Operations Project Authorization Form

Project Title: [redacted] **TDRP**	**Project Number: CD01650**
Date Prepared: 09/01/2023	**Company:** Eversource CT
Organization: Electric System Operations	**Project Category:** TRMSN DISTR RELIABILTY PERFRM
Project Initiator: [redacted]	**Project Type:** Specific
Initiating Organization: Distribution	**Capital Investment part of original Op Plan:** Yes
Project Manager: [redacted]	**Emergency Related Request?** No
Project Sponsor: [redacted]	**Facility Type** (check all that apply)**:** ☐ PTF ☐ non-PTF ☒ Distribution ☐ N/A (General Plant)
Required in service date: 12/30/2023	AWC: [redacted]. Brooklyn, CT
Total Capital Request: $1,548K	**Authorization Type:** Full Funding

1. Executive Summary

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

[redacted] circuit in Brooklyn, CT is ranked #7 of the top Worst 100 circuits in Connecticut. This project will be improving the reliability[redacted] by bringing the backbone of the circuit up to standards, reconductoring bare conductor with single and 3 phase TW on lateral side-taps and performing necessary tree trimming.

[redacted]

The initial engineering estimate for Project CD01650 was approved on April 8, 2021, for $1,546K. Project CD01650 is expected to be completed within budget by a combination of both internal and

external resources.

2. Project Cost Summary

Note: Dollar values are in thousands.

Financial Evaluation

Capital Costs	2021	2022	2023	Total
Internal Labor and Construction Equipment	40.2	188.8	95.1	324.1
Outside Services	25.8	121.2	61.0	208.0
Materials	20.9	98.0	49.3	168.1
Removals	10.7	50.1	25.2	86.1
Risk and Contingency	3.8	17.7	8.9	30.4
Other	4.4	20.7	10.4	35.5
Subtotal	**105.8**	**496.5**	**249.9**	**852.2**

Indirect Capital Costs	2021	2022	2023	Total
Indirects/Overheads (including benefits)	81.2	381.1	191.9	654.2
Capitalized interest or AFUDC, if any	5.3	24.7	12.5	42.5
Subtotal	**86.5**	**405.8**	**204.3**	**696.7**
Total Capital Costs (Gross)	**192.3**	**902.3**	**454.3**	**1,548.9**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**192.3**	**902.3**	**454.3**	**1,548.9**

3.Technical Justification

a. Background

Four Year Reliability Summation*

Device	Sum of Customer Affected Cou	Sum of Customer Minut	Count of Devi	% Cust Affecte	% of CM
[redacted]		300644	3	1%	3%
		309544	6	2%	3%
		386231	10	3%	4%
		79911	9	0%	1%
		139566	9	1%	1%
		614475	8	4%	6%
		479642	8	4%	5%
		134919	15	0%	1%
		398332	11	3%	4%
		274119	10	2%	3%
		573348	7	7%	6%
		347771	9	15%	4%
		13562	2	3%	0%
		626099	4	9%	6%
		232415	5	8%	2%
				63%	50%

*Does not include Storm Isaias Data

[redacted]

[redacted]

[redacted]

Business Process and / or Technical Improvements

The expectation is to lessen the vulnerability of the system to outages, mostly caused by trees, while strengthening the infrastructure to become more resilient.

b. Project Need

This project is needed to improve reliability in the [redacted] as part of a Transmission Distribution Reliability Performance project. [redacted]

Project Objectives

This project was created to help reliability in the [redacted]. In order to do so, this project will bring areas of the backbone up to standards, reconductor areas of bare conductor found on lateral side-taps, and preforming tree trimming around areas that have had a high number of tree-related events.

c. Project Scope

(Preferred option $1,548K):

[redacted]

[redacted]

Major Material:

6,025 ft of 1 phase TW
8,900 ft of 3 phase TW

4. Alternatives Considered

Alternatives were considered (please describe below)

Alternative 1: (Cost $47,7K)

[redacted]

5. Project Schedule

Milestone/Phase Name	Estimated Completion Date
Preliminary Approval	01/21/2021
Detailed Design	7/30/2021
Construction Start Date	04/01/2021
Construction End Date	12/31/2023

6. Regulatory Decisions

No

7. Codes and Standards

8. Risk and Contingencies

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2023	Low	Included contingency costs in the funding request. Perform detailed Field Analysis and walk down in project development to avoid potential issues.
Customer Permission / Siting Council / Municipal approvals	2023	Medium	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2023	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Internal engineering resources not available to perform the work.	2023	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2023	Medium	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2023	Low	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2023	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	2023	Low	Before use of new technology ensure support of standards and manufacturer. Schedule project to accommodate for extra time or ensure new technology is not on the critical

			path.

9. References

References
DSEM10.20 – Recloser Guide
DSEM 10.22 – Recloser Three Phase Selection
DSEM 03.301 – Reliability Cost Effectiveness
DSEM 02.423 – Multiple Interruptions
DSEM 02.501 – System Resiliency Guideline

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

Attachment	Included in Submittal?
A. Project Need Statement	*YES*
B. [redacted] TDRP One Line	*YES*
C. [redacted] circuit Map	*YES*
D. [redacted] Circuit Map	*YES*
E. [redacted] Leap Zone Projections	*YES*
F. Load Summary	*YES*

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

[redacted]

Project Approval Form



- *Attachment A*

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD01650

30Y10 TDRP

Project Option Summary

ID	Description	Segments	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)	Prfrd
O2	Rehab of BB and Reconductoring of LT	3,7,8	$577,285	$0	100%	$35.62	$3.24	☐
O3	Rehab of BB and Reconductoring of LT	2,4,5,6	$241,754	$0	100%	$24.72	$1.56	☐
O4	Rehab of BB	1,2,3	$934,931	$0	100%	$43.28	$4.66	☐
O5	Reconductoring of LT	4,5,6,7,8	$642,464	$0	100%	$33.29	$3.39	☐
O7	Total Rehab/Recond	1,2,3,4,5,6,7,8,10	$1,722,435	$0	100%	$42.11	$4.44	☐
O8	Total Rehab/Recond with additional tree trimming	1,2,3,4,5,6,7,8,9,10	$1,868,355	$0	100%	$45.68	$4.81	☐
O9	[redacted]nd laterals	1,4,5,6,7,8,10	$1,545,859	$0	100%	$44.98	$6.25	☐

Segments

ID	Title	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)
1	Rehab/Reconducto[redacted]	$758,356			$41.17	$10.64
2	Rehab [redacted]	$47,779			$52.23	$0.73
3	Rehab [redacted]	$128,797			$22.30	$1.64
4	Reconductoring of Fuse 564 and 568	$81,505			$70.60	$5.24
5	Reconductoring Fuse 1154 on [redacted]ro	$60,451			$17.22	$2.04
6	Reconductoring past Fuse 654 [redacted]	$52,019			$12.37	$1.16
7	Reconductoring Fuse 894, [redacted]	$62,920			$10.47	$1.53
8	Reconductoring beyond Fuse [redacted]	$385,569			$80.66	$6.58
9	Tree Trimming Estimates	$145,920			$0.00	$0.00
10	Reconductoring Fuse [redacted]	$145,039			$156.45	$20.37



- Attachment C



- Attachment D

[redacted]

Operations Project Authorization Form

Date Prepared: 3/17/2021	**Project Title: [redacted] TDRP**
Company/ies: Eversource CT	**Project ID Number: CD01650**
Organization: Distribution Electric	**Class(es) of Plant: Distribution**
Project Initiator: [redacted]	**Project Category: Line**
Project Manager: [redacted]	**Project Type: TDRP**
Project Sponsor: [redacted]	**Project Purpose: Reliability**
Estimated in service date:	**If Transmission Project: PTF? N/A**
Eng. /Constr. Resources Budgeted? Y	**Capital Investment Part of Original Operating Plan? Y**
Authorization Type: ENG	**O&M Expenses Part of the Original Operating Plan? Y**
Total Request: $1,546,000	**Town: Brooklyn, CT**

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

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

The [redacted] circuit in Brooklyn, CT is ranked #7 of the top Worst 100 circuits in Connecticut. This project will be improving the reliability[redacted], and performing necessary tree trimming.

[redacted]

Project Approval Form

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized	2022	2023	2024	Totals
Capital Additions - Direct	$0	$865	$0	$0	$865
Less Customer Contribution	$0	$0	$0	$0	$0
Removals net of Salvage ____%	$0	$79	$0	$0	$79
Total - Direct Spending	$0	$944	$0	$0	$944
Capital Additions - Indirect	$0	$548	$0	$0	$548
Subtotal Request	$0	$1,492	$0	$0	$1,492
AFUDC	$0	$11	$0	$0	$11
Total Capital Request	$0	$1,503	$0	$0	$1,503
O&M	$0	$43	$0	$0	$43
Total Request	$0	$1,546	$0	$0	$1,546

