a copy of the prior authorized PAF as reference

Total Request figure of $3,731,000 reflects total anticipated expenditures to meet targeted installations of pole top Distribution Automation devices in Eastern Region under Base Budget. When this project was approved, the Company expected the REP to be extended at its existing funding level through the end of 2017. In July of 2017 the NHPUC approved a funding level for REP for the remainder of 2017 at half its previous level. In order to maintain the pole top DA installations at the planned level, the decision was made to change the funding source for non-REP installations to base budget. Original Authorized Amount did not include funding for installations in the July 1 2017 to December 31, 2017 time period. Expenditures have been approved as part of the capital budget tracking process.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Cost Summary

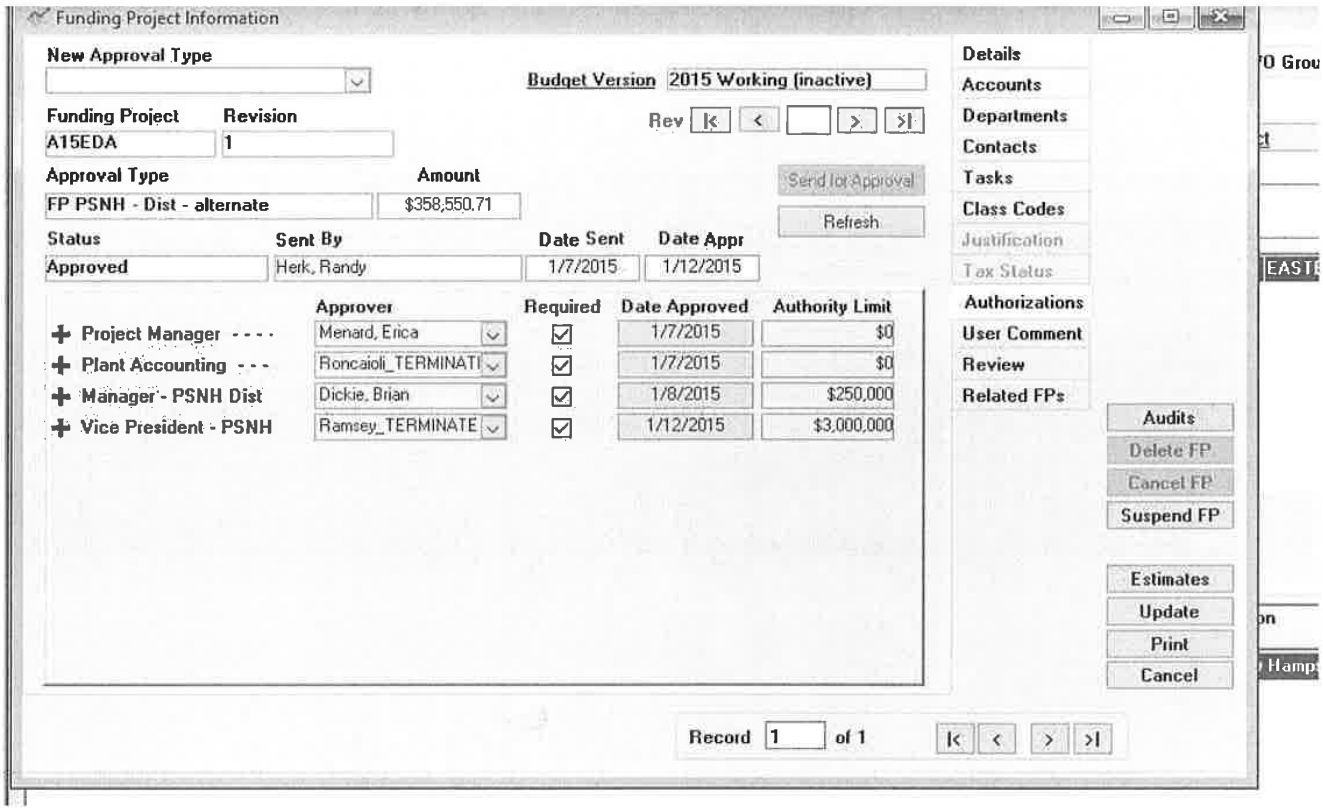
Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 359	$ 2,608	$ 2,967
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 359	$ 2,608	$ 2,967
Capital Additions - Indirect	-	730	730
AFUDC	-	34	34
Total Capital Request	$ 359	$ 3,372	$ 3,731
O&M	-	-	-
Total Request	**$ 359**	**$ 3,372**	**$ 3,731**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 2,608	$ -	$ -	$ 2,608
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 2,608	$ -	$ -	$ 2,608
Capital Additions - Indirect	730	-	-	730
AFUDC	34	-	-	34
Total Capital Request	$ 3,372	$ -	$ -	$ 3,372
O&M	-	-	-	-
Total Request	**$ 3,372**	**$ -**	**$ -**	**$ 3,372**


