EVERSOURCE

Project Approval Form

Project Title: [redacted] **Reliability Improvements**	**Project Number: CD01697**
Date Prepared: 08/22/2023	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** RELIABILITY IMPROVE SPEC PROJ
Project Initiator: [redacted]	**Project Type:** Specific
Initiating Organization: Distribution	**Capital Investment part of original Op Plan:** No
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: 12/31/2022	
Total Capital Request: $3,321,212	**Authorization Type:** Full Funding

1. Executive Summary

Project CD01697 addresses the [redacted] customers.

[redacted]

The partial funding approval amount was $2,738K. At the time, 2016 labor rates were used in the high-level estimate so including the new 2023 labor rates brings the cost up to $3,521K. Detailed design including updated labor estimates were completed and the resulting ACT request is for $3,321K. If today's labor rates were utilized, the total project cost would have been completed under the high-level engineering cost. Additionally, an obsolete oil-filled recloser needed to be swapped out in the field and additional pole sets were required.

Device	Existing Customer Count	Proposed Device (Swapped Circuit Device.)	Total Proposed customer count beyond device.	Proposed customer count per Zone.
[redacted]				
Total Customers	4,101			4,101

Environmental Desktop Review

The desktop review indicates that there are wetlands in the corridor and that there may be some activities within areas designated by CTDEEP as rare, threatened or endangered habitat. The field mapping of the environmental areas within this ROW, along with a report, will be completed by one of Eversource's environmental vendors. The process will likely take several weeks to complete. Pending the completion of the field work, mapping, and report, a meeting will be held with the project team to determine what permits will be needed to support Project CD01697.

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2021 Actuals	2022 Actuals	2023 Actuals	Total
Internal Labor and Construction Equipment	0.3	38.0	2.2	40.5
Outside Services	9.1	1,132.3	66.9	1,208.3
Materials	5.3	661.2	39.1	705.6
Removals	3.2	400.4	23.7	427.2
Risk and Contingency	0.0	0.0	0.0	0.0
Other	0.0	4.8	0.3	5.1
Subtotal	**18.0**	**2,236.6**	**132.1**	**2,386.7**

Indirect Capital Costs	2021 Actuals	2022 Actuals	2023 Actuals	Total
Indirects/Overheads (including benefits)	15.4	886.8	-44.5	857.7
Capitalized interest or AFUDC, if any	0.3	75.2	1.3	76.8
Subtotal	**15.6**	**962.0**	**-43.2**	**934.5**
Total Capital Costs (Gross)	**33.6**	**3,198.7**	**88.9**	**3,321.2**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**33.6**	**3,198.7**	**88.9**	**3,321.2**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

[redacted] customer zones have large radial taps on the east side of the [redacted]. The number of customers in these zones are listed below.

[redacted]

[redacted]

Circuit Voltage Correction.

- [redacted].

Easement Language.

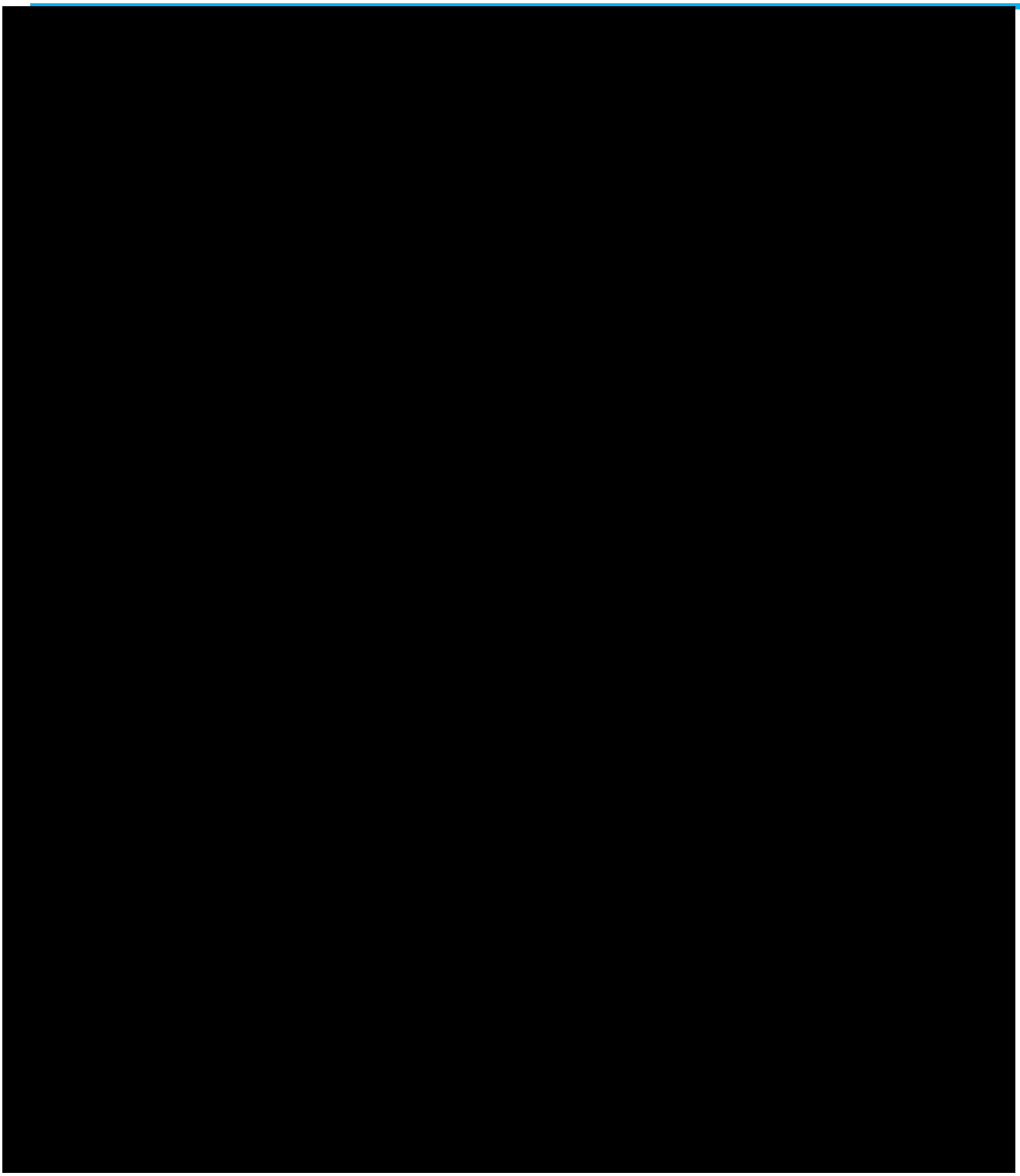
- Eversource has easement privilege and right of way to enter upon and erect, inspect, operate, replace, repair and patrol and perpetually maintain a single line of each poles and towers with the necessary conductors, wires, crossarms, guy wires and other usual fixtures and appurtenances used or adopted for the transmission of electric current for light, heat, power or for any other purpose granted by agreement.

b. Project Need

[redacted]

c. Project Scope

[redacted]



Business Process and / or Technical Improvements:

The Smart Switch Program provides a low cost per customer minute saved and a low O&M solution to large customer zones affected by an outage event by directly targeting SAIDI and SAIFI.

With the existing 4/0 Cu primary the voltage drops approximately 4 per unit volts. With the new 556 AAC primary, there is a one per unit voltage drop.

The normal and contingent loads before and after are depicted in the attachments at the end.

4. Alternatives Considered

This project scope was broken out from project CD01026. This project was an approved scope of work excluding Right of Way work which was retained in CD01026.

Option 1 was the approved scope of work. Alternative options did not meet all planning criteria standards. These either did not resolve all large customer zones or alleviate an overload. Option 1 met all of our planning criteria standards.

Option	Seg. ID	Title	Amount	Comments
Total			$ -	
1	Rebuild and Reconductor ROW & Address Large Radial Taps.			
	1	Resiliency Improv. on Beacon Fall [redacted] ROW	$2,939,386	
	3	Swap the [redacted] Circuits	$685,313	
	4	Create Loop Between 11N84(9) and 11N83	$633,324	
	6	Maintain Voltage with [redacted]	$163,153	
	9	Create a loop on Moss Street	$1,057,929	
	12	Replace [redacted] 500 kcmil Al Aerial Cable	$255,024	
Total			$ 5,734,128	
2	Option 1 without creating a second loop on Moss Avenue.			
	1	Resiliency Improv. on Beacon Fal[redacted] & [redacted] ROW	$ 2,939,386	
	3	Swap the [redacted] Circuits	$ 685,313	[redacted]
	4	Create Loop Between [redacted]	$ 633,324	[redacted]
	6	Maintain Voltage with [redacted]	$ 163,153	
	12	Replace [redacted] 500 kcmil Al Aerial Cable	$ 255,024	
[redacted]			$ 4,676,199	
3	Rebuild ROW & Address Large Radial Taps.			
	3	Swap the [redacted] Circuits	$ 685,313	
	4	Create Loop Between [redacted]	$ 633,324	[redacted]
	6	Maintain Voltage with [redacted]	$ 163,153	[redacted] .
	8	Replace Poles and Pole Tops on ROW vs, Replacing the 4/0 Cu Primary	$ 844,709	[redacted]
	9	Create a loop on Moss Street	$ 1,057,929	[redacted] .
	12	Replace [redacted] 500 kcmil Al Aerial Cable	$ 255,024	
[redacted]			$ 3,639,451	
4	Option 3 without creating Moss Ave [redacted]			
	3	Swap the [redacted] Circuits	$ 685,313	[redacted]
	4	Create Loop Betwee[redacted] and [redacted]	$ 633,324	[redacted]
	6	Maintain Voltage with [redacted]	$ 163,153	[redacted]
	8	Replace Poles and Pole Tops on ROW vs, Replacing the 4/0 Cu Primary	$ 844,709	[redacted]
	12	Replace [redacted] kcmil Al Aerial Cable	$ 255,024	[redacted]
[redacted]			$ 2,581,522	

Option	Seg. ID	Title	Amount	Comments
Total			$ -	
5	Rebuild and Reconductor ROW & Address Large Radial Taps.			
	3	Swap the [redacted] Circuits	$685,313	[redacted]
	4	Create Loop Between [redacted]	$633,324	[redacted]
	6	Maintain Voltage with [redacted]	$163,153	[redacted]
	9	Create a loop on Moss Street	$1,057,929	[redacted]
	12	Replace [redacted] 500 kcmil Al Aerial Cable	$255,024	[redacted]
[redacted]			$ 2,794,742	
6	Do Nothing			
			$ -	[redacted]
Total				

5. Project Schedule

Add any additional milestones that are pertinent to the project

Milestone/Phase Name	Estimated Date
Partial Approval	11/2019
100% Detailed Engineering Completion	9/2020
Fully Funded	8/2023
Construction Start	12/2021
In Service Date	12/2022

6. Regulatory Decisions

Environmental permitting will be required for work within the ROW.

7. Codes and Standards

N/A

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.	2021-2023	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	2021-2023	Medium	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2021-2023	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.	2021-2023	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2021-2023	Low	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2021-2023	Low	If storm activity delays work, we may be forced to use external resources.

System abnormal configuration	2021-2023	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	2021-2023	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	2021-2023	Medium	Use of mats and specialty equipment, only work during certain times of the year.

9. References

References
1. Project CD01026  Project Authorization Form
2.
3.
4.
5.

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

Attachment	Included in Submittal?
A. Cost Estimate	*YES*
C. Geographic Map	*YES*
D. System and Station One-Lines	*YES*
E. Load Sheets	*YES*
F.	

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

Before

CD01697 Single Line Before.pdf

Option One.

CD01697 Option One Single Line Rev 1.pdf

CD01697 New 11N89-83 Loops.Deta

Protection One Line.

Before

CD01697 Protection Before.pdf

[redacted]

After

CD01697 Protection Op. 1.pdf

[redacted]

Connecticut Light & Power
A Northeast Utilities Company

Specific Project Proposal - Project #: CD01697

Beacon Falls [redacted] Reliability

Work Classification		Ownership / Management	
Category:	Line	AWC:	Newtown
Type:	REL1	Statewide:	No
Type Desc:	RELIABILITY IMPROVE SPEC PROJ	Owner	[redacted]
Work Type:		Manager:	[redacted]

Project Information

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

Budget Summary - Preferred Option — Complete [redacted] Smart Switch Loop Program

2022

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
7	(ID 6) Maintain Voltage with [redacted] and 1	Draft	0	32%	$163,152	$163,152
6	(ID 12) Replace [redacted] 500 kcmil Al Aeria	Draft	0	32%	$255,024	$255,024
5	(ID 3) Swap the [redacted] and [redacted] Circuits	Draft	0	32%	$685,313	$685,313
4	(ID 9) Create a loop on [redacted]	Draft	0	32%	$1,057,929	$1,057,929
1	(ID 4) Create Loop Between [redacted] and	Draft	0	32%	$633,323	$633,323
				2022 Total:	**$2,794,742**	**$2,794,742**
				Total Project:	**$2,794,742**	**$2,794,742**

Item Description	CU	$ / Per	Qty	Amount
SECTIONALIZE OH - Recloser - 3ph A1. Install new [redacted] sectionalizing Recloser on [redacted]	16-OH38	[redacted]		$47,989.60
SECTIONALIZE OH - Remove Recloser (any) A2. Remove 11N83-60R Pearl Stret Pole [redacted]	16-OH42	[redacted]		$5,656.00
POLE OH - POLE - 3ph (Telephone custodian) A3. Associated with smart switch on [redacted]	16-OH12	[redacted]		$7,120.00
SECTIONALIZE OH - Recloser - 3ph A3. Smart Switch -- Pearl Street pole [redacted] Circuit	16-OH38	[redacted]		$47,989.60
SECTIONALIZE OH - Recloser - 3ph A4. Install Sectionalizeing recloser -- Maple Street pole [redacted]	16-OH38	[redacted]		$47,989.60
POLE OH - POLE - 3ph (Telephone custodian) A5. Associated with Sectionalizer on Maple St pole [redacted]	16-OH12	[redacted]		$3,560.00
SECTIONALIZE OH - Recloser - 3ph E1. Sectionalizing Recloser River Street pole [redacted]	16-OH38	[redacted]		$47,989.60
SECTIONALIZE OH - Recloser - 3ph E2. Replace [redacted] Intellirupter with tie recloser pole [redacted]	16-OH38	[redacted]		$47,989.60
SECTIONALIZE OH - Recloser - 3ph E3. Sectionalizer -- Maple Street pole [redacted]	16-OH38	[redacted]		$47,989.60

POLE OH - POLE - 3ph (Telephone custodian) E4. Associated with Tie Recloser on [redacted]	16-OH12	[redacted]	$3,560.00
SECTIONALIZE OH - Recloser - 3ph E4. Tie Recloser on [redacted]	16-OH38		$47,989.60
SECTIONALIZE OH - Recloser Control - setting changes only E5. Change Settings on Triple Single Recloser to Sectionalizer - [redacted]	16-OH39A		$4,885.60
SECTIONALIZE OH - Recloser - 3ph E6. Install smart switch recloser - [redacted]	16-OH38	[redacted]	$47,989.60
POLE OH - POLE - 3ph (Telephone custodian) E6.. Associate with [redacted]	16-OH12		$3,560.00
SECTIONALIZE OH - Recloser Control - setting changes only F. Change the [redacted] Settings. [redacted] Zone.	16-OH39A		$4,885.60
SECTIONALIZE OH - Recloser Control - setting changes only G. Change setting on [redacted] to a sectionalizing recloser.	16-OH39A	[redacted]	$4,885.60
SECTIONALIZE OH - Recloser Control - setting changes only H. Change setting [redacted]	16-OH39A		$4,885.60
SECTIONALIZE OH - Recloser - 3ph I. 11N85 Install Sectionalizing Recloser on Oxford Road Pole [redacted]	16-OH38	[redacted]	$47,989.60
SECTIONALIZE OH - Recloser Control - setting changes only I. Remove [redacted] recloser	16-OH39A		$4,885.60

Item Description	CU	$ / Per	Qty	Amount
OH WIRE OH - Line Extension - 3ph (556 kcmil)	16-OH34	[redacted]		$648,000.00
TREE OH - SYSTEM RESILENCY Tree Trimming - Backbone	16-OH62			$105,472.00
SECTIONALIZE OH - Recloser - 3ph On [redacted] near [redacted]	16-OH38			$47,989.60

Item Description	CU	$ / Per	Qty	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17	[redacted]		$7,019.20
POLE OH - POLE - 3ph (Telephone custodian)	16-OH12			$28,480.00
POLE OH - POLE - 3ph (CL&P custodian)	16-OH14			$93,520.00
OH WIRE OH-Install Aerial Cable-existing poles (any gauge)	16-OH36			$239,200.00
CONDUIT UG-Ductline-up to 12 duct - Traveled Way / Paved	16-UG137			$78,200.00
SECTIONALIZE OH - Recloser Control - setting changes only [redacted]	16-OH39A			$9,771.20
ENCLOSURE UG - MANHOLE - Precast The Bank and Franklin Streets intersection	16-UG139			$62,986.40

Item Description	CU	$ / Per	Qty	Amount
OH WIRE OH-Install Aerial Cable-existing poles (any gauge) Lopus road pole 2[redacted]	16-OH36	[redacted]		$193,200.00

Item Description	CU	$ / Per	Qty	Amount
EQUIPMENT OH - Regulators, 3-1ph - on RACK At the end of ROW,[redacted]	16-OH48	[redacted]		$61,800.00
EQUIPMENT OH - Regulators, 3-1ph - on RACK River road at pole [redacted]	16-OH48			$61,800.00