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor	$112	$0	$0	$112
Overtime Labor	$10	$0	$0	$10
Outside Services	$486	$0	$0	$486
Materials	$323	$0	$0	$323
Other, including contingency amounts (describe)	$12	$0	$0	$12
Total Direct Costs	**$944**	**$0**	**$0**	**$944**

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)	$548	$0	$0	$548
Capitalized interest or AFUDC, if any	$11	$0	$0	$11
Total Indirect Costs	**$559**	**$0**	**$0**	**$559**
Total Capital Costs	**$1,503**	**$0**	**$0**	**$1,503**
Less Total Customer Contribution	**$0**	**$0**	**$0**	**$0**
Total Capital Project Costs	**$1,503**	**$0**	**$0**	**$1,503**
Total O&M Project Costs	**$43**	**$0**	**$0**	**$43**
Total Project Cost	**$ 1,546**	**$ -**	**$ -**	**$ 1,546**

Note: Explain unique payment provisions, if applicable

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Project Approval Form

Technical Justification:

Project Need Statement

This project is needed to improve reliability in the [redacted], CT as part of a Transmission Distribution Reliability Performance project. Most lateral side-tap events on this circuit from December 2016 through December 2020 occurred on sections of bare conductor. [redacted]

Project Objectives

This project was created to help reliability in the [redacted]. [redacted] and preforming tree trimming around areas that have had a high number of tree-related events.

Project Scope

[redacted]

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Project Approval Form

Major Material:

6,025 ft of 1 phase TW
8,900 ft of 3 phase TW

Background / Justification

Four Year Reliability Summation*

Device	Sum of Customer Affected Cou	Sum of Customer Minut	Count of Devi	% Cust Affecte	% of CM
[redacted]	[redacted]	300644	3	1%	3%
		309544	6	2%	3%
		386231	10	3%	4%
		79911	9	0%	1%
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		347771	9	15%	4%
		13562	2	3%	0%
		626099	4	9%	6%
		232415	5	8%	2%
				63%	50%

*Does not include Storm Isaias Data

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Project Approval Form

Reliability Table

Segment/Alternative	Estimated Cost	Number of Events (4 Years)			Customer Minutes (4 Years)			% CM improvement	Cost per Customer Minute (4 Years)			% CI Improvement	Number of Customers per Interruption			Cost per Customer Interruptions Saved		
		Non-Storm	Storm	Both	Non-Storm	Storm	Both		Non-Storm	Storm	Both		Non-Storm	Storm	Both	Non-Storm	Storm	Both
[redacted]	$385,569.00	8	8	16	52,477.00	590,656.00	643,133	45%	$26.45	$2.35	$4.32	50%	[redacted]					
	$60,451.00	5	3	8	38,535.00	287,389.00	325,924	45%	$3.53	$0.28	$0.67	50%						
	$145,039.00	4	5	9	10,404.00	69,507.00	79,911	45%	$25.09	$4.70	$7.35	50%						
	$81,505.00	5	5	10	12,674.00	158,158.00	170,832	45%	$14.47	$1.16	$2.15	50%						
	$52,019.00	2	7	9	46,150.00	444,547.00	490,697	45%	$1.01	$0.37	$0.43	50%						
	$62,920.00	7	6	13	65,986.00	386,545.00	452,531	45%	$3.00	$0.44	$0.81	50%						
	$758,356.00	6	7	13	245,620	704,429	950,049	30%	$5.56	$2.26	$3.11	30%						
	$47,779.00	1	4	5	15,062	1,062,178	1,077,240	30%	$0.95	$0.05	$0.07	25%						
	$128,797.00	8	5	13	95,085	1,200,959	1,296,044	30%	$3.25	$0.16	$0.39	25%						
	$1,722,435.00	46	50	96	581,993	4,904,368	5,486,361	40%	$29.60	$3.51	$3.14	42%						

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[redacted]

Business Process and / or Technical Improvements:

Alternatives Considered with Cost Estimates

[redacted] on [redacted] $47,779

- Event breakdown: 3/5 tree related, 1/5 lightning related, 1/5 patrolled nothing found
- rehabbing by adding ampacts and adding a visible disconnect to [redacted].

[redacted] on [redacted] $128,797

- Event breakdown: 5/5 tree related associated with [redacted]
- Event breakdown: 8/8 tree related associated with [redacted]

rehabbing by fusing transformers, adding wraps, replacing hot line clamps with ampacts, and adding visible disconnects to [redacted]

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Preliminary Approval	01/21/2021
Detailed Design	7/30/2021
Construction Start Date	04/01/2022
Construction End Date	12/31/2022

Regulatory Approvals

N/A

Risks and Risk Mitigation Plans

N/A

References

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

[redacted]