EVERSOURCE

Project Approval Form

Project Title: TRC Circuit Patrol Fixes - 2023	Project Number: CD02169
Date Prepared: 08/27/2023	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** RELIABILITY IMPROVE SPEC PROJ
Project Initiator: [redacted]	**Project Type:** Specific
Initiating Organization: Distribution Engineering	**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: 12/31/2023	
Total Capital Request: $17,719.8K	**Authorization Type:** Full Funding

1. Executive Summary

Contractors patrolled Eversource's distribution circuits and documented deficiencies that could impact reliability. This project is being presented to receive full funding to cover patrol cost, engineering cost and the cost to address the findings categorized as priority 1, priority 2 and priority 3. Priority 1 and priority 2 findings have already been addressed at a cost of $11,237.8K. This is 116% of the partial funding received for that scope of work. There was no scope change, and the additional cost can be attributed to material and overhead costs.

In addition, $6,481.9K is being requested to perform a portion of the priority 3 work which will include non-standard missing arresters and unfused transformers. The total amount being requested for full funding is $17,719.8K.

Priority 1, 2 and 3 findings were broken down as shown below:

Findings	Estimated Qty
Priority 1	**1,946**
Broken/cracked crossarm	336
Broken-cracked insulator	124
Floating primary	29
Foreign object on line	9
Overhead transformer bushing damaged	4
Pole Cracked	284
Pole Physical damage	284
Rotten crossarm	269
Rotten pole-pole top	18
Temporary construction to be updated per latest standards	37
Vines	552
Priority 2	**1,998**
Broken/loose guy wire	677
Lightning arrestor damaged	98
Rubber Tie Insulators	339
Unfused backbone XFMs	884
Priority 3	**29,239**
Lightning arrestor missing	38
Missing animal protection	2,240
Missing messenger guard	40
Overhead transformer damaged	45
Ringed condition	1
Risers missing animal guards on the terminators	743
Skinned locations	1
Unfused lateral XFMs*	26,131

*This project will only address 5,304 priority three unfused transformers

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	Prior Actuals	Estimated Future Spend	Total
Internal Labor and Construction Equipment	14.5	0.0	14.5
Outside Services	4,689.4	4,094.1	8,783.5
Materials	665.4	0.0	665.4
Removals	1,242.4	0.0	1,242.4
Risk and Contingency	327.3	452.2	779.5
Other	1.8	0.0	1.8
Subtotal	**6,940.8**	**4,546.3**	**11,487.2**

Indirect Capital Costs	2023	2023	Total
Indirects/Overheads (including benefits)	4,207.6	1,935.6	6,143.2
Capitalized interest or AFUDC, if any	89.4	0.0	89.4
Subtotal	**4,297.0**	**1,935.6**	**6,232.6**
Total Capital Costs (Gross)	**11,237.8**	**6,481.9**	**17,719.8**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**11,237.8**	**6,481.9**	**17,719.8**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

In the fall of 2022, Eversource began performing patrols of their overhead distribution system twice a year (Spring and Fall). The Spring patrol included high priority deficiencies only and the Fall patrol would include both high priority deficiencies and additional findings that would improve reliability.

b. Project Need

This project was developed as a result of the Fall patrol for which all priority 1 and 2 findings along with a portion of the priority three findings will be completed in 2023. These repairs must be completed to maintain a high level of reliability and service to Eversource customers.

c. Project Scope

Perform Fall patrol, design all high priority deficiencies for repair in 2023.

Major Material:

Stockcode	Description	Qty
566943	45-1 pole	422
566940	40-2 pole	632
501024	Xarm 8'	1,027
501025	Xarm 10'	103
500825	Insulator Bare	2,102
522559	Insulator Cov	2,102
576488	Butt Plate	1,054
500810	Cutout	12,000
509710	Arrester 18kV	68
500626	Arrester 12kV	68
521792	Sq Guard	2,983
521824	Zap Shield	27,015
576621	XARM Bracket	4,800
566273	T-Bracket	7,200
566290	Up-Swing Bracket	240
513455	#4 Tap Wire	120,000
504268	6k Fuse	7,200
520739	10k Fuse	4,800

4. Alternatives Considered

Not performing the patrols and associated repairs would lead to poor reliability impacting Eversource customers.

