Operations Project Authorization Form

Project Title: Cromwell Chelsea Estates Create DB Loops	Project Number: CD01827
Date Prepared: 10/11/2023	**Company:** Eversource CT
Organization: Electric System Operations	**Project Category:** DB CABLE REPLACE-SPECIFIC PROJ
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: $848.5K	**Authorization Type:** Full Funding

1. Executive Summary

This project creates a [redacted]
The loop will provide faster restoration times and limit the need for generation in the event of another failure. The project will also evaluate the condition of submersible transformers and replace them if they are found defective.

In the past thirteen years there have been eight events in this neighborhood, two of which occurred in late 2022. Of the eight events, six have been the result of submersible transformer failures, and the remaining two were due to primary cable faults.

This residential development [redacted]

During a constructability review it was determined that [redacted]

[redacted] The additional work was partially approved in CPAC increasing the project cost from $427K to $557K.

Furthermore, as construction crews were in the process of installing the primary cable, it was discovered that [redacted] is considered out of scope work; thus, increasing the project cost to $848.5K

The original project scope for $427K was approved on December 2nd ,2021, and it called for the installation of [redacted] The added scope approved on December 15th, 2022, for $557K resulting from the replacement of the [redacted]

Therefore, the full funding request for this project is $848.5K, which includes the additional out-of-scope installation of [redacted] and reflects an increase of direct capital cost ($154k) and an increase of indirect cost $136.5K that resulted from a revised estimate per unit cost in labor and materials.

2. Project Cost Summary

Note: Dollar values are in thousands.

Financial Evaluation

Capital Costs	2022	2023	Year 3+	Total
Internal Labor and Construction Equipment	0.0	0.0	0.0	0.0
Outside Services	33.8	346.9	0.0	380.7
Materials	4.2	42.7	0.0	46.8
Removals	4.7	47.9	0.0	52.6
Risk and Contingency	0.0	16.6	0.0	16.6
Other	0.0	0.2	0.0	0.2
Subtotal	**42.7**	**454.3**	**0.0**	**497.0**

Indirect Capital Costs	2022	2023	Year 3+	Total
Indirects/Overheads (including benefits)	28.6	293.8	0.0	322.4
Capitalized interest or AFUDC, if any	2.6	26.5	0.0	29.1
Subtotal	**31.2**	**320.3**	**0.0**	**351.5**
Total Capital Costs (Gross)	**73.9**	**774.6**	**0.0**	**848.5**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**73.9**	**774.6**	**0.0**	**848.5**

3.Technical Justification

a. Background

This project was created in response to a recommendation from the Hartford Overhead Line Department. They requested a loop for the Chelsea Estates, Cromwell DB Development. During

the June 7, 2021, [redacted]

b. Project Need

[redacted]

c. Project Scope

Preferred Option #1, Segment #3

Project Name: Cromwell_Chelsea Estates_Two Phase Loop
Cost: $848.5K (Includes Out-of-Scope-Work)

[redacted]



Major Material:

1Ø Underground conductor: 2,372 ft.
3Ø Underground conductor: 707 ft.
HDD: 1,900 ft.
DB - PAD Type - Junction-3Ø: 2
DB - PAD Type-Junction - 1Ø: 3
DB/UG-Padmount XF-1 PH: 6
Hex hole
Above ground switch

Out of Scope Work

Below are the detailed locations descriptions along with a map showing the new sections installed.

.

Major Material:

.





4. Alternatives Considered

Alternatives were considered (please describe below)

Alternatives Considered:

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

Option #3, Segment #1

Project Name: Cromwell_Chelsea Estates_Create DB Loop
Cost: $1,162K

Description: [redacted]

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Option #2, Segments #1 & #2

Project Name: Cromwell_Chelsea Estates_Create DB Loop & Replace DB Cable
Cost: $3,512K

Extend three-phase cable via a riser from Franklin Rd. down Chelsea Drive and then split the phases up





None of these alternatives were selected because of their higher cost. The preferred option addresses the reliability issue with the most cost-effective solution and targets the replacement of obsolete distribution plant.

Project Option Comparison

[redacted]

Cost	$848K	$1,162K	$3,512K
Cost / MVA added	$0	$0	$0
Cost / CM Saved	$46.49	$49.47	$181.79
Cost / CI Saved	$41,255.56	$48,419.37	$161,171.43
Preferred option	X		

5. Project Schedule

Milestone/Phase Name	Estimated Completion Date
CPAC ENG Approval	04/04/2019
Project Rollout for PM and CE	05/31/2019
ACT Approval	12/31/2019
Construction Start	06/01/2022
Project Completion	09/30/2023

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.	2022-2023	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	2022-2023	Low	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2022-2023	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.	2019	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2022-2023	Medium	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2022-2023	Medium	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2022-2023	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	2022-2023	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.
Wetlands / Environmentally sensitive area	2022-2023	High	Use of mats and specialty equipment, only work during certain times of the year.

9. References

References

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

Attachment	Included in Submittal?
A. Project Need Statement	*YES*
B. Cromwell_Chelsea Estates Loop Appraisal	*YES*
C. Load Summary	*YES*
D. Air-line Trail Pictures	*YES*
E. Chelsea Est Cromwell Sketch (Out of Scope diagram)	

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

Chelsea Est Cromwell Sketch Ph

CD01827_project_needs_statement.pdf

Cromwell_Chelsea Estates_Loop_3R11_

CD01827_Chelsea%20Estates_Outage%

Chelsea Cromwell EJ Estimates.pdf

Cromwell_Chelsea Estates_Loop_Appro

- *Attachment A*

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD00315 [redacted]

Design Alternative CD00315-08

Estimate

	Preliminary Estimate Summary
Revision Number:	1
Contingency:	24.00 %
SubTotal:	$454,280
Contingency Amount:	$109,027
Estimate:	$563,307
Reimbursement:	$0
Net Amount:	$563,307
Description:	

Item Description	CU	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	14-ALL17	$21,300.00
TRAFFIC OH/DB/UG - Traffic Control - Flagger	14-ALL19	$15,000.00
SECTIONALIZE OH - Cutouts or Arresters - 1ph	14-OH19	$3,330.00
OH WIRE OH - Ampact Connectors - 1ph (2 Ampacts)	14-OH21	$4,995.00
OH WIRE OH - Ampact Connectors - 3ph (6 Ampacts)	14-OH22	$7,000.00
OH WIRE OH - Reconductor w/ 175 Mil Tree Wire - 3ph -336 k	14-OH26B	$340,000.00
TREE OH - Trimming for Taller Pole	14-OH64	$5,500.00
POLE OH - POLE - 3ph (CL&P custodian) 8 removed for reconductoring	14-OH14	$5,675.00
POLE OH - POLE - 3ph (CL&P custodian) PD	14-OH14	$17,025.00

[redacted]

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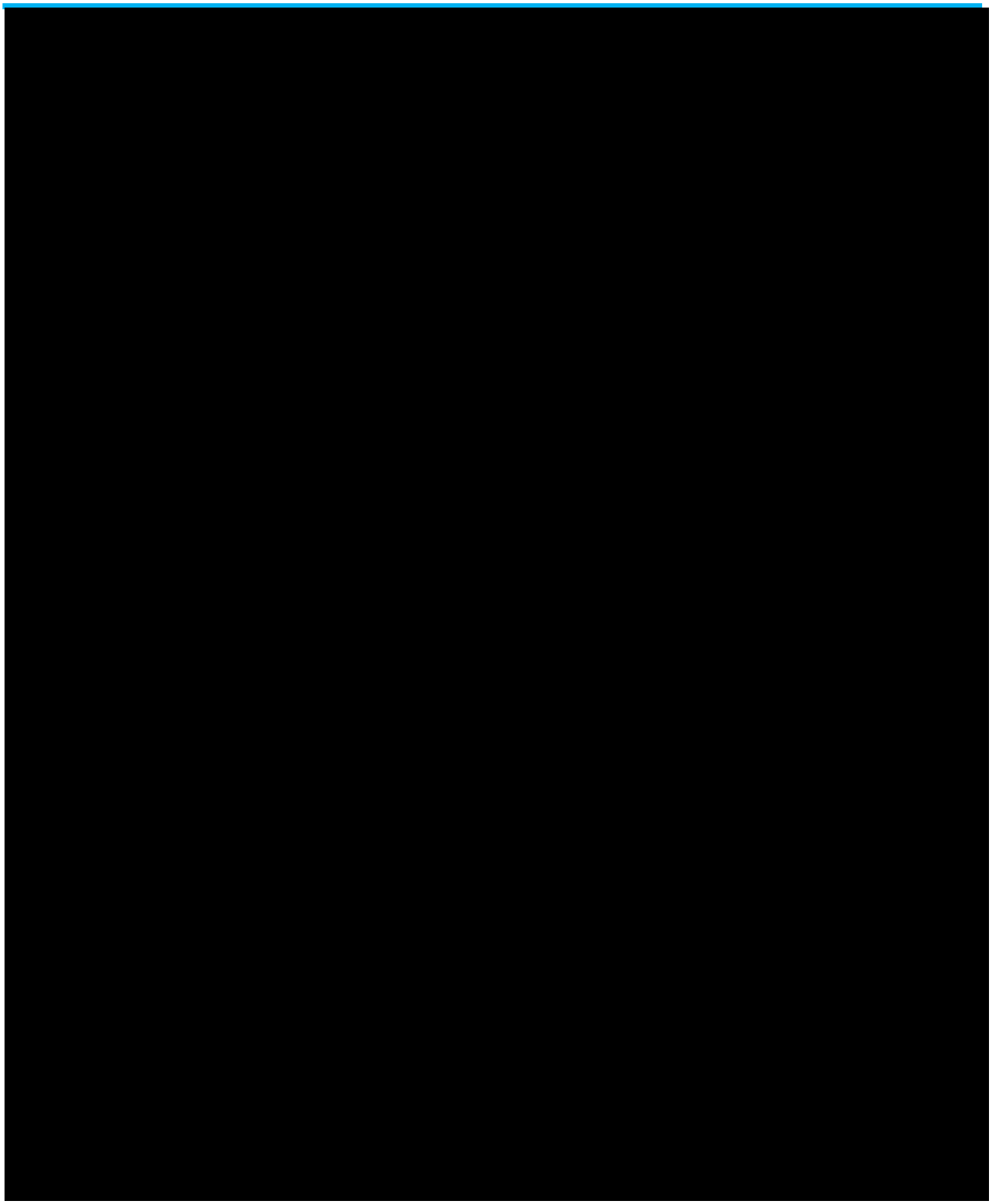

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Project Approval Form



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Operations Project Authorization Form

Project Title: Cromwell Chelsea Estates Create DB Loops	**Project Number: CD01827**
Date Prepared: 11/15/2022	**Company:** Eversource CT
Organization: Distribution Engineering	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** DB CABLE REPLACE-SPECIFIC PROJ
Project Manager: [redacted]	**Project Type:** Specific
Project Sponsor: [redacted]	**Capital Investment part of original Operating Plan:** Yes
Estimated in service date: 12/31/22	**Emergency Related Request?** No
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution
Total Gross Capital Request: $557K	**Authorization Type:** Partial Funding

Financial Requirements:
Project Authorization
ERM: _____

FP&A: _____

Executive Summary

This project creates a [redacted] The loop will provide faster restoration times and limit the need for generation in the event of another failure. The project will also evaluate the condition of submersible transformers and replace them with pad-mount transformers as needed. Shortage of underground and overhead transformer is prevalent in the supply chain across the country.

[redacted] be evaluated for proper functionality and replaced with pad-mount transformers if a defect is found.

[redacted]

[redacted]

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[redacted]

Project Costs Summary

Note: Dollar values are in thousands

Capital Costs	Year 2022	Year 2023	Year 2024	Total
Direct Capital Costs				
Internal Labor and Construction Equipment	$17	$0	$0	$17
Outside Services	$150	$0	$0	$150
Materials	$57	$0	$0	$57
Removals	$117	$0	$0	$117
Risk and Contingency	$2	$0	$0	$2
Other	$0	$0	$0	$0
Subtotal	**$343**	**$0**	**$0**	**$343**
Indirect Capital Costs	**Year 2022**	**Year 2023**	**Year 2024**	**Total**
Indirects/Overheads (including benefits)	$213	$0	$0	$213
Capitalized interest or AFUDC, if any	$2	$0	$0	$2
Subtotal	**$215**	**$0**	**$0**	**$215**
Total Capital Costs (Gross)	**$557**	**$0**	**$0**	**$557**

Technical Justification:

Project Need, Objective and Justification:

[redacted]

Project Objectives

[redacted]

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[redacted]

Project Scope:

Preferred Option #1, Segment #3

Project Name: Cromwell_Chelsea Estates_Two Phase Loop
Cost: $557K

Description: Extend three-phase cable via a riser from Franklin Rd. down Chelsea Drive and then use [redacted]



Major Material:

1Ø Underground conductor: 2,372 ft.

3Ø Underground conductor: 707 ft.
HDD: 1,900 ft.
DB - PAD Type - Junction-3Ø: 2
DB - PAD Type-Junction - 1Ø: 3
DB/UG-Padmount XF-1 PH: 6
Hex hole
Above ground switch

Background:

[redacted]

Alternatives Considered:

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

Option #3, Segment #1

Project Name: Cromwell_Chelsea Estates_Create DB Loop
Cost: $763K

[redacted]

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[redacted]

Option #2, Segments #1 & #2

Project Name: Cromwell_Chelsea Estates_Create DB Loop & Replace DB Cable
Cost: $2,306K

[redacted]

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Refer to Project Approval Process
JA-AM-2001-B, Rev.1

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Project Approval Form

[redacted]

Project Option Comparison

[redacted]

Cost	$557K	$763K	$2,306K
Cost / MVA added	$0	$0	$0
Cost / CM Saved	$46.49	$49.47	$181.79
Cost / CI Saved	$41,255.56	$48,419.37	$161,171.43
Preferred option	X		

Regulatory Approvals:

Are Regulatory body approvals needed for the project?
No

If yes, provide detailed regulatory approvals

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Preliminary Approval	December 2021
Detailed Design	March 2022
Approved for Construction	May 2022
Start Construction	July 2022

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	High	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.	2022	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
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. Most of this work will require system to be abnormal for any extended period of time.

References

References

DTR 12.251 – 25 KV MGY – Three Phase Riser – Solid Dielectric Cable – 4/0 and Smaller
DTR 58.119 – 15 kV & 35 kV Multi-grounded – Single Phase Pad – Mounted Transformer
DTR 56.221 – Jacketed Primary Cable – Grounding
DTR 58.185 – Direct-Buried in Conduit – Installation of Concrete PAD for Single-Phase Pad-Mounted Transformers

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

Need Statement



CD01827_project_needs_statement.pdf



Chelsea Cromwell EJ Estimates.pdf

Design/Cable Layout



Cromwell_Chelsea Estates_Loop_3R11_



Cromwell_Chelsea Estates_Loop_Appro

Outage Events



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