Supplement Request Form

Approved at August 29, 2018 EPAC

Link to Meeting Minutes

Date Prepared: 8/21/18	**Project Title: [redacted] - OCB Replacement**
Company/Companies: Eversource CT	**Project ID Number: CS00235**
Organization: Asset Management	**Plant Class/(F.P.Type): Distribution Substation**
Project Initiator: [redacted]	**Project Type: Specific**
Project Manager: [redacted]	**Capital Investment Part of Original Operating Plan? Yes**
Project Sponsor: [redacted]	**O&M Expenses Part of the Original Operating Plan? No**
Current Authorized Amount: $375,000	**Estimated in service date(s): 10/31/2018**
Supplement Request: $$349,000	**Other:**
Total Request: $724,000	

Supplement Justification

This request is for supplemental funding in the amount of $349K for the Windsor Locks OCB replacement project. This supplemental approval will increase the total authorized funding for the project to $724K.

The initial authorized budget for the project was $375K approved at the March 28, 2018 EPAC.

There are six factors contributing to additional cost for this project.

1. **Construction Representative-** The original estimate for construction did not account for a Construction Representative. Eversource Construction was not able to support this project and the construction scope was competitively bid. The bid was awarded to McPhee. In order for this contractor to work on Eversource property, they must be supervised by a Construction Rep. The original estimate did not include costs associated with a Construction Rep. The cost for a Construction Rep to support this project is **$85.4K**

2. **Lead Commissioning Engineer-**The original estimate did not account for a Lead Commissioning Engineering (LCE). Per SUB202, a Testing & Commissioning contractor must be supervised by an LCE in order to work on Eversource property. The cost for an LCE is and additional **$60K.**

3. **Outside Services-** Eversource Testing Department was not able to support this project. The Testing & Commissioning scope was below the $250K threshold and the bid was direct awarded to EPS-T, a contractor on the Contractor of Choice list through Eversource procurement. The estimate has been validated by the LCE and Substation Tech Engineering

   Eversource Construction was not able to support this project and the construction scope was competitively bid after this project's funding was authorized in March 2018. The bid was awarded to McPhee.

   Outside services will be an additional **$31.2K**

4. **Engineering Costs-**IFC prints were issued in February 2018. After the IFC prints were issued, there were drawing updates required as a result of two ongoing projects at [redacted]. Engineering support will also be required during construction and during the As-built process. There will be additional Engineering costs for the amount of **$34K**.

5. **Soil Borings-** Eversource civil department took soil borings and tested the existing foundation that will be replaced during construction. This was not included in the original estimate. Soil borings will be an additional **$7K**

6. **Indirect Costs-**The increases above resulted in additional Indirect costs for the amount of **$131.4K.**

Justification for Additional Resources

No additional resources are required. All construction resources will be provided by McPhee Electric as the electrical contractor, testing resources will be provided by ESP-T and civil work to be performed by Eversource In-House Civil.

Supplement Cost Summary

Note: Dollar values are in thousands:

	Prior Authorized	Supplement Request	Total
Capital Additions - Direct	$ 288	$ 214	$ 502
Less Customer Contribution	-	-	-
Removals net of Salvage ____%	14.0	4.0	18.0
Total Direct Spending	$ 302	$ 218	$ 520
Capital Additions - Indirect	60.0	126.6	186.6
AFUDC	13.0	4.8	17.8
Total Capital Request	$ 375	$ 349	$ 724
O&M	-	-	-
Total Request	**$ 375**	**$ 349**	**$ 724**

Note: Dollar values are in thousands:

Total Supplement Request by year view:

	Year 2017	Year 2018	Year 20__+	Total
Capital Additions - Direct	$ 12	$ 487	$ -	$ 500
Less Customer Contribution	-	-	-	-
Removals net of Salvage ____%	-	20.0	-	20.0
Total Direct Spending	$ 12	$ 507	$ -	$ 520
Capital Additions - Indirect	17.1	169.6	-	186.7
AFUDC	0.3	17.6	-	17.9
Total Capital Request	$ 30	$ 695	$ -	$ 724
O&M	-	-	-	-
Total Request	**$ 30**	**$ 695**	**$ -**	**$ 724**

Lessons Learned

Transmission Projects will develop and implement a project review process which will evaluate the Authorized Budget and In-Service Date for a Distribution project as part of the turnover process.

Operations Project Authorization Form

Approved at March 28, 2018 EPAC

Link to Meeting Minutes

Date Prepared: 05/09/2018	**Project Title: [redacted] - OCB replacement**
Company/ies: Eversource CT	**Project ID Number: CS00235**
Organization: Asset Management	**Class(es) of Plant: Distribution Substation**
Project Initiator: [redacted]	**Project Category: Environmental - Substation**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Project Purpose: Replace aging oil circuit breakers**
Estimated in service date: 12/31/2018	**If Transmission Project: PTF? N/A**
Eng. /Constr. Resources Budgeted? Yes	**Capital Investment Part of Original Operating Plan? Yes**
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan? No**
Total Request: $375,000	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

Project CS00235 is seeking full funding of $375,000 for the [redacted]. Eversource CT has a PURA initiative within docket number 14-05-06 that began in 2006 to replace all OCBs within distribution substations to minimize environmental impacts from leaking and failed equipment. The initiative started by targeting OCBs with PCB bushings. In 2012, the initiative increased in scope to include all substation OCBs. Project CS00235 was prior authorized for $50,000 of engineering dollars.

Project Costs Summary ***Note: Dollar values are in thousands***

	Prior Authorized	2018	Total
Capital Additions - Direct	$50	$288	$288
Less Customer Contribution	$0	$0	$0
Removals Net of Salvage 5%	$0	$14	$14
Total - Direct Spending	$50	$302	$302
Capital Additions - Indirect	$0	$60	$60
Subtotal Request	$0	$362	$362
AFUDC	$0	$13	$13
Total Capital Request	$50	$375	$375
O&M	$0	$0	$0
Total Request	$50	$375	$375

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	2018	Total
Straight Time Labor	$12	$12
Overtime Labor	$0	$0
Outside Services	$240	$240
Materials	$50	$50
Other, including contingency amounts	$0	$0
Total	$302	$302

Indirect Capital Costs	2018	Total
Indirects/Overheads (including benefits)	$60	$60
Capitalized interest or AFUDC, if any	$13	$13
Total	$73	$73

Total Capital Costs	$375	$375
Less Total Customer Contribution	$0	$0
Total Capital Project Costs	$375	$375
Total O&M Project Costs	$0	$0

Note: Explain unique payment provisions, if applicable

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: **N/A**

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: **N/A**

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): This project has no retirement obligations.

Technical Justification:

Project Need Statement

Eversource CT has PURA initiative within docket number 14-05-06 that began in 2006 to replace all OCBs from distribution substations to minimize environmental impacts from leaking and failed equipment. The initiative started by targeting OCBs with PCB bushings. In 2012, the initiative increased in scope to include all substation OCBs. [redacted]

Project Objectives

- [redacted]

Project Scope

[redacted]

Verify acceptable foundation parameters for the proposed replacement vacuum circuit breaker

- Existing foundation size is acceptable of new steel
- Foundation loading values match new breaker values
- Perform any foundation enhancements if required by engineering

Additional scope includes extending power and control cables to the new vacuum circuit breaker control enclosure, testing and commissioning of the new breakers.

A separate bus rehabilitation project (CS00234) will address associated switches and other bus equipment.

Background / Justification

The overall capital initiative to eliminate oil filled circuit breakers from the system was presented to (Public Utilities Regulatory Agency) PURA within docket number 14-05-06. It started off with replacing (OCBs) with PCB bushings and has now expanded to all oil filled circuit breakers. The initiative justification was due partly to the amount of environmental damage and the associated dollars the company was exposed to with a PCB bushing/breaker catastrophically failing. The other justification is that the existing OCBs are obsolete with unavailable repair parts. The complete docket mentioned above can be found under References.

As mentioned above under the project need statement, this project is part of an overall oil circuit breaker removal initiative that began in 2006. The initiative was created to decrease the company's environmental exposure to oil spills and leaks, as well as replacing a vital component of aging obsolete substation infrastructure.

Business Process and / or Technical Improvements:

The benefit to customers will be improved reliability and less environmental risk in the future by replacing aging equipment that is both a safety and environmental concern. The replacement Siemens vacuum circuit breakers have higher BIL and short circuit ratings.

Alternatives Considered with Cost Estimates

A do nothing approach is not recommended as an alternative due to not addressing the environmental concerns communicated to PURA.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Engineering	December 2017
Construction start	September 2018
Construction finish	December 2018

Regulatory Approvals

N/A

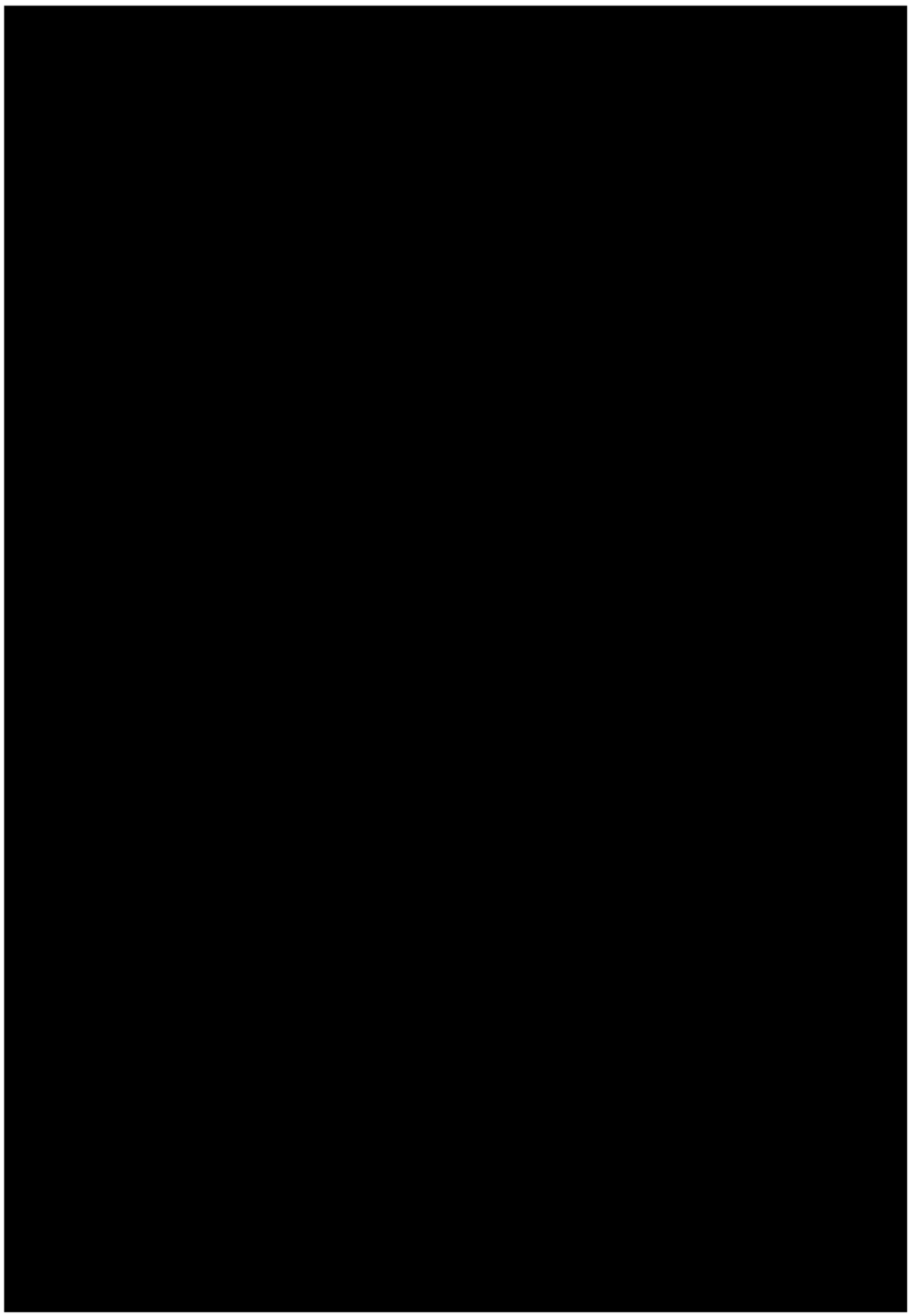
Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Materials Shortage or long lead times	2018	Low Impact	Long lead time materials have been pre-ordered to arrive in plenty of time prior to start of construction. Breakers are stocked items.
System abnormal configuration	2018	High Impact	Pre-build as much as possible prior to taking outages. Work will be scheduled to minimize system abnormal time. Pre-contingent switching may be performed for some breakers.

References

1 *CL&P 2014 Capital Plan*

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



Nomenclature diagram identifying breakers being replaced



Figure1 - [redacted]

Figure 2. - [redacted]

Project Checklist – Transmission and Substation

Checklist for Studies and Processes of a Transmission & Substation Capital Project				
Project Name: [redacted] - OCB replacement				**PAF No: CS00235**
Facility Type: ☐ BPS ☒ BES ☐ PTF ☐ non-PTF ☐ CIP ☒ Distribution				
PLANNING				
Is a NX-9 required?			No	
Is an ISO-NE PAC presentation required?			No	
Is a PPA required?			No	
Is a TCA Application Required?			No	
PLANNING/PROTECTION & CONTROLS				
Are RAS/SPS/UVLs affected?			No	
OPERATIONS				
Outage Required?	☒ Primary Equipment (Power Transfer)	☒ Secondary Equipment (P&C only)	☐ Outage Not Required	
Do SCLL Conditions Exist?			No	
Has an outage schedule been approved?			Yes	
Are Operations & Maintenance procedures/training required?			No	
STANDARDS				
Does the project include standard equipment and designs?			Yes	
SUBSTATION ENGINEERING				
Does this impact Revenue Metering			No	
Is preliminary short circuit/ breaker duty analysis required?			Yes	
Are there any changes to the baseline audible noise?			No	
Is there an impact to the existing ground grid?			Yes	
Is a Transient Over Voltage (TOV) analysis required?			No	
P&C ENGINEERING				
OP-22 - Are PMUs and DDR required?			No	
If BPS, is an NPCC Directory #4 presentation required?			No	

Checklist for Studies and Processes of a Transmission & Substation Capital Project	
Project Name: [redacted] - OCB replacement	**PAF No: CS00235**

TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	No
Are there any changes that affect the baseline EMI?	No
SITING	
Is a Siting filing required?	No
PERMITTING	
Is there any permitting required?	No
SITING & CONSTRUCTION SERVICES (OUTREACH)	
What is the level of outreach expected?	Low
INITIATOR	
Has a field constructability review been completed?	Yes
INVESTMENT RECOVERY	
Does the project require development of an Investment Recovery plan?	No
COST ESTIMATING	
How was the cost estimate prepared?	Other (specify below)
Who prepared the estimate?	Engineering
Was the estimate reviewed by Eversource Estimating?	No

Cost Estimate Backup Details

Decision Making Estimate for PAF

The cost estimate is $250k per transformer breaker for a total cost of $500,000 to replace both OCB's. This cost estimate is based on actual average costs incurred on several recent OCB replacement projects. This assumes that new foundation supports will be required for each of the replacements.

Cost $500,000

The funding information provided on this PAF has been updated to reflect actuals to date along with project cost projections.

Cost $375,000

RESOURCES	Prior Yrs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	TOTAL
DIRECT	Actual	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	Fcst	2018	Project
LT - CT_L01:Labor EESCO	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3
LT - CT_LO1:Labor EECT - Civil, Elect, Test	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
L01-LT - Total Labor	**12.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.3**
AE - CT_EE0:Employee Expenses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AM - CT_M12:Materials-Stores M11 Purchas	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0
AO - CT_OS1:OS Svc-Contr Env	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AQ - CT_OS0:OS Svc-Contr	0.0	15.0	15.0	0.0	0.0	210.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240.0	240.0
AV - CT_V00:Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P1 - CT_A01:Other Misc Acct, Contingency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KR - CT_C01:Contributions, Fees & Paymen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BR - CT_J00:Rents + Leases	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Direct - Excluding Labor	**0.0**	**15.0**	**15.0**	**0.0**	**50.0**	**210.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**290.0**	**290.0**
Total Direct - Including Labor	**12.3**	**15.0**	**15.0**	**0.0**	**50.0**	**210.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**290.0**	**302.3**
INDIRECT															
CT_ZNP:Non-Productive EESCO	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
CT_ZNP:Non-Productive EECT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CT_Z91:Alloc-Mat loaders (Excludes >25K)	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	8.0
CT_Z93:Alloc-PR load Payroll Benefits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CT_Z94:Alloc-GSCOH EESCO	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
CT_Z96:Alloc- E+S	4.3	1.6	1.6	0.0	0.0	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.9	30.2
CT_Z92:Alloc-Misc Costs Cap	0.9	0.4	0.4	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.9
CT_Z90:Alloc- AS+E	0.2	0.2	0.2	0.0	0.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.3
CT_Z98:Alloc - Veh Clear	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	17.1	**2.1**	**2.1**	**0.0**	**8.6**	**30.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**43.0**	**60.0**
Subtotal X-AFUDC	**29.3**	**17.1**	**17.1**	**0.0**	**58.6**	**240.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**333.0**	**362.3**
CT_Z95:Alloc-AFUDC	0.3	0.2	0.2	0.3	0.4	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	12.7	13.0
Total Project Prior To Date-->Month	**29.6**	**17.3**	**17.4**	**0.3**	**59.0**	**241.1**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**345.7**	**375.3**
Total Project - Cumulative To Date	**29.6**	**46.9**	**64.3**	**64.6**	**123.5**	**364.6**	**366.1**	**367.6**	**369.2**	**370.7**	**372.2**	**373.7**	**375.3**	**375.3**	