Funding Project Information
New Approval Type
Budget Version
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Funding Project
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Revision
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Send for Approval
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Date Appr
1/12/2015
Approver
Required
Date Approved
Authority Limit
Project Manager
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Dickie, Brian
1/8/2015
$250,000
Vice President - PSNH
Ramsey_TERMINATE
1/12/2015
$3,000,000
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Justification
Tax Status
Authorizations
User Comment
Review
Related FPs
Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Cancel
Record
1
of 1

PSNH
2015 Capital Construction Budget
Project Authorization Form

Project Title:	Eastern Region 2015 DA				
Business Group:	Distribution		**Project Area:**	Eastern	
Project Category:	Reliability		**Project ID:**	A15EDA	
Project Cost:			**Budgeted** ☑	**Unbudgeted** ☐	
Current Year	**Capital:**	$358,551	**Expense:**	$0	
Total Project	**Capital:**		**Expense:**	$0	
Start Date: (mm/yy)		Jan-15	**In-service Date: (mm/yy)**		Dec-15
Project Initiator:	PSNH DA plan				
Project Owner/Manager	Brian Dickie				

Project Description:

Project includes the following:
Installation and comissioning of 4 SCADA devices on the 34.5 kV system
All associated line work deemed to be minor in detail to support the DA deployment

Project Justification:

Problem Statement

• *Project is part of the long term Distribution Automation strategy. This sub-project will Start the 34.5 kV Central area Distribution Automation plan.*

Project Objectives

Increase system awareness
Increase reliability
Increase customer satisfaction
Decrease large customer impacts per single outage event and outage duration

PSNH **2014 Capital Construction Budget** **Project Authorization Form**

(complete if over $200K Capital, including contingency and indirects)

Risk: (describe the risk of not doing the work)

- Not completing the PSNH DA strategy

*continued reliability issues associated with large single contingency outage events

Benefit:

*System reliability increase

*Customer satisfication will increase

*efficiencies in line operations and increased system awareness

Alternatives Considered: (if applicable)

N/A

Financial Evaluation: (Describe the project schedule and milestones)

Ongoing yearly five year project

devices installs complete by May 30, 2105.

SCADA comissioning by October 2015

Direct Capital Costs	Year 1	Year 2	Year 3	Total Direct Capital Costs
NU Labor	$40,000			$40,000
Contract Labor	$0			$0
Outside Services				$0
Materials & Supplies	$180,000			$180,000
Other (Fees & Payments, Rents & Leases, Emp Exp, Salvage)	$16,240			$16,240
Contingency				$0
Total	$236,240	$0	$0	$236,240

Indirect Capital Costs	Year 1	Year 2	Year 3	Total Indirect Capital Costs
Benefits	$26,265			$26,265
Loaders	$70,200			$70,200
AFUDC	$2,066			$2,066
Other	$23,780			$23,780
Total	$122,311	$0	$0	$122,311

Total Capital Costs	$358,551	$0	$0	$358,551

Total O&M Costs				$0

Other Comments:

Public Service Co of New Hampshire
Project Approval Information

Fund Project Number A15NDA **Status** open **Revision** 29

Project Title NORTHERN REGION 2015 DA **Operating Unit**

Initiated By Randy Herk **Initiated Date** 1/2/2015 13:30:31

Description of Work Installation and commissioning of 59 SCADA devices on the 34.5kv system. Installation of 3 12.47kv SCADA devices at Lancaster substation. all associated line work deemed to be minor in detail to support the DA deployment

Location Distribution Line - New Hampshire

Project Schedule / Expenditures **Est Start Date :** 1/2/2015 **Est Complete Date :** 12/31/2017

	2015	2016	2017	2018	2019	Future Years	Total
	$3,578,105.89	$0.00	$3,562,900.00	$0.00	$0.00	$0.00	$7,141,006
		Capital	Expense	Removal	Retirements	Credits	
Cost Breakdown		$7,141,006	$0	$0	$0	$0	$7,141,005.89

Reason For Work

Background Information

Approvals

Level	Approver	Approval Limit	Date Approved
Project Manager	Menard, Erica	$0	10/24/2017
Plant Accounting	Salbinski, Chris	$0	10/24/2017
Manager - PSNH Dist	Lajoie, Lee	$100,000	10/25/2017
Director - PSNH Dist	Eilenberger_TERMINATED, James	$250,000	11/8/2017
Sr. VP/President - Ops	Clarke_TERMINATED, Peter	$5,000,000	11/9/2017
Executive VP - COO	Schweiger, Werner	$12,500,000	11/10/2017

