EVERSOURCE
Project Authorization Form

Operations Project Authorization Form

Date Prepared: 08/24/2018	**Project Title: [redacted]. 9L- Rebuild Failed 1X-LTC**
Company/ies: Eversource CT	**Project ID Number: CS00304**
Organization: Asset Management	**Class(es) of Plant: Distribution Substation**
Project Initiator: [redacted]	**Project Category: General Modernization**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Project Purpose: Rebuild 1X-LTC contacts**
Estimated in service date: 04/30/2015	**If Transmission Project: PTF? N/A**
Eng. /Constr. Resources Budgeted? Y	**Capital Investment Part of Original Operating Plan? Y**
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan? N**
Total Request: $277,049	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This project is seeking full funding of $277,049 to cover the capital replacement of failed load tap changer (LTC) at [redacted] 9L substation. Annual work order DSQ52013 was created to address the emergent elevated [redacted]. Original estimate for the annual was for $89,400, the final cost of the project was $277,049. This specific project was created to capture annual project DSQ52013 costs due to exceeding APS1 direct cost threshold. Unexpected costs were incurred due to developed leaks on the mobile transformer used to backup customers.

Project Costs Summary

	Prior Authorized	2015	2016	Totals
Capital Additions - Direct	$73300	$85,909	$66,065	$151,974
Less Customer Contribution	$0	$0	$0	$0
Removals net of Salvage 25%	$16100	$19,227	$19,117	$38,344
Total - Direct Spending	$89,400	$105,136	$85,182	$190,318
Capital Additions - Indirect	$ -	$74,003	$12,728	$86,731
Subtotal Request	$89,400	$179,139	$97,910	$277,049
AFUDC	$ -	$ -	$ -	$ -
Total Capital Request	$89,400	$179,139	$97,910	$277,049
O&M	$ -	$0	$0	$0
Total Request	**$89,400**	**$179,139**	**$97,910**	**$277,049**

Financial Evaluation

Direct Capital Costs	2015	2016	Total
Straight Time Labor	$21,607	$14,906	$36,513
Overtime Labor	$47,063	$373	$47,436
Outside Services	$0	$62,029	$62,029
Materials	$31,491	$4,917	$36,408
Other, including contingency amounts (describe)	$4,975	$2,956	$7,932
Total	**$105,136**	**$85,181**	**$190,318**

Indirect Capital Costs	Year 1	Year 2	Total
Indirects/Overheads (including benefits)	$74,004	$12,728	$86,731
Capitalized interest or AFUDC, if any	$0	$0	$0
Total	**$74,004**	**$12,728**	**$86,731**

Total Capital Costs	**$179,140**	**$97,909**	**$277,049**
Less Total Customer Contribution	$0	$0	$0
Total Capital Project Costs	**$179,140**	**$97,909**	**$277,049**
Total O&M Project Costs	$0	$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):

Is there an ARO associated with this project? If yes, please provide details: **This is not an ARO project**

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

Technical Justification:

Project Need Statement

[redacted]

Project Objectives

[redacted]

Project Scope

The scope of this project included the following:

- [redacted]
- [redacted]
  - [redacted]
- [redacted]

Background / Justification

[redacted]
DGA report is included in the attachments.

Business Process and / or Technical Improvements:

Refurbishment of damaged equipment.

Alternatives Considered with Cost Estimates

There were no alternatives considered prior to the LTC condition as this was an emergent refurbishment project.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Project has been completed	2016

Regulatory Approvals

N/A

Risks and Risk Mitigation Plans

Project has been completed

References

DGA analysis report provided under attachments

Reconciliation of Cost Increase

Annual work order DSQ52013 was estimated at $89,400
The final project cost came to $277,049 with the last recorded spend in June/2016

		Original estimate		Actuals		Delta
Materials		$21,800		$36,408		$14,608
Labor		$51,500		$75,072		$23,572
Removals		$16,100		$38,344		$22,244
Totals		$89,400		$277,049		$187,649

Material costs increased by $14,608
Labor costs increased by $23,572
Removals costs increased by $22,244
Overall project costs increased by $187,649

