EVERSOURCE
Project Authorization Form

Operations Initial Funding Request Form

Approved by EPAC Chairmen external to meeting on 4/11/2022

Link to 4/13/2022 EPAC Meeting Minutes

Project Title: [redacted]6X Transformer Voltage Change and Refurbishment	**Project Number: CS00577**
Date Prepared: 03/18/2022	**Company: Eversource CT**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformers**
Managing Organization: Transmission / Major Projects	**Schedule ID#: TBD**
Project Manager: TBD	**Project Type: Specific**
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: Yes**
Estimated in service date: 12/31/2023	**Emergency Related Request? No**
Eng./Constr. Resources Budgeted? Yes	**Facility Type (check all that apply):** ☐ **PTF** ☐ **non-PTF** ☒ **Distribution** ☐ **N/A (General Plant)**
Total Capital Request: $150K	**Tx Development Costs: No**

[1] project need statement

This request of $150K in initial funding is needed to create a project to change the secondary voltage on transformer [redacted] from 27.6kV to 23kV. This transformer is located at the [redacted] at [redacted] CT. This project will coordinate with the [redacted] being conducted under project CS00166, approved in PowerPlan on March 5, 2020. The [redacted] CT. This will require the refurbishment of the [redacted] and internally reconnected for the new voltage. Simultaneously, relay settings will be modified, and new potential transformers and arresters will be installed to reflect the new transformer secondary voltage.

Transformer [redacted] is 66 years old and has leaky radiators, oil pumps, valves, thermal wells, etc. that are encapsulated but need to be permanently repaired. The outage to modify the transformer voltage is an ideal time to address these issues and refurbish the transformer. The transformer does not have a history of overload and is not forecast to be overloaded in the future. Dissolved gas analysis shows the transformer insulation has not deteriorated, making the transformer a candidate for refurbishment. Additionally, transformer [redacted] does not have a load tap changer (LTC) which is a common failure point in older transformers. Refurbishment is

expected to add at least 15 years to the life of the transformer. Plant accounting has confirmed that this life extension is capital work.

[2] Project objectives

The project objectives are to change the transformer [redacted] secondary voltage to match the changes being made at [redacted] and to refurbish the transformer to extend its life. The outage for this project will need to coordinate with the [redacted]-3X transformer replacement project. Figure 1 below depicts a Partial One Line Diagram of equipment being modified or replaced.



Figure 1 - Partial One Line Diagram showing [redacted]

The work required for the voltage modification is:

- Outage for the [redacted] unit to drain, change internal voltage connections, refill, and test.
- Replace the three (3) 14W-5H potential transformers with appropriate voltage.
- Replace arresters on the low side of the transformer.
- Relay settings changes.

The exact scope and quantities of the transformer refurbishment will be determined during conceptual engineering. The work which may be required for the life extension refurbishment, which will be performed at the same time as the voltage change, is as follows:

- Replace transformer bushings
- Install new gaskets on the transformer
- Repair broken welds
- Repair/replace pumps and fans (See Figure 2, below)
- Repair/replace leaking radiators, valves, gauges, thermal well, etc. (See Figure 3, below)
- Repaint transformer

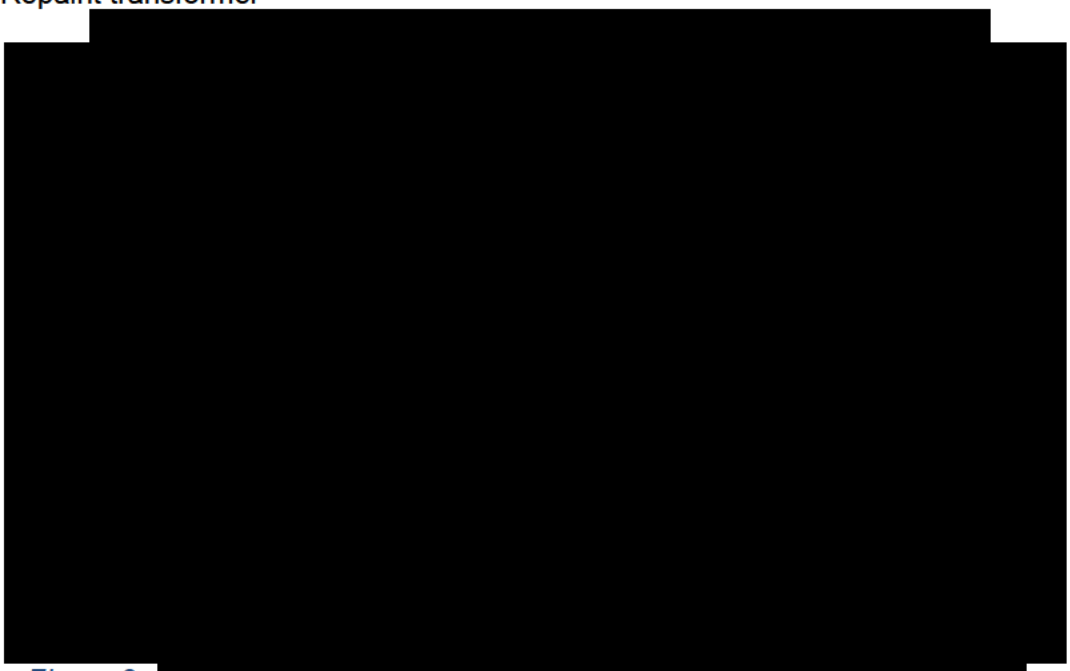

Figure 2 - [redacted]



Figure 3 - [redacted]

[3] funding request explanation (total request, amount per task, deliverables)

The initial funding for this proposed [redacted] 6X voltage change and refurbishment project will be used for further evaluation to finalize scope, project details, and cost estimates. The $150K will be used for Substation Engineering, Asset Management, Estimating, Project Management, and Field Engineering to perform the following:

- Conceptual and Preliminary Engineering ($100K)
- Constructability Walkdown at [redacted] including qualified representatives from Engineering, Project Management, Operations, and Construction departments. ($25K)
- Outage Planning and development of single contingency load loss (SCLL) mitigation plans, as needed ($15K)
- Development of full funding Project Authorization Form (PAF) ($10K)

Conceptual engineering is anticipated to be completed by July 2022 and the project will be presented to the Solution Design Committee (SDC) in August 2022. Following SDC approval, it is anticipated the full funding PAF will be submitted to EPAC in November 2022.

[4] initial funding schedule

Milestone	Scheduled Completion Date
Project Need by Date	12/31/2023
Complete Conceptual design of Alternative(s)	7/2022
Initiator complete SSF form	7/2022
SDC Presentation Date(s)	8/2022
Conversion of Tx development costs, 183 to 107 (applicable to projects that require SSF approval but do not require ISO alternative selection)	NA
Preliminary Design Complete	9/2022
Preliminary Design Constructability review complete	9/2022
Full funding estimate complete	9/2022
Full funding estimate review	9/2022
Initiator complete PAF form	10/2022
EPAC Funding Dates (Full)	11/2022
Start of Construction – Coordinate with outage(s) for CS00166	6/2023
Project ISD	12/31/2023
ISO Related Milestones (for applicable projects)	
· ISO Preferred Alternative Selected	NA
· Conversion of Tx development costs, 183 to 107 (following ISO preferred alternative selection)	NA
· PAC Presentation	NA
· TCA Submittal	NA

[5] References

References
1. 404932-CS00166 - [redacted] Expansion - PAF Rev1.pdf, dated 5/27/21
2.
3.

[6] Attachments (One-Line Diagrams, Images, etc.)

Figures