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Request Form

Date Prepared: 10/2/17	Project Title: Northern Region 2015 DA
Company/Companies: NH	Project ID Number: A15NDA
Organization: NH Engineering	Plant Class/(F.P.Type): Distribution
Project Initiator: Ryan West	Project Type: Specific
Project Manager: Lee Lajoie	Capital Investment Part of Original Operating Plan? N
Project Sponsor: James Eilenberger	O&M Expenses Part of the Original Operating Plan? N
Current Authorized Amount: $3,578,000	Estimated in service date(s): 12/31/2017
Supplement Request: $3,563,000	Other:
Total Request: $7,141,000	

Supplement Justification

Supplement Request Forms must be completed for projects in accordance with the Project Authorization Policy and approval levels in the Delegation of Authority Policy (DOA) as follows:

For Corporate Shared Services Projects:
For projects $500K to $10M - An increase in total authorized cost > 15% or;
For projects > $10M - An increase in total authorized cost > $1.5M

For Distribution Operations Projects:
For projects <= $250K - An increase in direct costs >= $25K or;
For projects >$250K - An increase in direct costs >10%

For Transmission Operations Projects:
For projects <= $500K – An increase in total authorized cost >= $75K
For projects $500K to $16.5M- An increase in total authorized cost > 15% or;
For projects > $16.5M - An increase in total authorized cost > $2.5M

Justification for Additional Resources

In this section, please provide a detailed and comprehensive justification for the additional resources. Please include, scope changes, dollar changes, the reasons for the changes, etc.

In addition, please attach a copy of the prior authorized PAF as reference

Total Request figure of $7,141,000 reflects total anticipated expenditures to meet targeted installations of pole top Distribution Automation devices in Northern Region under Base Budget. When this project was approved, the Company expected the REP to be extended at its existing funding level through the end of 2017. In July of 2017 the NHPUC approved a funding level for REP for the remainder of 2017 at half its previous level. In order to maintain the pole top DA installations at the planned level, the decision was made to change the funding source for non-REP installations to base budget. Original Authorized Amount did not include funding for installations in the July 1 2017 to December 31, 2017 time period.

EVERSOURCE

APS 1 - Project Authorization Policy

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 3,578	$ 2,518	$ 6,096
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	-	-	-
Total Direct Spending	$ 3,578	$ 2,518	$ 6,096
Capital Additions - Indirect	-	1,009	1,009
AFUDC	-	36	36
Total Capital Request	$ 3,578	$ 3,563	$ 7,141
O&M	-	-	-
Total Request	**$ 3,578**	**$ 3,563**	**$ 7,141**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 20__	Year 20__+	Total
Capital Additions - Direct	$ 2,518	$ -	$ -	$ 2,518
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	-	-	-
Total Direct Spending	$ 2,518	$ -	$ -	$ 2,518
Capital Additions - Indirect	1,009	-	-	1,009
AFUDC	36	-	-	36
Total Capital Request	$ 3,563	$ -	$ -	$ 3,563
O&M	-	-	-	-
Total Request	**$ 3,563**	**$ -**	**$ -**	**$ 3,563**

