EVERSOURCE
Project Authorization Form

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 [redacted] versource 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

- Replace identified oil circuit breakers in the substation with Siemens vacuum breakers
- Increase employee safety
- Increase system reliability
- Reduce maintenance intervals

Project Scope

[redacted]

Replacing the obsolete OCBs requires inspecting and retrofitting the existing foundations to accept the proposed Siemens vacuum circuit breaker stand. Typical foundation modifications include installing steel beams, because the dimensions of the vacuum breakers are different than the existing OCBs.

[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

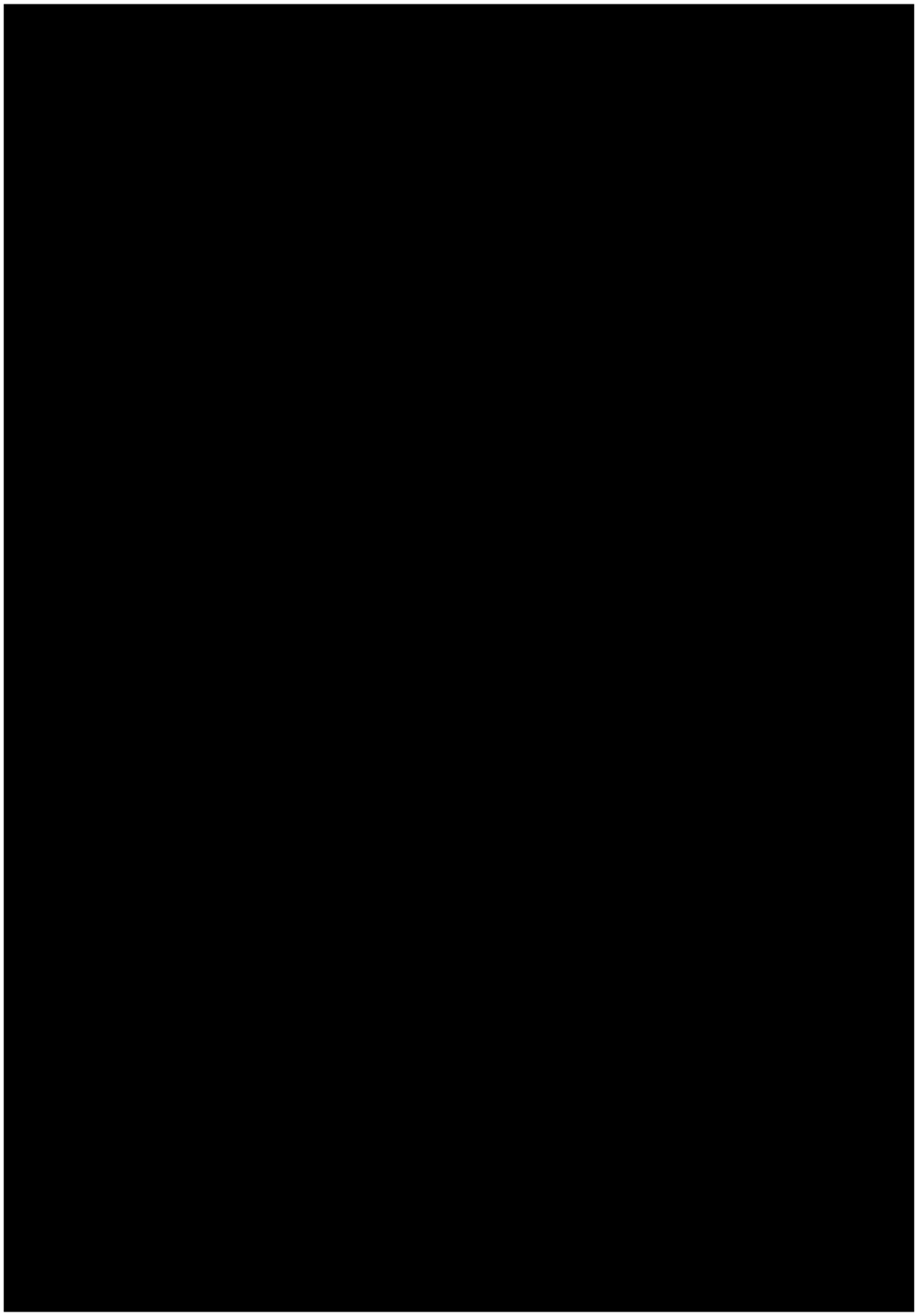
Risks and Risk Mitigation Plans

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 -

Figure 2. -

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**	