EVERSOURCE

Project Approval Form

Project Title: [redacted] WPC Reliability Improvement	Project Number: CD02194
Date Prepared: 05/29/2024	**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: 12/31/2024	
Total Capital Request: $904.9K	**Authorization Type:** Full Funding

1. Executive Summary

Full funding is being requested for this project at a cost of **$904.9K** which is 93.2% of the partial funding capital estimate of $971K. This project was partially approved on 3/30/2023. There is no scope change on the project. The marginal decrease in cost for this project is due to internal resources completing most of the work, rather than outside services as previously accounted for. This project falls within the 15% threshold relative to the partial funding request and is being requested with no changes anticipated.

The Original Project was presented as follows:

- *Eversource identified the top ten worst performing circuits (WPC) for each operating company based on the total number of customer minutes experienced on these circuits over the last four years. The devices with the most customer minutes for each circuit were identified as high impact zones. Cross functional teams were created with members from Engineering, Operations, System Planning, Vegetation Management and Standards to review the aging infrastructure within each high impact zone where outages have occurred. CD02194 focuses on infrastructure replacement to improve the reliability of the* [redacted]
- [redacted]
- *CD02194 addresses* [redacted]. *These proposals include aging infrastructure replacement, removing conductor from an inaccessible right of way as well as extensive vegetation trimming.*
- *The two zones that this project does not address will have extensive tree trimming performed.*

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2024	2025	Year 3+	Total
Direct Capital Costs				
Internal Labor and Construction Equipment	117.6	69.7	0.0	187.3
Outside Services	20.3	83.0	0.0	103.3
Materials	68.1	28.8	0.0	96.8
Removals	0.0	0.0	0.0	0.0
Risk and Contingency	0.0	63.1	0.0	63.1
Other	0.0	8.4	0.0	8.4
Subtotal – Direct Costs	**206.0**	**253.0**	**0.0**	**459.0**
Indirect Capital Costs				
Indirect/Overheads (including benefits)	262.0	183.8	0.0	445.8
Capitalized interest or AFUDC, if any	0.0	0.0	0.0	0.0
Subtotal – Indirect Costs	**262.0**	**183.8**	**0.0**	**445.8**
Total Gross Capital Costs	**468.0**	**436.9**	**0.0**	**904.9**
Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Total Net Capital Project Costs	**468.0**	**436.9**	**0.0**	**904.9**

Explain unique payment provisions, if applicable:

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

[redacted]

[redacted]

b. Project Need

Eversource identified the top ten worst performing circuits (WPC) for each operating company based on the total number of customer minutes experienced on these circuits over the last four years. The devices with the most customer minutes for each circuit were identified as high impact zones. Cross functional teams were created with members from Engineering, Operations, System Planning, Vegetation Management and Standards to review the aging infrastructure within each high impact zone where outages have occurred. CD02194 focuses on infrastructure replacement to improve the reliability of the [redacted]

[redacted]

[redacted] through aging infrastructure replacement, vegetation removals, and conductor relocation out of an inaccessible right of way that will increase reliability.

c. Project Scope

This project addresses the aging infrastructure and reliability performance in four high impact zones through the following proposals:

[redacted]

- [redacted]
- [redacted]

- Trim/remove as much vegetation as permissible.

[redacted]

- [redacted]
- Remove facilities from right of way.
- Trim to blue sky spec as permissible.

A Synergi loadflow was performed on the circuit and no overloads were identified and all voltages were within PURA guidelines.

4. Alternatives Considered

1 – Do Nothing – This alternative was not selected because it doesn't address the aging infrastructure and heavy vegetation on this circuit and would not improve reliability.

2 – Extensive Vegetation Trimming - $415K – This alternative was not selected because it only addresses the heavy vegetation on the [redacted] but does not replace any of the aging infrastructure. This option would not address all reliability concerns on the [redacted] and would leave under classed poles and smaller bare conductor on the circuit.

3 – Replace overhead facilities in these two high impact zones with underground facilities - $15M – This option was not selected since lower cost options to replace the aging infrastructure were possible.

5. Project Schedule

Add any additional milestones that are pertinent to the project

Milestone/Phase Name	Estimated Date
Partial Approval	03/17/2023
100% Detailed Engineering Completion	10/31/2023
Construction Start	3/1/2024
In Service Date	12/31/2024

6. Regulatory Decisions

DOT permits may be required for this work.

7. Codes and Standards

N/A

8. Risk and Contingencies

Risk Mitigation:

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2024/ 2025	Medium	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	2024/ 2025	Medium	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2024/ 2025	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/ 2024	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2024/ 2025	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2024/ 2025	High	If storm activity delays work, we may be forced to use external resources.

System abnormal configuration	2024/ 2025	Medium	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	2024/ 2025	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.
Wetlands / Environmentally sensitive area	2024/ 2025	Low	Use of mats and specialty equipment, only work during certain times of the year.

9. References

N/A

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

Attachment	Included in Submittal?
A. Partial Funding PAF Form	*YES*
B. System and Station One-Lines	*YES*
C. Project Needs Statement	*YES*
D. Geographic Map	*YES*

Attachment A – Partial Funding PAF Form

Operations Project Authorization Form

Project Title: [redacted] **WPC Reliability Improvement**	**Project Number: CD02194**
Date Prepared: 03/17/2023	**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: 12/31/2024	**Emergency Related Request?** No
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution
Total Gross Capital Request: $971K	**Authorization Type:** Partial Funding

Executive Summary

Eversource identified the top ten worst performing circuits (WPC) for each operating company based on the total number of customer minutes experienced on these circuits over the last four years. The devices with the most customer minutes for each circuit were identified as high impact zones. Cross functional teams were created with members from Engineering, Operations, System Planning, Vegetation Management and Standards to review the aging infrastructure within each high impact zone where outages have occurred. CD02194 focuses on infrastructure replacement to improve the reliability of the [redacted]

[redacted]

CD02194 addresses [redacted] where Eversource has experienced outages within the past four years. These proposals include aging infrastructure replacement, removing conductor from an inaccessible right of way as well as extensive vegetation trimming.

The two zones that this project does not address will have extensive tree trimming performed.

Project Costs Summary

Note: Dollar values are in thousands

Capital Costs	Year 2024	Year 2025	Year 2026+	Total
Direct Capital Costs				
Internal Labor and Construction Equipment	$18	$18	$0	$37
Outside Services	$174	$171	$0	$346
Materials	$54	$53	$0	$107
Removals	$28	$27	$0	$55
Risk and Contingency	$24	$23	$0	$47
Other	$0	$0	$0	$0
Subtotal – Direct Costs	**$298**	**$294**	**$0**	**$592**
Indirect Capital Costs				
Indirect/Overheads (including benefits)	$181	$178	$0	$359
Capitalized interest or AFUDC, if any	$10	$10	$0	$20
Subtotal – Indirect Costs	**$191**	**$188**	**$0**	**$379**
Total Gross Capital Costs	**$489**	**$482**	**$0**	**$971**
Customer Contribution				
Total Net Capital Project Costs	**$489**	**$482**	**$0**	**$971**

Technical Justification:

Project Need, Objective and Justification:

Eversource identified the top ten worst performing circuits (WPC) for each operating company based on the total number of customer minutes experienced on these circuits over the last four years. The devices with the most customer minutes for each circuit were identified as high impact zones. Cross functional teams were created with members from Engineering, Operations, System Planning, Vegetation Management and Standards to review the aging infrastructure within each high impact zone where outages have occurred. CD02194 focuses on infrastructure replacement to improve the reliability of [redacted]

[redacted]

This project addresses the reliability in the following high impact zones [redacted], and fuse pole through aging infrastructure replacement, vegetation removals, and conductor relocation out of an inaccessible right of way that will increase reliability.

Project Scope:

This project addresses the aging infrastructure and reliability performance in four high impact zones through the following proposals:

[redacted]

- [redacted]
- Trim/remove as much vegetation as permissible.

[redacted]

- [redacted]
- Remove facilities from right of way.
- Trim to blue sky spec as permissible.

A Synergi loadflow was performed on the circuit and no overloads were identified and all voltages were within PURA guidelines.

Major Material:
2024

- 23 kV Scada Switch – 1
- Wood Poles – 10
- Composite Crossarms – 10

2025

- Single Phase 336 Tree Wire – 5800’
- Wood Poles – 10
- Composite Crossarms - 10

Background:

[redacted]

[redacted]

Alternatives Considered:

Were alternative solutions considered/applicable? Include any cost/benefit analysis.

Alternatives were considered (please describe below)

1 – Do Nothing – This alternative was not selected because it doesn't address the aging infrastructure and heavy vegetation on this circuit and would not improve reliability.

