EVERSOURCE

Project Approval Form

Project Title: [redacted] PILC Cable Replacement	**Project Number: CD02121**
Date Prepared: 10/20/2022	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** UG CABLE & EQUIPMNT REPLACEMNT
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: 12/31/2023	
Total Capital Request: $931.3K	**Authorization Type:** Full Funding

1. Executive Summary

Work orders have been written and full funding is now being requested for this project at a cost of $931.3K. This figure is 42% of the approved initial funding. This reduction in cost is due to a difference in the amount of cable that need to be replaced. Approximately 12,000' feet of cable were requested to be replaced on the initial funding request, but investigations showed that only approximately 7,600' needs to be replaced.

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2023	2024	2025+	Total
Internal Labor and Construction Equipment	5.1	0.0	0.0	5.1
Outside Services	192.5	0.0	0.0	192.5
Materials	266.0	0.0	0.0	266.0
Removals	117.6	0.0	0.0	117.6
Risk and Contingency	65.0	0.0	0.0	65.0
Other	0.0	0.0	0.0	0.0
Subtotal	**646.1**	**0.0**	**0.0**	**646.1**

Indirect Capital Costs	2023	2024	2025+	Total
Indirects/Overheads (including benefits)	285.2	0.0	0.0	285.2
Capitalized interest or AFUDC, if any	0.0	0.0	0.0	0.0
Subtotal	**285.2**	**0.0**	**0.0**	**285.2**
Total Capital Costs (Gross)	**931.3**	**0.0**	**0.0**	**931.3**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**931.3**	**0.0**	**0.0**	**931.3**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

PILC copper cable was used extensively in the urban underground electrical systems that were built in the early/mid 1900s. This cable is now reaching the end of its useful life, and cable failures cause feeder lockouts which can impact customer reliability and satisfaction.

This project is part of an overall strategy to address the poor performance of the Paper Insulated Lead Covered (PILC) cable in Eversource's underground distribution system. PILC cable was installed on the Eversource distribution system prior to 1984. Beginning in 2018, Eversource - CT has established a program to proactively replace PILC cable. Targeted cable replacement is prioritized based on outage history / reliability.

b. Project Need

[redacted]

c. Project Scope

[redacted]

- [redacted]
- [redacted]

4. Alternatives Considered

Replacement of PILC cable is the only feasible option to mitigate reliability events on the Eversource Distribution Circuits which contain PILC. PILC cable is Eversource's most mature asset and has reached the end of its useful life. It is not only prone to failure but requires longer repair time. These two reliability issues together, coupled with the heath & environmental issues of carcinogenic PCBs found in PILC oil, necessitate the proactive replacement of PILC on the Eversource system.

[redacted]

5. Project Schedule

Add any additional milestones that are pertinent to the project

Milestone/Phase Name	Estimated Date
Partial Approval	November 2022
100% Detailed Engineering Completion	April 2023
Fully Funded	June 2023
Construction Start	June 2023
In Service Date	December 2023

6. Regulatory Decisions

N/A

7. Codes and Standards

N/A

8. Risk and Contingencies

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2024	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.	2024	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.	2024	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2024	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2024	Medium	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2024	Low	Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods.

9. References

References
1. N/A

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

Attachment	Included in Submittal?
A. Cost Estimate	*YES*
B. Before and After Geographic Map	*YES*
C. Cable Route	*YES*
D. Load Sheet	*YES*
E. Partial Funding PAF	*YES*

Attachment A: Cost Estimate

Segment 1

Design Alternative CD02121-01

Estimate

Preliminary Estimate Summary

Revision Number:	0
Contingency:	24.00%
SubTotal:	$890,005
Contingency Amount:	$213,601
Estimate:	$1,103,606
Reimbursement:	$0
Net Amount:	**$1,103,606**

Description: PILC Cable Replacement

Item Description	CU	[redacted]	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17		$7,019.20
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu	16-UG114		$417,600.00
UG CABLE UG - Cable Removal - all cables	16-UG117		$120,000.00
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18		$30,000.00
OTHER OTHER 30% Constrctor cost added	16-ALL14		$205,386.00
OTHER OTHER MH Cleaning	16-ALL14		$10,000.00
OTHER OTHER Rodding and cleaning old "orangeburg" ducts	16-ALL14		$100,000.00

Segment 2

Design Alternative CD02121-02

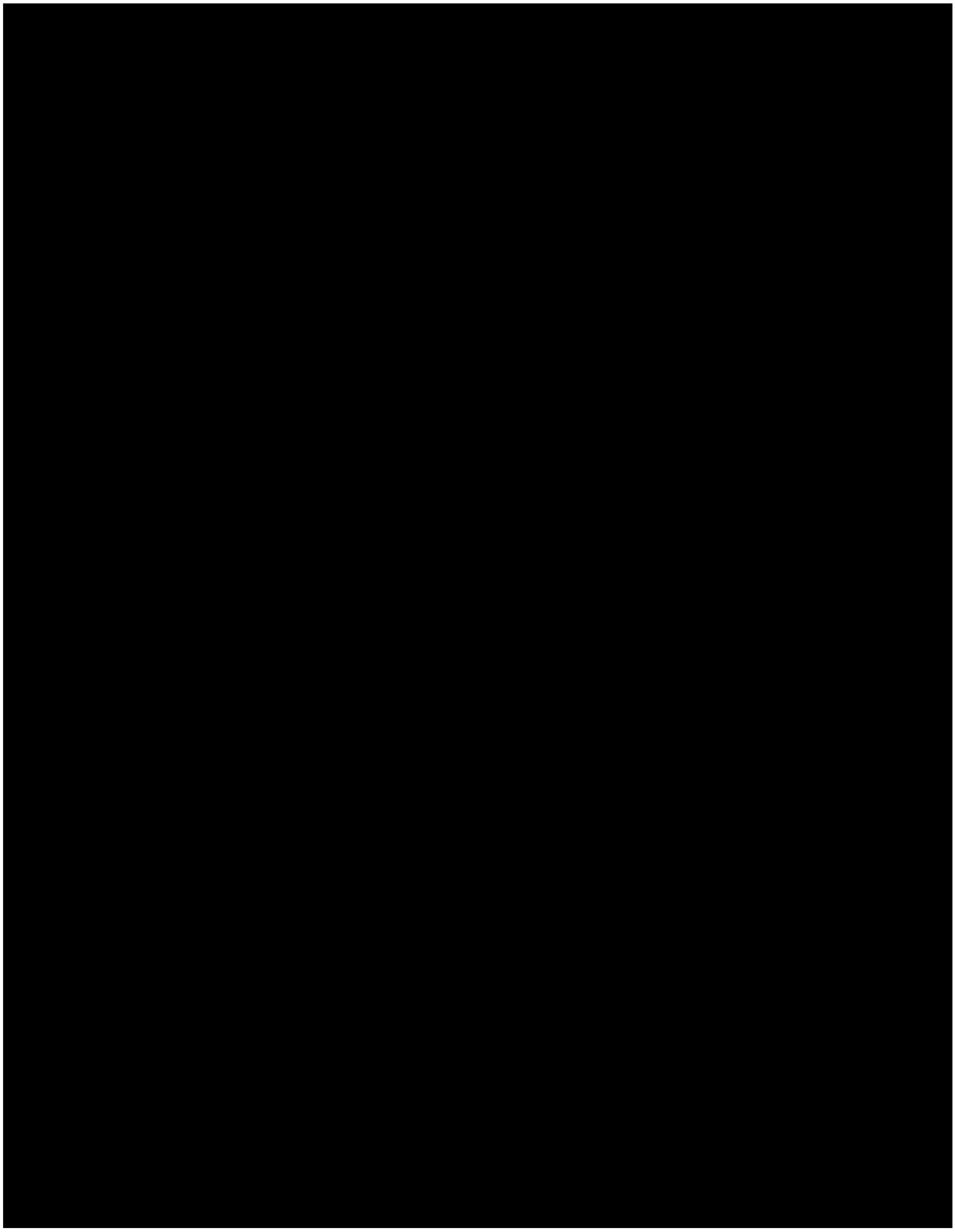
Estimate

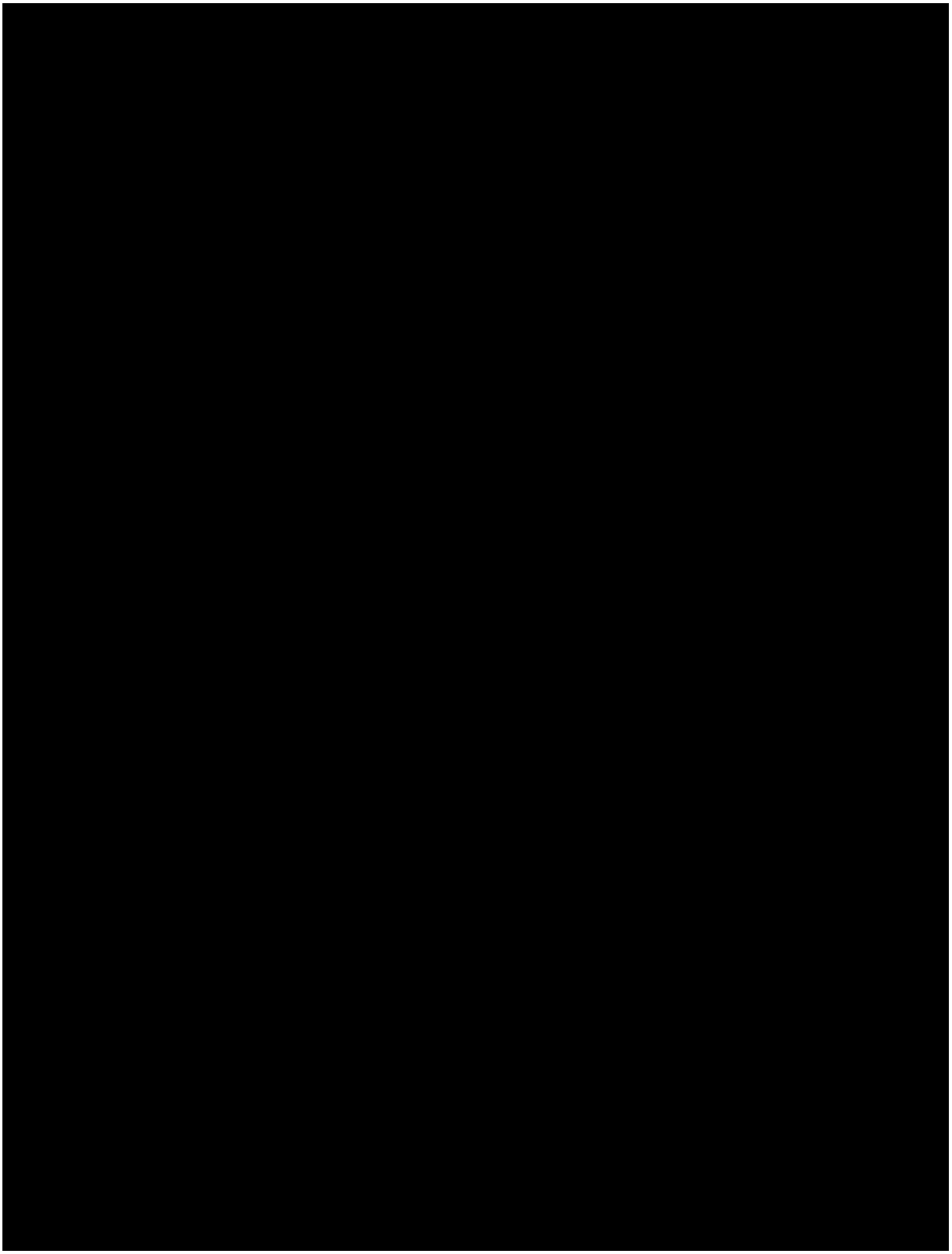
Preliminary Estimate Summary	
Revision Number:	0
Contingency:	24.00%
SubTotal:	$909,505
Contingency Amount:	$218,281
Estimate:	$1,127,786
Reimbursement:	$0
Net Amount:	**$1,127,786**

Description: PILC Cable Replacement

Item Description	CU	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17	$7,019.20
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu	16-UG114	$417,600.00
UG CABLE UG - Cable Removal - all cables	16-UG117	$120,000.00
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18	$45,000.00
OTHER OTHER 30% Contractor cost added	16-ALL14	$209,886.00
OTHER OTHER MH Cleaning	16-ALL14	$10,000.00
OTHER OTHER Rodding and cleaning orangeburg ducts	16-ALL14	$100,000.00

Attachment B: Before and After Geographic Map





Attachment C: Cable Route



Attachment D: Load Sheet



Attachment E: Partial Funding PAF

Operations Project Authorization Form

Project Title: [redacted]PILC Cable Replacement	**Project Number: CD02121**
Date Prepared: 10/20/2022	**Company:** Eversource CT
Organization: Distribution Engineering	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** UG CABLE & EQUIPMNT REPLACEMNT
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? No	**Facility Type** (check all that apply)**:** ☐ PTF ☐ non-PTF ☒ Distribution
Total Gross Capital Request: $2,206K	**Authorization Type:** Initial Funding

Executive Summary

This project is part of an overall strategy to address the poor performance of the Paper Insulated Lead Covered (PILC) cable in Eversource's underground distribution system. PILC cable was installed on the Eversource distribution system prior to 1984 [redacted]

[redacted]

[redacted] The capital cost of the project is $2,206K

Project Costs Summary

Note: Dollar values are in thousands

Capital Costs	Year 2023	Year 2024	Year 2025+	Total
Direct Capital Costs				
Internal Labor and Construction Equipment	$167	$0	$0	$167
Outside Services	$501	$0	$0	$501
Materials	$525	$0	$0	$525
Removals	$140	$0	$0	$140
Risk and Contingency	$17	$0	$0	$17
Other	$0	$0	$0	$0
Subtotal – Direct Costs	**$1,350**	**$0**	**$0**	**$1,350**
Indirect Capital Costs				
Indirect/Overheads (including benefits)	$810	$0	$0	$810
Capitalized interest or AFUDC, if any	$46	$0	$0	$46
Subtotal – Indirect Costs	**$856**	**$0**	**$0**	**$856**

Total Gross Capital Costs	**$2,206**	**$0**	**$0**	**$2,206**
Customer Contribution	$0	$0	$0	$0
Total Net Capital Project Costs	**$2,206**	**$0**	**$0**	**$2,206**

Technical Justification:

Project Need Statement

PILC copper cable was used extensively in the urban underground electrical systems that were built in the early/mid 1900s. This cable is now reaching the end of its useful life, and cable failures cause feeder lock-outs which can impact customer reliability and satisfaction.

Beginning in 2018, Eversource - CT has established a program to proactively replace PILC cable. Targeted cable replacement is prioritized based on outage history / reliability.

[redacted]

Project Objectives

[redacted]

Project Scope:

[redacted]

- [redacted] EPR 30kV cable.

- [redacted]

Major Material:

12,000’ 4ct 500Cu 30KV EPR cable.

Background:

- [redacted]

Business Process and / or Technical Improvements:

Replacement of the PILC cable eliminates the exposure to failure of the PILC cable.

Alternatives Considered:

Alternatives were considered (please describe below)

[redacted]

Regulatory Approvals:

Are Regulatory body approvals needed for the project?

No

Project Schedule

Milestone/Phase Name	Estimated Date
100% Engineering Completion	May 2024
Construction Start	September 2024
Testing/Commissioning	November 2024
In Service Date	December 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	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.	2024	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.	2024	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2024	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2024	Medium	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2024	Low	Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods.

References

CD02121_project_needs_statement.pdf

Copy of Copy of [redacted] Outages rev.2.

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

[redacted] before & after map.pdf

Oneline CD02121 [redacted].pdf

Load Sheet CD02121.xlsx