Operations Project Authorization Form

Approved at April 25, 2018 EPAC

Link to Meeting Minutes

Date Prepared: 04/16/2018	**Project Title:** [redacted] - Bus Rehab
Company/ies: Eversource CT	**Project ID Number:** CS00234
Organization: Asset Management	**Class(es) of Plant:** Distribution Substation
Project Initiator: [redacted]	**Project Category:** Bus Rehabilitation
Project Manager: [redacted]	**Project Type:** Specific
Project Sponsor: [redacted]	**Project Purpose:** Replace substation bus equipment
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?** Y
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan?** N
Total Request: $1,038,000	

Financial Requirements:

Executive Summary

Project CS00234 is seeking full funding of $1,038,000 for outdoor bus rehabilitation. [redacted]

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized	Prior Years	2018	2019	Total
Capital Additions - Direct	$870	$4	$26	$840	$870
Less Customer Contribution	$0	$0	$0	$0	$0
Removals Net of Salvage 0%	$0	$0	$0	$0	$0
Total - Direct Spending	$870	$4	$26	$840	$870
Capital Additions - Indirect	$165	$5	$15	$145	$166
Subtotal Request	$1,036	$9	$41	$985	$1,036
AFUDC	$2	$0	$2	$0	$2
Total Capital Request	$1,038	$9	$44	$985	$1,038
O&M					
Total Request	$1,038	$9	$44	$985	$1,038

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Prior Years	2018	2019	Total
Straight Time Labor	$4	$7	$15	$26
Overtime Labor	$0	$0	$0	$0
Outside Services	$0	$19	$762	$781
Materials	$0	$0	$64	$64
Other, including contingency amounts	$0	$0	$0	$0
Total	$4	$26	$840	$870
Indirect Capital Costs	**Prior Years**	**2018**	**2019**	**Total**
Indirects/Overheads (including benefits)	$5	$15	$145	$166
Capitalized interest or AFUDC, if any	$0	$2	$0	$2
Total	$5	$18	$145	$168

Total Capital Costs	$9	$44	$985	$1,038
Less Total Customer Contribution	$0	$0	$0	$0
Total Capital Project Costs	$9	$44	$985	$1,038
Total O&M Project Costs	$0	$0	$0	$0

Note: Explain unique payment provisions, if applicable

Technical Justification:

Project Need Statement

[redacted]

Project Objectives

[redacted]

Project Scope

[redacted]

Background / Justification

There will be an oil circuit breaker replacement project scheduled to run in parallel with this project. In past projects, it has been a problem for isolation switches to fail when attempting to create safe work zones. This is a proactive approach to replacing the identified devices prior to a device failure that can result in multiple customers being out for a lengthy time. The devices being replaced have been identified as having installation dates in the 1950's and have been identified by the substation electricians as problematic. Refer to figures 1 thru 5.

[redacted] Refer to figure 9 for transformer ranking on transformer score table

Business Process and / or Technical Improvements:

The equipment improvements to this portion of the substation yard will look to minimize future exposure to prolonged customer outages during emergency and routine switching operations. It is known that work zone expansion due to failed isolating switches extends work schedules and puts additional customers at risk.

Alternatives Considered with Cost Estimates

The only alternative to the identified project scope is to do nothing. [redacted]

[redacted] been costing approximately $500k per switch.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Engineering	December, 2017
Construction	March, 2018
ISD	12/31/2018

Regulatory Approvals

N/A

Risks and Risk Mitigation Plans

[redacted]

References

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





Fig. 1 - [redacted] switch

Fig. 2 – Alternate view of [redacted] switch



Fig. 3 - [redacted] [redacted] Hookstick



Fig. 5 - [redacted] Gang operated

115 kV Cap and Pin replacements



Fig. 6 - [redacted]

Fig. 7 - [redacted] **high side bus insulators**



Fig. 8-Aerial view of [redacted] substation with constuction area indicated.