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Data Request STAFF 12-045
Dated 9/20/2019
Attachment STAFF 12-045 G
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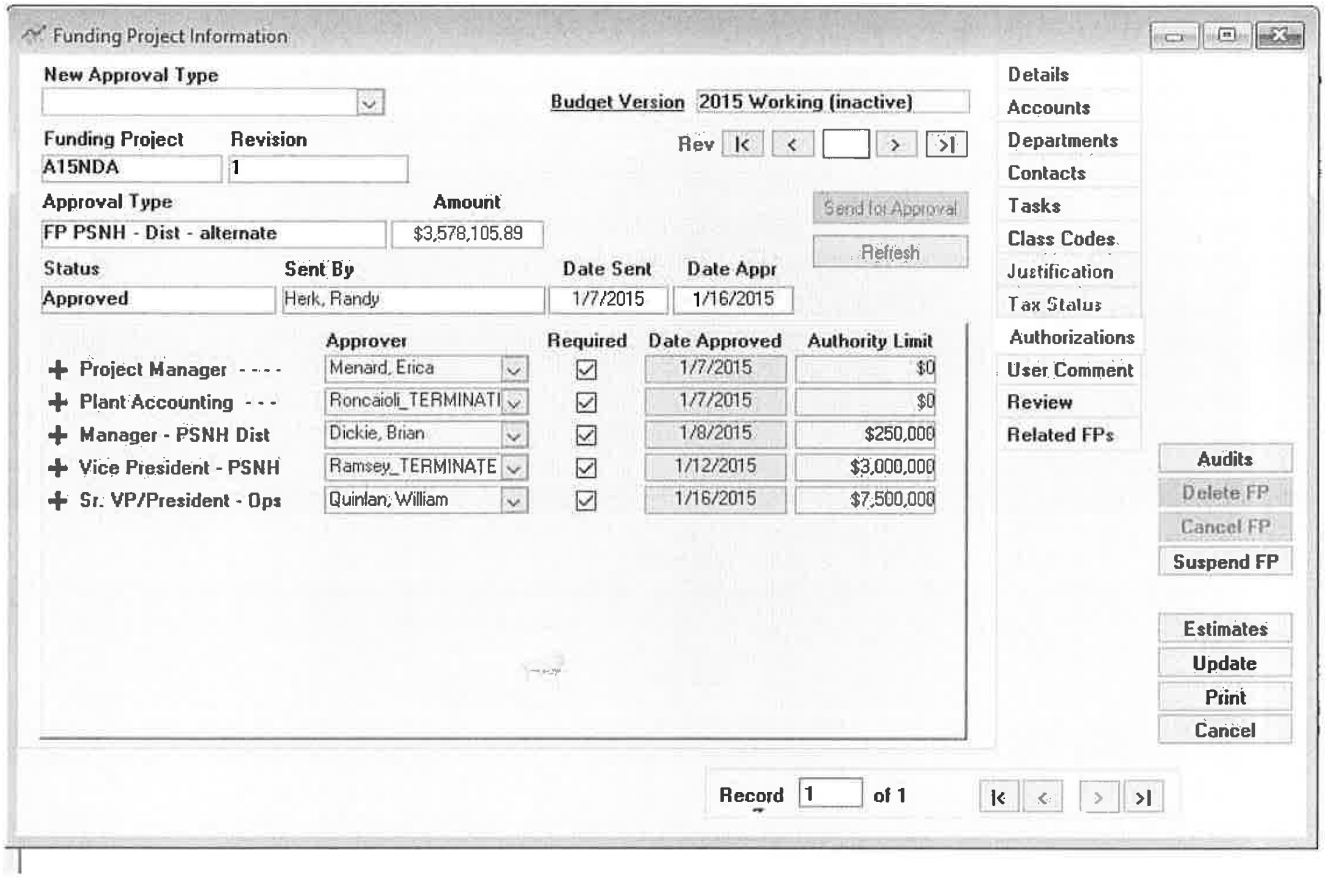

PSNH
2015 Capital Construction Budget
Project Authorization Form

Project Title:	Northern Region 2015 DA				
Business Group:	Distribution		**Project Area:**	Northern	
Project Category:	Reliability		**Project ID:**	A15NDA	
Project Cost:			**Budgeted** ☑	**Unbudgeted** ☐	
Current Year	**Capital:**	$3,578,106	**Expense:**	$0	
Total Project	**Capital:**		**Expense:**	$0	
Start Date: (mm/yy)		Jan-15	**In-service Date: (mm/yy)**		Dec-15
Project Initiator:	PSNH DA plan				
Project Owner/Manager	Brian Dickie				

Project Description:

Project includes the following:
Installation and comissioning of 59 SCADA devices on the 34.5 kV system
Installation of 3 12.47 kV SCADA devices at Lancaster substation
All associated line work deemed to be minor in detail to support the DA deployment

Project Justification:

Problem Statement

• *Project is part of the long term Distribution Automation strategy. This sub-project will complete the 34.5 kV northern area Distribution Automation plan.*

Project Objectives

Increase system awareness
Increase reliability
Increase customer satisfaction
Decrease large customer impacts per single outage event and outage duration

PSNH **2014 Capital Construction Budget** **Project Authorization Form**

(complete if over $200K Capital, including contingency and indirects)

Risk: (describe the risk of not doing the work)

- Not completing the PSNH DA strategy

*continued reliability issues associated with large single contingency outage events

Benefit:

*System reliability increase

*Customer satisfication will increase

*efficiencies in line operations and increased system awareness

Alternatives Considered: (if applicable)

N/A

Financial Evaluation: (Describe the project schedule and milestones)

Ongoing yearly five year project

devices installs complete by May 30, 2105.

SCADA comissioning by October 2015

Direct Capital Costs	Year 1	Year 2	Year 3	Total Direct Capital Costs
NU Labor	$372,000			$372,000
Contract Labor	$180,000			$180,000
Outside Services				$0
Materials & Supplies	$1,781,600			$1,781,600
Other (Fees & Payments, Rents & Leases, Emp Exp, Salvage)				$0
Contingency				$0
Total	$2,333,600	$0	$0	$2,333,600

Indirect Capital Costs	Year 1	Year 2	Year 3	Total Indirect Capital Costs
Benefits	$244,266			$244,266
Loaders	$694,824			$694,824
AFUDC	$21,614			$21,614
Other	$283,802			$283,802
Total	$1,244,506	$0	$0	$1,244,506

Total Capital Costs	$3,578,106	$0	$0	$3,578,106

Total O&M Costs				$0

Other Comments: