EVERSOURCE

Project Approval Form

Project Title: [redacted] Overload	**Project Number:** CD02030
Date Prepared: 11/28/2023	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** OVERLOADS-SPECIFIC PROJECTS
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: $832.5K	**Authorization Type:** Full Funding

1. Executive Summary

Project CD02030 was established to [redacted]

This is for full funding.

Full/Partial: $832.5K/$608.9K = 137%

Legacy estimating units were used in the calculation of the partial estimate. Had revised estimating units been used the partial estimate would have been 30% higher or $792K, Full/Partial $832.5K/$792K = 105%.

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2023	2024	2025+	Total
Internal Labor and Construction Equipment	168.8	0.0	0.0	168.8
Outside Services	81.5	0.0	0.0	81.5
Materials	232.7	0.0	0.0	232.7
Removals	21.3	0.0	0.0	21.3
Risk and Contingency	1.8	0.0	0.0	1.8
Other	1.3	0.0	0.0	1.3
Subtotal	**507.4**	**0.0**	**0.0**	**507.4**

Indirect Capital Costs				Total
Indirects/Overheads (including benefits)	313.6	0.0	0.0	313.6
Capitalized interest or AFUDC, if any	11.5	0.0	0.0	11.5
Subtotal	**325.1**	**0.0**	**0.0**	**325.1**

Total Capital Costs (Gross)	**832.5**	**0.0**	**0.0**	**832.5**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**832.5**	**0.0**	**0.0**	**832.5**

Explain unique payment provisions, if applicable:

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

[redacted]

b. Project Need

[redacted]

c. Project Scope

- [redacted]
- [redacted]
- [redacted]
- [redacted]

Major Material:

- 2,775ft of 1000 CU EPR 4CT
- 6 Vertical 900 Amp Disconnect Switches

4. Alternatives Considered

Four alternatives were considered for this project. Legacy estimating units were used in the calculation of the partial alternative estimates. Had revised estimating units been used the partial alternative estimates would have been 30% higher as shown below.

Option 1 – Reconductor the [redacted] Getaway

[redacted] Preferred option.

Option 2 – Reconductor [redacted] Getaway

[redacted]

Option 3 – Reconductor [redacted] Breaker Swap

[redacted]. The cost of this project is $1,027K.

[redacted]

Option 4 – Install new S/S Duct Bank

[redacted]

The cost of this project is $5.686M and [redacted]

Option 5 – Battery Alternative

[redacted] The cost of this project is $22.2M, compared to the $832.5K for the proposed. [redacted]

Project Option Comparison

	Options
[redacted]	

Authorization Type	Full	Partial	Partial	Partial	Partial
Capital Cost	$832.5K	$448K	$1,027K	$5,570K	$22,210K
Expense Cost	$26K	$9.4K	$20.3K	$116K	N/A
Total Cost	$858.5K	$457.9K	$1,048K	$5,686K	N/A
Total Cost / MVA added	$147,543	$180,422	$123,557	$156,705	$6,590,280
Preferred option	X				

5. Project Schedule

Add any additional milestones that are pertinent to the project

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

6. Regulatory Decisions

7. Codes and Standards

8. Risk and Contingencies

Contingencies:

Risk Mitigation:

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2023	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	2023	Low	Design to minimize customer impact. Project Preplanning and customer/community outreach.

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	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2023	Medium	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2023	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	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	2023	Low	Use of mats and specialty equipment, only work during certain times of the year.

9. References

[redacted]

- Status: completed
- [redacted]

- Status: approved

- [redacted]

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

Attachment	Included in Submittal?
A. Cost Estimate	*YES*
B. P6 Schedule	*NO*
C. Geographic Map	*YES*
D. System and Station One-Lines	*YES*
E. Underground Maps	*YES*
F. Load Summary Sheet	*YES*

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Cost Estimate - Initial

Work Classification

Category: Line

Type: BLG1

Type Desc: OVERLOADS-SPECIFIC PROJECTS

Work Type:

Ownership / Management

AWC: Cheshire

Statewide: No

Owner: [redacted]

Manager:

Project Information

Status: Prelim Design Approved

SPS #:

AIS Score:

Associated Projects:

Assignment ID:

Patrol Find ID:

Budget Summary - Preferred Option [redacted]

2024

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
1	[redacted] Reconductor Getaway	Prelim	0	28%	$352,240	$352,240
6	[redacted] Reconductor Getaway	Prelim	0	28%	$239,324	$239,324
7	[redacted] Breaker Swap	Prelim	0	28%	$17,292	$17,292
				2024 Total:	**$608,856**	**$608,856**
				Total Project:	**$608,856**	**$608,856**

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ID	Description	Segments	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)	Prfrd
O1	[redacted]	1	$352,240	$0	100%	$0.00	$0.00	☐
O2		2	$1	$0	100%	$0.00	$0.00	☐
O3		1,4,7	$774,580	$0	100%	$0.00	$0.00	☐
O4	New Substation Feeder Duct Bank	3	$4,374,376	$0	100%	$0.00	$0.00	☐
O5	[redacted]	1,6,7	$608,856	$0	100%	$0.00	$0.00	☑

Segments

ID	Title	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)
1	[redacted]	$352,240			$0.00	$0.00
2		$1			$0.00	$0.00
3	New Duct Bank	$4,374,376			$0.00	$0.00
4		$405,048			$0.00	$0.00
5		$5,760,000			$0.00	$0.00
6		$239,324			$0.00	$0.00
7		$17,292			$0.00	$0.00

Project Approval Form

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$275,187
Contingency Amount:	$77,052
Estimate:	$352,240
Reimbursement:	$0
Net Amount:	**$352,240**
Description:	

Item Description	CU	Amount
UG CABLE DB/UG - 750/1000 - 3-1/C (3ph) Cu 1,536ft from Riser to MH8017 per UG Circuit Map + 25ft/MH (5x MH	16-UG114B	$163,200.00
OTHER OTHER Cleaning manholes. $1k/MH to clean and $500 to rod duct (5MH=$7	16-ALL14	$7,500.00
OTHER OTHER Contractor Labor Cost (20% of Total)	16-ALL14	$45,900.00
UG CABLE UG - Cable Removal - all cables MH8017 to Riser pole	16-UG117	$34,000.00
SECTIONALIZE OH-Vertical Disconnect Switches-600/900 amp 3-1ph replace riser disconnects with 900A	16-OH43	$10,283.20
POLE DB/UG - Riser - 3ph Replacing riser pole	16-UG146	$10,794.40
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average Switching 1 Circuit [redacted] 1 count needed as only pulling between MHs that have empty ducts.	16-ALL17	$3,509.60

Estimate

Preliminary Estimate Summary

Revision Number:	0
Contingency:	30.00%
SubTotal:	$3,364,904
Contingency Amount:	$1,009,471
Estimate:	$4,374,376
Reimbursement:	$0
Net Amount:	**$4,374,376**
Description:	