5. Project Schedule

Milestone/Phase Name	Estimated Date
Complete OH patrols	March 2023
Complete Engineering Design	September 2023
Begin repairs	April 2023
Complete repairs	December 2023

6. Regulatory Decisions

N/A

7. Codes and Standards

N/A

8. Risk and Contingencies

Contingencies: NA

Risk Mitigation:

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.
Internal construction resources not available to perform the work.	2023	Medium	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	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2023	Low	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	202X	High/Medium/Low	If storm activity delays work, we may be forced to use external resources.

9. References

References
1. N/A

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

Attachment	Included in Submittal?
A. Cost Estimate	*YES*
B. Partial Funding PAF	*YES*

Attachment A: Cost Estimate

Estimate based on material unit cost plus contractor unit-based pricing for the repair findings.

Contractor unit-based pricing:

Issue	EJ Labor	IB Abel Labor	EH Labor
Unfused transformer	333	382	315
Missing animal protection	83	273	95
Risers missing animal guards on the terminators	83	273	95
Broken/loose guy wire	343	439	334
Rotten pole-pole top	2,307	2,414	3,545
Broken/cracked crossarm	1,628	1,164	1,193
Pole Physical damage	2,307	2,414	3,545
General HL clamps on BB	157		191
Rotten crossarm	1,628	1,164	1,193
Lightning arrestor damaged	426	611	620
Pole Cracked	2,307	2,414	3,545
Lightning arrestor missing	426	611	620
Unfused transformer	333	382	315
Temporary construction	2,307	2,414	3,545
Rubber Tie Insulators	270	272	
Broken-cracked insulator	270	272	
Overhead transformer damaged		2,051	
Floating primary	200	254	239
Wire Damaged	200		239
Cutout damaged	333	382	315
Pole Fire damage	2,307	2,414	3,545
Foreign object on line		205	
Missing messenger guard	56		143
Overhead transformer bushing damaged		2,051	
Skinned locations	200		239
Spreaders with rubber ties		272	

Attachment B: Partial Funding PAF

Project Title: TRC Circuit Patrol Fixes - 2023	**Project Number:** CD02169
Date Prepared: 02/09/2023	**Company:** Eversource CT
Organization: Electric Field Operations	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** RELIABILITY IMPROVE SPEC PROJ
Project Manager: [redacted]	**Project Type:** Specific
Project Sponsor: [redacted]	**Capital Investment part of original Operating Plan:** Yes
Estimated in service date: 12/31/2023	**Emergency Related Request?** No
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply)**:**
Total Gross Capital Request: $9,654K	**Authorization Type:** Initial Funding

Executive Summary

Contractors are actively patrolling all Eversource's distribution circuits and documenting deficiencies that could impact reliability. Patrols are approximately 70% complete. Based on the findings so far, estimates were developed for the expected total findings and this project is being presented to gain initial funding of approximately $9.7Mil to cover the patrol cost, engineering costs and the cost to address the Priority 1 and 2 findings in 2023. Priority 3 findings are still being evaluated, at the end of which this project will be re-presented for a scope change to have priority 3 work completed in 2024. Findings are broken down into Priorities 1, 2 and 3 as shown below:

Findings	Estimated Qty
Priority 1	**4,303**
Broken/cracked crossarm	349
Broken-cracked insulator	100
Floating primary	31
Foreign object on line	6
General HL clamps on BB	1,791
Overhead transformer bushing damaged	4
Pole Cracked	266
Pole Physical damage	441