S/S Name	Nomenclature	Bulk/Distr	2017 XFMR Age	MT DGA (1-4)	LTC DGA +FQ (2-8)	MT Fluid Qty (1-4)	Acid =1 if>0.19	SOR	COND CODE (1-3)	Condition)
[redacted]										

Project Checklist – Transmission and Substation

Checklist for Studies and Processes of a Transmission & Substation Capital Project						
Project Name : [redacted] **- Bus Rehab**						**PAF No:CS00234**
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?						No
Are there any changes to the baseline audible noise?						No
Is there an impact to the existing ground grid?						No
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] **- Bus Rehab**	**PAF No: CS00234**
TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	No
Are there any changes that affect the baseline EMI?	No
Is there an impact to the existing ground grid?	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

Cost Estimate Backup Details

The construction phase of the project will be performed with the Oil Circuit Breaker (OCB) replacement program. This will take advantage of switching and mobilization of equipment for both projects.

Project Costs;

Contractor support $1,038,200

Distribution Substation Engineering and Partial ACT Estimate

PEM: [redacted] **Date of Estimate:** 12/5/2016

Project Title: [redacted] Bus Rehab

Description: The Scope of this DME is to replace (7) sevin Goup Operated Switches and (2) two High side MOD's. Install (1) one new J-box on the low side of [redacted].

Operating Company:	CL&P
Year of Construction:	2018

Project No.	TBD
In Service Date:	TBD

Labor Estimates	Mandays	NU Labor Daily Rate	NU Labor Labor Total	Outsourced Labor Daily Rate	Outsourced Labor Labor Total
NUMSO - NUSCO Protection & Controls	5	$371	$1,855	$371	$1,855
NUMSO - NUSCO Drafting	10	$249	$2,493	$249	$2,493
NUMSO - NUSCO Electrical Design	10	$348	$3,478	$348	$3,478
NUMSO - NUSCO Project Engineering/Management	5	$498	$2,492	$498	$2,492
NUMSO - NUSCO Apparatus Specialist	5	$498	$2,492	$498	$2,492
NUMSO - NUSCO Civil Engineering	5	$498	$2,492	$498	$2,492
NUMSO - NUSCO Civil Design	10	$368	$3,675	$368	$3,675
NUMSO - NUSCO Permitting & Surveying	0	$283	$0	$283	$0
ADDS0 - General Construction	0	$481	$0	$720	$0
ADDS0 - Operating Company Manpower	20	$502	$10,040	$502	$10,040
ADDS0 - Test	100	$502	$50,201	$1,088	$108,800
ADDS0 - Electrical Construction	300	$502	$150,604	$720	$216,000
ADDS0 - Construction Rep	30			$400	$12,000
ADDS0 - Transformer Shop	0	$398	$0	$398	$0
Totals	500		$229,823		$365,818

Direct Charge Materials:	$5,640
Stock Materials	$52,454
Equipment & Vehicles:	$71,666
Contract Work:	$0
Taxes (4.6%):	$2,806
AFUDC:	$37,853

Environmental Remediation:	

Contingencies		
Op. Co. Labor	3%	$6,325
Materials	5%	$2,905
Contractor	5%	$0

MIB Data		
Materials	ADDS0 AM	$58,094
Contract Work:		$0
Equip&Vehicles:	ADDS0	$71,666
CL&P Labor	ADDS0	$210,845
NUSCO Labor	NUMS0	$18,978
Removals	RMVS0	$0
Removals %		0%

Construction Rep & Operating Co. Manpower	
Equip& Veh	$6,612
Labor Loader	$17,321
Stores	$6,819
E&S	$12,181
AFUDC:	$60,759

	Adder
Engineering Contractor	$16,486
Contractor	$200
Per Diem	$80,000
Removals %	8%

Loaders	NUSCO Labor Loader	99.1%	$18,801	NUSCO Labor Loader	99.1%	$18,801
	CL&P Labor Loader	61.1%	$132,613	Labor Loader	60.0%	$194,880
	Stores	13.0%	$6,819	Stores	13.0%	$6,819
	E&S	23.2%	$89,914.35	E&S	23.2%	$94,523.76
	AS&E	1.83%	$11,121	AS&E	1.83%	$15,303

Total Project Capital Cost	**$668,741**	**$1,038,119**
Subtotal without AFUDC/AS&E	$619,766	$984,963

WORK SCOPE

Major Materials:

(7) sevin Goup Operated Switches

(2) two High side MOD's

(1) one new J-box on the low side of [redacted]

Misc: