Operations Project Authorization Form

Project Title: [redacted] TDRP	**Project Number:** CD01718
Date Prepared: 04/12/2023	**Company:** Eversource CT
Organization: Distribution Electric	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** TRMSN DISTR RELIABILTY PERFRM
Project Manager: [redacted]	**Project Type:** Specific
Project Sponsor: [redacted]	**Capital Investment part of original Operating Plan:** Yes
Estimated in service date: 12/31/23	**Emergency Related Request?** No
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution
Total Gross Capital Request: $1,324,236	**Authorization Type:** Full Funding

Executive Summary

The project was previously presented for initial funding as follows:

Eversource Transmission-Distribution Reliability Performance (TDRP) Projects address reliability issues associated with the Worst Performing Top 100 circuits in Connecticut. In doing so, Eversource maintains compliance with Docket 86-12-03. Eversource is required to report the status of the actions taken to improve performance for each circuit topping the "Worst 100" list. Updates are required each year consecutively for a total of four years following a circuit's appearance on the list.

[redacted] was ranked 58th in 2020 Top Worst 100 Circuits in Connecticut. To improves the reliability of the circuit this project proposes to reconductor bare conductor with tree wire, create self-ties on large lateral side-taps, replace deteriorating poles, and perform Maintenance Trimming.

Moreover, this circuit was also ranked 329th in 2021 Smart Switch Ranking list i.e., [redacted] This can be resolved by installing a new smart switch and splitting the customer zone from 590 to 243 and 346. The preferred option is estimated to cost $614,631.

Initial Funding PAF vs ACT

This project received preliminary funding on October 7, 2021, for $598,000. Construction for this project is currently in progress. The risk and contingency included with TDRP projects caused higher than expected bids and direct capital costs for this project. The requested amount for the project is now $1,324,236 or 221% of the initial funding request. Cost overages are mainly due to the contractor bid of $531,000. Costs for contractors were not included in the initial estimate, which would have increased the estimate by $122,926. Additionally, the estimate did not include adequate risk and contingency associated with more labor-intensive voltage conversion work. Although the funding request increased significantly, we anticipate a similar percent

increase on the alternative options. The preferred option remains the most cost-effective option. This project remains needed to increase the resilience of the [redacted].

Project Costs Summary

Note: Dollar values are in thousands

Direct Capital Costs	Prior Authorized Amount	2023	2024	Total
Internal Labor and Construction Equipment	$50	$47.4	**$0**	$47.4
Outside Services	$139	$495.2	**$0**	$495.2
Materials	$133	$74.6	**$0**	$74.6
Removals	$30	$82.9	**$0**	$82.9
Risk and Contingency	$4	$120.4	**$0**	$120.4
Other	$0	$0	**$0**	$0
Subtotal – Direct Costs	**$356**	**$820.4**	**$0**	**$820.4**
Indirect Capital Costs	**Prior Authorized Amount**	**2023**	**2024**	**Total**
Indirects/Overheads (including benefits)	$231	$503.8	$0	$503.8
Capitalized interest or AFUDC, if any	$11	$0.0	$0	$0.0
Subtotal – Indirect Costs	**$242**	**$503.8**	**$0**	**$503.8**
Total Capital Costs (Gross)	**$598**	**$1,324.2**	**$0**	**$1,324.2**
Less Total Customer Contribution	**$0**	**$0**	**$0**	**$0**
Total Net Capital Project Costs	**$598**	**$1,324.2**	**$0**	**$1,324.2**

Technical Justification:

Project Need, Objective and Justification

This project has been established to address the TDRP for [redacted] which was ranked 58th of The Top Worst 100 circuits in Connecticut. This project will focus on improving the reliability of the circuit by reconductoring bare conductor with tree wire, creating self-ties on lateral side-taps, replacing deteriorating poles, and performing Maintenance Trimming.

The goal of this project is to improve the reliability of the circuit by targeting worst performing areas and implementing necessary work to bring the circuit up to the standard. Along with performing maintenance work, we will be installing a [redacted]

Project Scope

The following are preferred segments with cost, $/CM and $/CMI.

[redacted]

Segment Cost:	$45,487.10		$/CMS:	$1.63	$/CIS:	$1,898.46
Fuse	Location	Cust Count	Total Outages	Storm Outages	%CMI	% CI
[redacted]						

2. [redacted]

Note: Since the circuit in being trimmed currently, vegetation management were notified to perform METT.

Segment Cost:	$169,979.90		$/CMS:	$2.07	$/CIS:	$1,794.55
Fuse	Location	Cust Count	Total Outages	Storm Outages	%CMI	% CI
[redacted]						

[redacted]

[redacted]

[redacted]

Segment Cost:	$46,621.70		**$/CMS:**	$0.66	**$/CIS:**	$1,606.54

[redacted]

4. [redacted]

[redacted]

Segment Cost:	$156,493.82		**$/CMS:**	$1.70	**$/CIS:**	$2,374.00

[redacted]

5. [redacted]

[redacted]

[redacted]

Segment Cost:	$15,426.56		**$/CMS:**	$0.20	**$/CIS:**	$277.76
Fuse	**Location**	**Cust Count**	**Total Outages**	**Storm Outages**	**%CMI**	**% CI**

[redacted]

6. [redacted]

[redacted]

[redacted]

Segment Cost:	$101,903.36		$/CMS:	$3.00	$/CIS:	$2,106.31
Fuse	Location	Cust Count	Total Outages	Storm Outages	%CMI	% CI
[redacted]						

7. Smart Switch – **Segment 20**

[redacted]

Segment Cost:	$78,718.98		$/CMS:	$0.28	$/CIS:	$363.26
Fuse	Location	Cust Count	Total Outages	Storm Outages	%CMI	% CI
[redacted]						

- 7900’ 1/0 175mil tree wire
- 7900’ Neutral
- 1 Cooper Nova Form 6 Recloser

Background

In order to target worst performing area on [redacted] this project focuses on devices which had more than 4 outages, % of customer minute interruption contributing greater than 2% and % of customers out to be greater than 2%, and as a result 5 locations and one smart switch location was chosen to perform work. The project proposes to perform reconductoring work for areas with poor reliability due bare conductor, where the customer had experienced more than 4 outages and number of splices. [redacted] we can reduce customer interruption minutes, replace deteriorating poles to avoid future events, perform Maintenance Trimming and lastly installing a smart switch to split the customer zone from 590 to 243 and 347. The preferred option is estimated to cost $615 k.

The table 1 below shows % of customer minutes and % of customers interrupted which were the major contributors to the circuit performance. Next, table 2 shows segments of the project with $/CMS and $/CIS. The highlighted rows are the ones that are preferred for this project.

Table 1: The following table shows %CMI and % CI contribution

[redacted]

Table 2: The table shows $/CMS and $/CIS

[redacted]

Appendix 2
Operations Project Authorization Form

[redacted]

Completion of the project will improve the reliability of circuit and strengthen system resiliency.

Alternatives Considered

Option 2: This option proposes to perform all the work of option 1 but not install a smart switch under [redacted]. This option is not preferred because there is always a chance of an outage that would risk 590 customers and ultimately effect customer minutes. But, by having a smart switch installed, SCADA would have the supervisory control and can isolate/restore majority of the customer in few minutes.

Project Option Comparison

Preferred Option			✔
Design Criteria	**TDRP**	**TDRP with Smart Switch**	**Reviewed**
[redacted]			
Cost	$1,218,725.53	$1,297,444.51	$614,631.42
Cost / CM Saved	$3.67	$2.11	$1.34
Cost / CI Saved	$4,555.27	$2,736.68	$1,656.49

Regulatory Approvals

Eversource Transmission-Distribution Reliability Performance (TDRP) Projects address reliability issues associated with the Worst Performing Top 100 circuits in Connecticut. In doing so, Eversource maintains compliance with Docket 86-12-03. Eversource is required to report the status of the actions taken to improve performance for each Circuit topping the "Worst 100" list. Updates are required each year consecutively for a total of four years following a circuit's appearance on the list.

Project Schedule

Milestone/Phase Name	Estimated Date
Preliminary Approval	07/2021
Detailed Design	01/2022
Construction Approval	04/2022
Settings Requested	07/2022

Milestone/Phase Name	Estimated Date
Construction Start Date	09/2022
Construction End Date	12/2023

Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2022	Medium	Included contingency costs in the funding request. Perform detailed Field Analysis and walk down in project development to avoid potential issues.
Internal construction resources not available to perform the work.	2022	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost if necessary.
Internal engineering resources not available to perform the work.	2022	High	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost if necessary.
Materials shortage or long lead times	2022	Medium	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2022	Low	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2022	Low	Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods
Technological risks involving integration of new technology	2022	Low	Before use of new technology ensure support of standards and manufacture. Schedule project to accommodate for extra time or ensure new technology is not on the critical path.

References: NA

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

[redacted] Geo Map.pdf

[redacted] One line_Rev 2.pdf

CD01718_project_needs_statement_Rev

Outages - [redacted].xlsx

[redacted] - Load Sheets.xlsx


[redacted] - $ CMS and $ S - Rev 2.xlsx


[redacted]2 - % CMI & CI_Rev 2.xlsx