2 – Extensive Vegetation Trimming - $415K – This alternative was not selected because it only addresses the heavy vegetation on the [redacted] but does not replace any of the aging infrastructure. This option would not address all reliability concerns on the [redacted] and would leave under classed poles and smaller bare conductor on the circuit.

3 – Replace overhead facilities in these two high impact zones with underground facilities - $15M – This option was not selected since lower cost options to replace the aging infrastructure were possible.

Regulatory Approvals:

Are Regulatory body approvals needed for the project?

No

DOT permits may be required for this work.

Project Schedule

Milestone/Phase Name	Estimated Date
100% Engineering Completion	10/31/2023
Construction Start	3/1/2024
In Service Date	12/31/2024

Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2024/ 2025	Medium	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	2024/ 2025	Medium	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2024/ 2025	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/ 2024	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2024/ 2025	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2024/ 2025	High	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2024/ 2025	Medium	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	2024/ 2025	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.

Wetlands / Environmentally sensitive area	2024/ 2025	Low	Use of mats and specialty equipment, only work during certain times of the year.

References

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


[redacted]%20PAF%20Detail%20Map.vsdx


[redacted]One Line Final.pdf


CD02194_26E8_project_needs_statemen

Attachment B – System and Station One-Lines



Attachment C – Project Needs Statement

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD02194

[redacted]VPC - Reliability Improvements

Work Classification

Category: Line
Type: REL1
Type Desc: RELIABILITY IMPROVE SPEC PROJ
Work Type:

Ownership / Management

AWC: Danielson
Statewide: No
Owner Manager [redacted]

Project Information

Status: Draft
SPS #:
AIS Score:
Associated Projects:
Assignment ID:
Patrol Find ID:

Budget Summary - Preferred Option

Preferred Solution

2024

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
1	[redacted] Zone Replace Poles and Trim	Draft	0	24%	$500,101	$500,101
				2024 Total:	**$500,101**	**$500,101**

2025

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
2	[redacted] Relocate out of ROW	Draft	0	28%	$491,971	$491,971
				2025 Total:	**$491,971**	**$491,971**
				Total Project:	**$992,071**	**$992,071**

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Specific Project Proposal - Project #: CD02194

[redacted]WPC - Reliability Improvements

Project Option Summary

ID	Description	Segments	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)	Prfrd
O1	Preferred Solution	1,2	$992,071	$0	100%	$48.93	$4.90	☑
O2	Vegetation Removals Only	3	$414,160	$0	100%	$0.00	$0.00	☐

Segments

ID	Title	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)
1	[redacted]one Replace Poles and	$500,101			$68.08	$2.66
2	[redacted]Relocate out of ROW	$491,971			$26.18	$23.47
3	[redacted]tion Removals Only	$414,160			$0.00	$0.00

Connecticut Light & Power
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Specific Project Proposal - Project #: CD02194
[redacted] VPC - Reliability Improvements

Background / Scope

Issue:
[redacted]

Project Description:
[redacted]

Other Considerations:

Revision / ACT Comments:

If we don't do this project, what will happen?

Environmental

Water Pollution: No Change Soil Contamination: No Change Natural Habitats: No Change

Alternatives considered based on Environmental Impact or Description of Aspects Oil Spill Risks Considered? ☐

Safety Concerns With This Project? ☐

Explain:

External Stakeholders

Customer Impact / Involvement

Cust. Impacted: Approx. Pole Count (NU):

Crit. Cust. Impacted: Approx. Pole Count (Other):

Adjoining Property Owner Consent Required: ☐ Town Hearing Required: ☐

Other Utility Pole Custodian Area: ☐ Easement Required: ☐

State Highway Permit Required: ☐

Relocation / New Service

New Srvc. Contact: Requestor Type:

Customer Type: State Highway Project #:

Request Number: Route #:

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Specific Project Proposal - Project #: CD02194

[redacted]VPC - Reliability Improvements

Design Alternative CD02194-01

General Information

Segment: 1 - [redacted]one Replace Poles and Trim Status: Draft

Segment Type: BACKBONE REHAB Town: WOODSTOCK Budget Year: 2024

Work Type: BB-Rehab Trimming Required: ☑ In Service Date: 12/31/2024

Description: This segment replaces 10 rotted poles, install scada switch and perform trimming.