EVERSOURCE

Project Approval Form

Project Load Summary

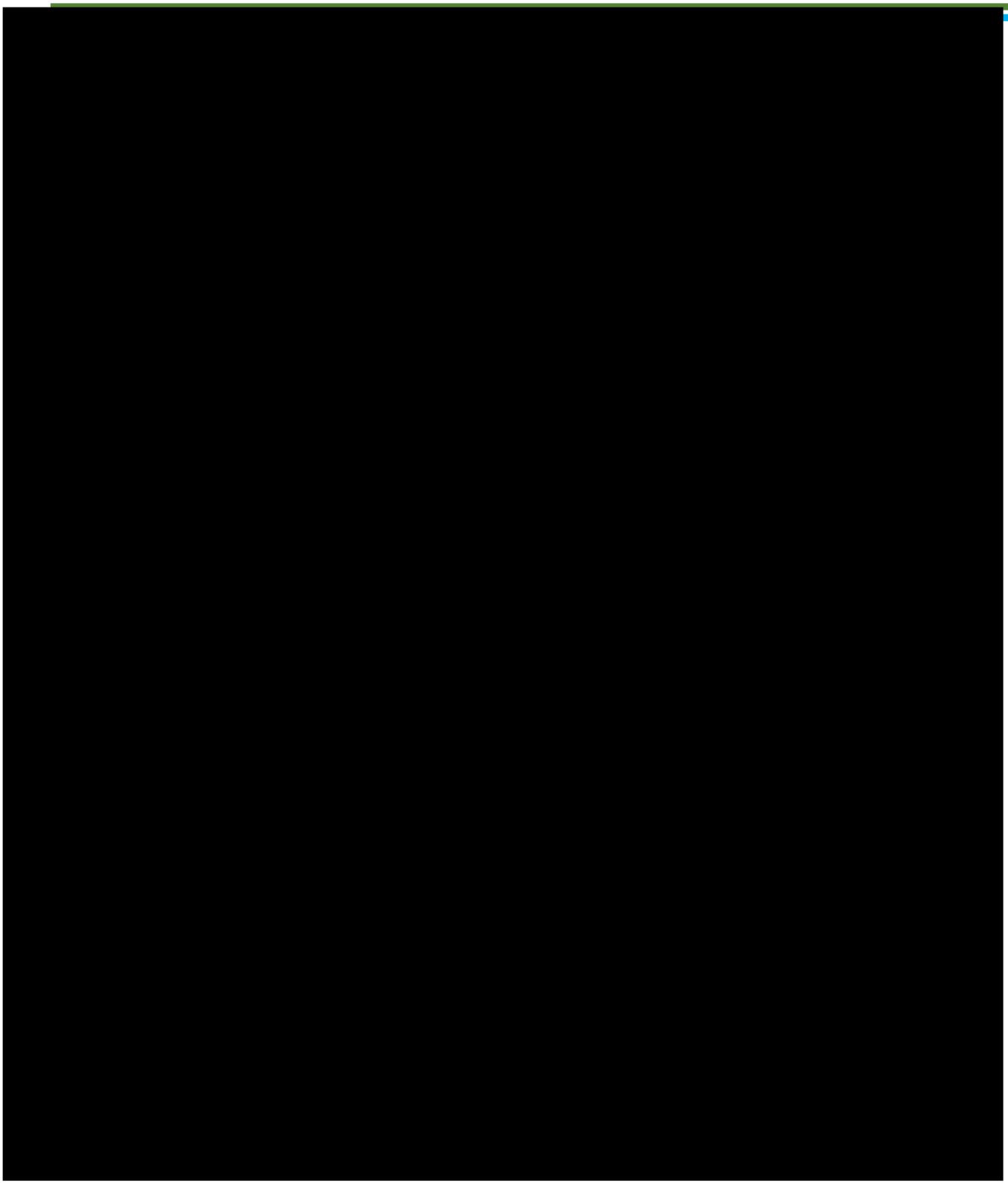
Project Number: CD01697 -- Before

Project Name: [redacted] *Reliability*

75%	Under Normal (N-0) Load is greater than 75% of normal UG rating.	80%	Under Normal (N-0) Load is greater than 80% of normal UG rating.
85%	Under Normal (N-0) Load is greater than 85% of normal OH rating.	90%	Under Normal (N-0) Load is greater than 90% of normal OH rating.
95%	Under Contingency (N-1) Load is greater than 95% of normal rating.	100%	Under Contingency (N-1) Load is greater than 100% of normal rating.

[redacted]

[redacted]



Project Load Summary

Project Number: CD01697

Option One Replace 4/0 Cu Four-over-two Construction with 556 kcmil bare primary.

Project Name: [redacted] *Reliability*

75%	Under Normal (N-0) Load is greater than 75% of normal UG rating.	80%	Under Normal (N-0) Load is greater than 80% of normal UG rating.
85%	Under Normal (N-0) Load is greater than 85% of normal OH rating.	90%	Under Normal (N-0) Load is greater than 90% of normal OH rating.
95%	Under Contingency (N-1) Load is greater than 95% of normal OH rating	100%	Under Contingency (N-1) Load is greater than 100% of normal OH rating

[redacted]





[redacted]

Notes 1 Create another project to install another circuit out of Beacon Falls to help off load the 1178 circuit.