Item Description	CU	Amount
OTHER OTHER Cleaning of MHs outside S/S, $1k/MH (7MH = $7k)	16-ALL14	$7,000.00
OTHER OTHER Contractor Labor Cost (20% of Total)	16-ALL14	$560,818.00
OTHER OTHER Cost of new reactors for [redacted] $100k/reactor)	16-ALL14	$300,000.00
UG CABLE DB/UG - 750/1000 - 3-1/C (3ph) Cu Install conductors from MH8018 to each's riser pole; [redacted] 00ft, 6A10 -> 2250ft ; +25ft/MH (41MH instances)	16-UG114B	$867,360.00
SECTIONALIZE OH-Vertical Disconnect Switches-600/900 amp 3-1ph New disconnects for [redacted]	16-OH43	$61,699.20
CONDUIT UG-Ductline-up to 12 duct-Non- Traveled/Non-Paved New duct for [redacted] from new MH outside S/S from new rea [redacted] s) + extra	16-UG138	$151,040.00
ENCLOSURE UG - MANHOLE - Precast New MH outside of SS	16-UG139	$62,986.40
ENCLOSURE UG - MANHOLE - Pour in place New MH to connect new duct bank to preexisting (MH8016<->MH403)	16-UG140	$107,976.80
POLE DB/UG - Riser - 3ph New riser pole for [redacted]	16-UG146	$64,766.40
UG CABLE UG - Cable Removal - all cables Remove conductors from MH8018 to each's riser pole; [redacted] > 710ft, 6A [redacted] 1200ft, 6A10 -> 2250ft	16-UG117	$160,200.00
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average switching 7 circuits	16-ALL17	$21,057.60
OTHER OTHER Took from cost of S/S work for CS00515. Cost per feeder $200k (5 feeders)	16-ALL14	$1,000,000.00

Design Alternative CD02030-04

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$316,444
Contingency Amount:	$88,604
Estimate:	$405,048
Reimbursement:	$0
Net Amount:	**$405,048**
Description:	

Item Description	CU	Amount
SWITCHING	16-ALL17	$14,038.40
OH/DB/UG - SWITCHING NonNetwork - Average 2 circuits being switched, estimate each circuit to be switched twice (1 [redacted] ling to breaker) - 4 total		
SECTIONALIZE	16-OH43	$20,566.40
OH-Vertical Disconnect Switches-600/900 amp 3-1ph [redacted] isconnects replace		
UG CABLE	16-UG114B	$168,000.00
DB/UG - 750/1000 - 3-1/C (3ph) Cu [redacted] 014>Risr is		
OTHER	16-ALL14	$4,500.00
OTHER Cleaning manholes. $1k/MH to clean and $500 to rod duct (3x MHs)		
OTHER	16-ALL14	$52,750.00
OTHER Contractor Labor Cost (20% of Total)		
UG CABLE	16-UG117	$35,000.00
UG - Cable Removal - all cables Remove conductor described for installation		
POLE	16-UG146	$21,588.80
DB/UG - Riser - 3ph [redacted]		

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Design Alternative CD02030-05

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$4,500,000
Contingency Amount:	$1,260,000
Estimate:	$5,760,000
Reimbursement:	$0
Net Amount:	**$5,760,000**

Description:

Item Description	CU	Amount
OTHER OTHER Cost to construct a new circuit to Industrial Rd Middletown ($1.1M/mi)	16-ALL14	$400,004.00
OTHER OTHER Cost to construct a new circuit to Industrial Rd Middletown ($1.1M/mi)	16-ALL14	$999,999.00
OTHER OTHER Cost to construct a new circuit to Industrial Rd Middletown ($1.1M/mi)	16-ALL14	$999,999.00
OTHER OTHER Cost to construct a new circuit to Industrial Rd Middletown ($1.1M/mi)	16-ALL14	$999,999.00
OTHER OTHER Cost to construct a new circuit to Industrial Rd Middletown ($1.1M/mi)	16-ALL14	$999,999.00
OTHER OTHER new 600A Reactor for [redacted]	16-ALL14	$100,000.00

[redacted]

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Segment CD02030-06

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$186,972
Contingency Amount:	$52,352
Estimate:	$239,324
Reimbursement:	$0
Net Amount:	**$239,324**
Description:	

Item Description	CU	Amount
SWITCHING	16-ALL17	$7,019.20
OH/DB/UG - SWITCHING NonNetwork - Average 1 circuit being switched, estimate to be switched twice (1 day for pulli [redacted] aker)		
SECTIONALIZE	16-OH43	$10,283.20
OH-Vertical Disconnect Switches-600/900 amp 3-1ph 6A9 Disconnects replace		
UG CABLE	16-UG114B	$103,200.00
DB/UG - 750/1000 - 3-1/C (3ph) Cu [redacted]		
OTHER	16-ALL14	$3,000.00
OTHER Cleaning manholes. $1k/MH to clean and $500 to rod duct (2x MHs)		
OTHER	16-ALL14	$31,175.00
OTHER Contractor Labor Cost (20% of Total)		
UG CABLE	16-UG117	$21,500.00
UG - Cable Removal - all cables Remove conductor described for installation		
POLE	16-UG146	$10,794.40
DB/UG - Riser - 3ph [redacted]		

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Segment CD02030-07

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$13,510
Contingency Amount:	$3,783
Estimate:	$17,292
Reimbursement:	$0
Net Amount:	**$17,292**

Description:

Item Description	CU	[redacted]	Amount
OTHER	16-ALL14		$10,000.00
OTHER Cost for changing [redacted] position			
SWITCHING	16-ALL17		$3,509.60
OH/DB/UG - SWITCHING NonNetwork - Average [redacted]			

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Project Approval Form

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Operations Project Authorization Form

Project Title [redacted] **Overload**	**Project Number: CD02030**
Date Prepared: 10/13/2022	**Company:** Eversource CT
Organization: Distribution Engineering	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** OVERLOADS-SPECIFIC PROJECTS
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: $596K	**Authorization Type:** Initial Funding

CTPAC APPROVED 11.03.2022: OPTION 1 – [redacted]

Executive Summary

[redacted]

[redacted]

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

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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	$0	$24	$0	$24
Outside Services	$0	$203	$0	$203
Materials	$0	$117	$0	$117
Removals	$0	$25	$0	$25
Risk and Contingency	$0	($0)	$0	($0)
Other	$0	$0	$0	$0
Subtotal – Direct Costs	$0	$369	$0	$369
Indirect Capital Costs				
Indirect/Overheads (including benefits)	$0	$212	$0	$212
Capitalized interest or AFUDC, if any	$0	$15	$0	$15
Subtotal – Indirect Costs	$0	$228	$0	$228
Total Gross Capital Costs	$0	**$596**	$0	**$596**
Customer Contribution	$0	$0	$0	$0
Total Net Capital Project Costs	$0	**$596**	$0	**$596**

Technical Justification:

Project Need, Objective and Justification:

[redacted]

Project Scope:

[redacted]

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Major Material:

- 2,775ft of 1000 CU EPR 4CT
- 6 Vertical 900 Amp Disconnect Switches

Background:

Per the Distribution System Planning guide section 2.1 feeder upgrades are required when conductor limits are expected to exceed 80% of the normal limit for underground cables under normal conditions and over 100% of the normal limit under contingency.

Neither circuit has experienced a getaway conductor related outage over the last 4 years.

Alternatives Considered:

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

Alternatives were considered (please describe below)

Four alternatives were considered for this project.

Option 2 – [redacted]

[redacted]

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Project Option Comparison

Design Criteria	[redacted]				
Cost	$596,000	$345,000	$759,000	$4,285,000	$22,210,723
Cost / MVA	$147,543	$180,422	$123,557	$156,705	$6,590,280
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 Date
100% Engineering Completion	10/31/2023
Construction Start	1/1/2024
Testing/Commissioning	5/1/2024
In Service Date	6/1/2024

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Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2024	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	Low	Design to minimize customer impact. Project Preplanning and customer/community outreach.
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.	2023	Medium	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	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	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	Low	Use of mats and specialty equipment, only work during certain times of the year.

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References

CD01220 – Berlin SS Support for [redacted] Circuits

- Status: completed
- Relevance: reconductored [redacted] getaway cables

CD01006 – [redacted] SS and Reconductoring

- Status: approved
- Relevance: calls to reconductor [redacted] getaway cable

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