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

9L-1X / LTC T1173 / LTC

Equipment	T1173	**kV ratings**	115000
Apparatus type	LTC	**Max rated voltage**	115000
Owner	D- New London	**Fluid volume**	360
Region	CT	**In service**	TRUE
Substation	[redacted] 9L	**Spare**	FALSE
Designation	9L-1X	**Tank**	LTC
Norms	NU_D_LTC_GENERIC_V2	**Norms used**	NU_D_LTC_GENERIC_V2
Fluid type	NON PCB <50 PPM	**DGA result**	02-Feb
Description	LTCTransformer	**FQ result**	1/1
Manufacturer	Westinghouse	**Moisture result**	1/1
Year manufactured	1969	**PCB result**	0/0
Model	UTT	**Oil test status**	UNREVIEWED

Table 1 – Device Details

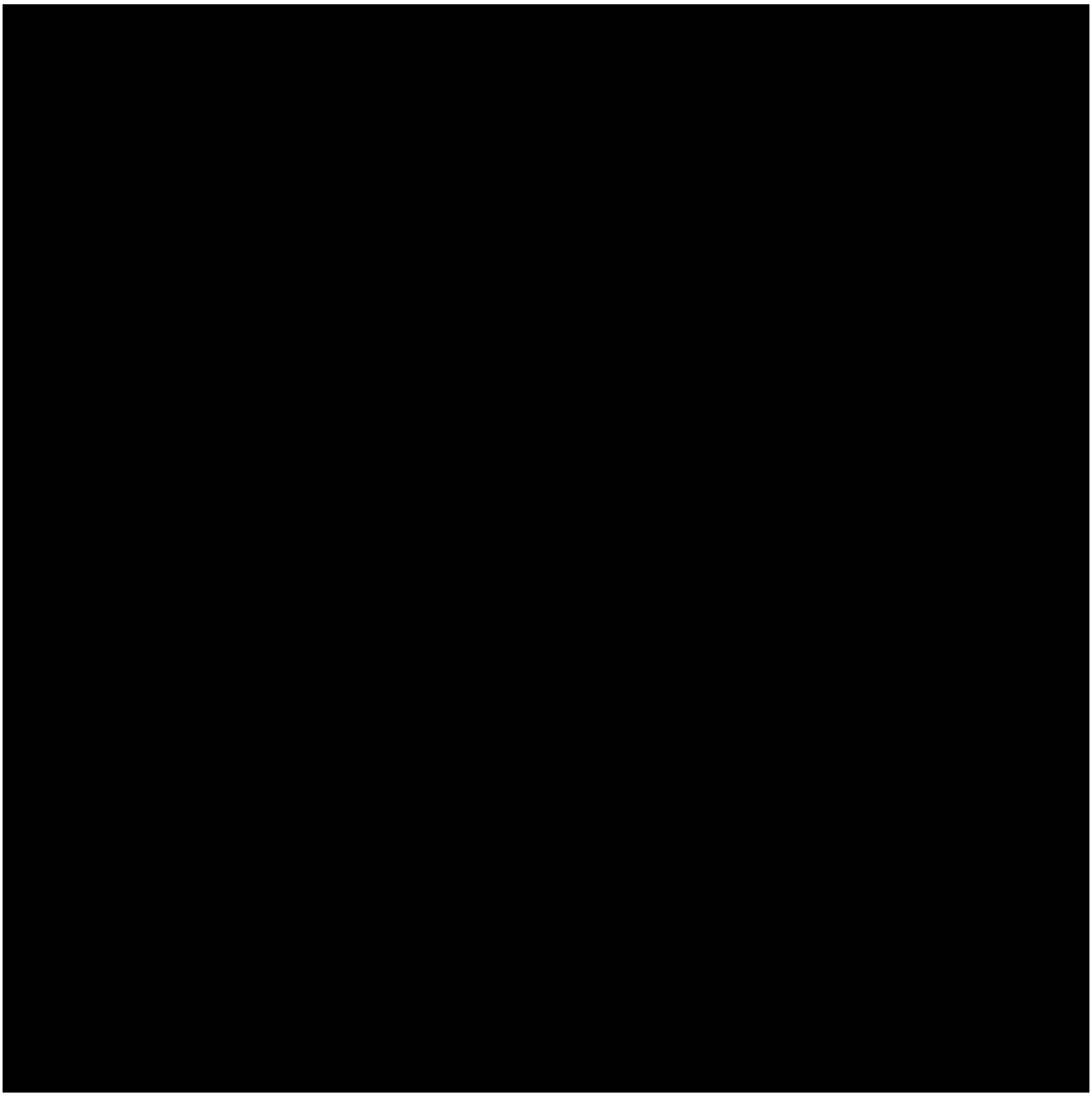

Table 2 - DGA results

Fluid Quality Analysis Remarks
No oil quality problems were detected.



Figure 1 – Hydrocarbon Gases and Hydrogen graph



Graph 2 thru 5 – DGA results

Project Checklist – Transmission and Substation

Checklist for Studies and Processes of a Transmission & Substation Capital Project					
Project Name: [redacted]. 9L- Rebuild Failed 1X-LTC					**PAF No: CS00304**
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] - Rebuild Failed 1X-LTC	**PAF No: CS00304**

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

accounting_wo	DSQ52013									
month_numbe	(All)									
Sum of amount				Column Labels						
Row Labels	CE Type	cost_element	cost element description	107010	108030	186950	45701X	92000X	93020X	Grand Total
Direct	Contractors	S59	Spill Response and Disposal	47255.68	14773.14	1.46E-11				62028.82
	Contractors Total			47255.68	14773.14	1.46E-11				62028.82
	Labor	L11	Labor Straight Time Exempt	2938.62	918.67	0				3857.29
		L12	Labor Straight Time Non-Exempt	23772.61	7431.88	1.93E-12				31204.49
		L14	Exempt Hours Beyond Schedule-Unpaid	1105.56	345.64	0				1451.2
		L22	Labor Overtime Non-Exempt	33654.38	10521.13	-9.3E-12				44175.51
		L42	Labor Premium and Special Non-Exempt	2484.04	776.54	5.68E-14				3260.58
	Labor Total			63955.21	19993.86	-7.3E-12				83949.07
	Materials	M11	Materials- Purchased	2929.16		1.42E-14				2929.16
		M12	Materials- Stores	31791.97	1687.02	0				33478.99
	Materials Total			34721.13	1687.02	1.42E-14				36408.15
	Misc Other	A21	Miscellaneous Journal Entries Other	-4640.84	-1450.83	0				-6091.67
		E11	Employee Expense Other	302.39	94.54	-1.4E-14				396.93
		E13	Meals	969.12	302.83	-5.7E-14				1271.95
		E14	Mileage	189.7	59.3	-1.4E-14				249
	Misc Other Total			-3179.63	-994.16	-8.5E-14				-4173.79
	Vehicle	V34	Shared Lease Vehicles-Class 4	30.59	9.56	0				40.15
		V42	Vehicles-Class 2L-Large Vehicles	3429.01	1072	-2.8E-13				4501.01
		V43	Vehicles-Class 2S-Small Vehicles	9.12	2.86	0				11.98
		V44	Vehicles-Class 3	2460.59	769.25	2.42E-13				3229.84
		V50	Vehicles-Class 4B	552.98	172.87	0				725.85
		V51	Vehicles-Class 4C	143.62	44.9	0				188.52
		V52	Vehicles-Class 4D	1355.9	423.88	0				1779.78
		V58	Vehicles-Class 5C	187.46	58.6	0				246.06
		V68	Vehicles-Class 6M-Mobiles	1053.12	329.28	-2.8E-14				1382.4
	Vehicle Total			9222.39	2883.2	-7.1E-14				12105.59
Direct Total				151974.8	38343.06	7.14E-12				190317.8
Indirect	Indirect	ZAS	Admin and Eng OH- Acct Use Only	3162.8	809.66					3972.46
		ZGS	Gen Ser Co Benefit Loader- Acct Use Only	413.85	129.38					543.23
		ZLO	Lobby Stock Loader-Acct Use Only	5752.26	339.41					6091.67
		ZNP	Non Productive Time Loader- Acct Use Only	12709.19	3973.19					16682.38
		ZPB	Payroll Benefit Loader- Acct Use Only	39257.71	12272.86					51530.57
		ZSC	Service Company Allocations- Acct Use Only				-1.4E-13	2.84E-14	4.97E-14	-5.7E-14
		ZST	Stores Loader- Acct Use Only	7513.57	397.59					7911.16
		ZVE	Vehicle Costs Clearing- Acct Use Only	0.02	0.01					0.03
	Indirect Total			68809.4	17922.1		-1.4E-13	2.84E-14	4.97E-14	86731.5
Indirect Total				68809.4	17922.1		-1.4E-13	2.84E-14	4.97E-14	86731.5
Grand Total				220784.2	56265.16	7.14E-12	-1.4E-13	2.84E-14	4.97E-14	277049.3