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed
1	[redacted]		
2			

Connecticut Light & Power
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Specific Project Proposal - Project #: CD02194

[redacted]WPC - Reliability Improvements

Design Alternative CD02194-01

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	24.00%
SubTotal:	$403,307
Contingency Amount:	$96,794
Estimate:	$500,101
Reimbursement:	$0
Net Amount:	**$500,101**

Description:

Item Description	CU	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17	$3,509.60
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18	$17,000.00
POLE OH - POLE - 3ph (CL&P custodian)	16-OH14	$46,760.00
POLETOP OH - Replace wood xarm with composite xarm - 3ph	16-OH17A	$14,048.00
TREE OH - Tree Trimming	16-OH61	$274,000.00
SECTIONALIZE OH - Recloser - 3ph P.[redacted]Scada Switch	16-OH38	$47,989.60

Associated / Impacted Devices

Status	Type / SysID	Street / Cross St	Structure / Town	Circuit	Map	Cust	Notes
Existing	[redacted]						

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Specific Project Proposal - Project #: CD02194
[redacted] WPC - Reliability Improvements

Design Alternative CD02194-01

Reliability Projection

Title:

Outage Start Date: 1/1/2019 Outage End Date: 1/1/2023 Years History: 4.00

[redacted]

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Specific Project Proposal - Project #: CD02194
[redacted] WPC - Reliability Improvements

Design Alternative CD02194-02

General Information

Segment: 2 - Fuse 1346 - Relocate out of ROW Status: Draft

Segment Type: RECONDUCTORING - OTHER Town: WOODSTOCK Budget Year: 2025

Work Type: LT-Reconductoring Trimming Required: ☑ In Service Date: 12/31/2025

Description: [redacted]

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed
1	[redacted]		
2			
3			
4			

Connecticut Light & Power
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Specific Project Proposal - Project #: CD02194

[redacted] WPC - Reliability Improvements

Design Alternative CD02194-02

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$384,352
Contingency Amount:	$107,619
Estimate:	$491,971
Reimbursement:	$0
Net Amount:	**$491,971**

Description:

Item Description	CU	[redacted]	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17		$3,509.60
POLE OH - POLE - 1ph (Telephone custodian)	16-OH11		$9,380.00
OH WIRE OH-Reconductor w/175 Mil Tree Wire-1ph (any gauge)	16-OH25		$91,200.00
TREE OH - Tree Trimming	16-OH61		$120,000.00
TRAFFIC OH/DB/UG - Traffic Control - Flagger 10% since very rural area	16-ALL19		$25,000.00
SECTIONALIZE OH - Cutouts or Arresters - 1ph Fuse 1351	16-OH19		$2,742.40
OH WIRE OH - Remove circuit wire (3 phase) Remove Conductors in ROW.	16-OH37A		$3,520.00
OTHER OTHER Remove ROW poles	16-ALL14		$25,000.00
OH WIRE OH - Line Extension - 3ph (336 kcmil) Single Phase Delta - Cheaper to estimate this way.	16-OH33		$104,000.00

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Specific Project Proposal - Project #: CD02194
[redacted]WPC - Reliability Improvements

Design Alternative CD02194-02

Associated / Impacted Devices

Status	Type / SysID	Street / Cross St	Structure / Town	Circuit	Map	Cust	Notes
Existing	[redacted]						
Existing							

Reliability Projection

Title:

Outage Start Date: 1/1/2019 Outage End Date: 1/1/2023 Years History: 4.00

[redacted]

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD02194

[redacted] WPC - Reliability Improvements

Design Alternative CD02194-03

General Information

Segment: 3 - [redacted] Vegetation Removals Only
Status: Draft
Segment Type: OTHER
Town: WOODSTOCK
Budget Year: 2024
Work Type: ETT Trimming
Trimming Required: ☑
In Service Date: 12/31/2024
Description:

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD02194

[redacted] WPC - Reliability Improvements

Design Alternative CD02194-03

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	24.00%
SubTotal:	$334,000
Contingency Amount:	$80,160
Estimate:	$414,160
Reimbursement:	$0
Net Amount:	**$414,160**

Description:

Item Description	CU	[redacted]	Amount
TREE OH - Tree Trimming [redacted]	16-OH61		$274,000.00
TREE OH - Tree Trimming [redacted]	16-OH61		$60,000.00

Associated / Impacted Devices

Status	Type / SysID	Street / Cross St	Structure / Town	Circuit	Map	Cust	Notes

Attachment D – Geographic Map