Rotten crossarm	328
Rotten pole-pole top	535
Temporary construction to be updated per latest standards	51
Vines	400
Priority 2	**1,824**
Broken/loose guy wire	663
Lightning arrestor damaged	147
Rubber Tie Insulators	374
Unfused backbone XFMs	640
Priority 3	**6,241**
Lightning arrestor missing	76
Missing animal protection	2,537
Missing messenger guard	43
Overhead transformer damaged	75
Ringed condition	1
Risers missing animal guards on the terminators	788
Skinned locations	1
Unfused lateral XFMs	2,719

Project Costs Summary

Note: Dollar values are in thousands

Capital Costs	2023	2024	2025+	Total
Internal Labor and Construction Equipment	$364	$0	$0	$364
Outside Services	$3,438	$0	$0	$3,438
Materials	$1,065	$0	$0	$1,065
Removals	$550	$0	$0	$550
Risk and Contingency	$469	$0	$0	$469
Other	$0	$0	$0	$0
Subtotal	**$5,886**	**$0**	**$0**	**$5,886**

Indirect Capital Costs	2023	2024	2025+	Total
Indirects/Overheads (including benefits)	$3,574	$0	$0	$3,574
Capitalized interest or AFUDC, if any	$194	$0	$0	$194
Subtotal	**$3,768**	**$0**	**$0**	**$3,768**
Total Capital Costs (Gross)	**$9,654**	**$0**	**$0**	**$9,654**
Less Total Customer Contribution	**$0**	**$0**	**$0**	**$0**
Project Costs (Net)	**$9,654**	**$0**	**$0**	**$9,654**

Technical Justification:

Project Need, Objective and Justification:

Starting in the fall of 2022, Eversource began performing patrols of their overhead distribution system twice a year (Spring and Fall). The Spring patrol would include high priority deficiencies only and the Fall patrol would include both high priority deficiencies and additional findings that would improve reliability.

This project was developed as a result of the Fall patrol for which all high priority findings will be completed in 2023. The additional findings related to reliability improvements will be prioritized and addressed in 2024.

These repairs must be completed to maintain a high level of reliability and service to Eversource customers.

Project Scope:

Perform Fall patrol, design all high priority deficiencies for repair in 2023 with additional reliability findings to be prioritized, designed and implemented in 2024.

Major Material:

Stockcode	Description	Qty
566943	45-1 pole	518
566940	40-2 pole	776
501024	Xarm 8'	1,194
501025	Xarm 10'	119
500825	Insulator Bare	2,432
522559	Insulator Cov	2,432
576488	Butt Plate	1,294
500810	Cutout	30,617
509710	Arrester 18kV	112
500626	Arrester 12kV	112
521792	Sq Guard	3,325
521824	Zap Shield	27,834
576621	XARM Bracket	12,247
566273	T-Bracket	18,370
566290	UpSwing	612
513455	#4 Tap Wire	306,172’
504268	6k Fuse	18,370
520739	10k Fuse	12,247

Background:

Approximately 16,717 miles of Distribution circuits will be patrolled to identify high priority issues that pose an imminent threat to the overhead distribution system.

Alternatives Considered:

Alternatives were considered (please describe below)

Not performing the patrols and associated repairs would lead to poor reliability impacting Eversource customers.

Regulatory Approvals:

Are Regulatory body approvals needed for the project?

No

Project Schedule

Milestone/Phase Name	Estimated Date
Begin performing overhead patrols	December 2022
Complete overhead patrols	March 2023
Begin engineering design	February 2023
Complete engineering design	June 2023
Begin P1 and P2 repairs	March 2023
Complete all P1 and P2 deficiencies	December 2023

Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2023	Low	Repairs to be completed using contractor unit-based pricing.
Internal construction resources not available to perform the work.	2023	Medium	Plan external resources to perform repairs utilizing unit-bid pricing.
Internal engineering resources not available to perform the work.	2023	Medium	Plan external resources to perform the patrols and design. Use competitive bidding to ensure lowest external labor cost.
Materials Shortage or long lead times	2023	Low	Pre-order long lead time material.
Storm delays	2023	Low	If storm activity delays work, we may be forced to use additional external resources.

References

N/A

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

Deficiencies and reliability repairs will be included once all patrols have been completed.