EVERSOURCE

Supplement Authorization Form

Project Title: [redacted]witchgear	**Project Number: CD02046**
Date Prepared: 03/25/2025	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** SPECIFIC PROJECTS-NEW SRVCE
Initiating Organization: Distribution	**Project Type:** Specific
Project DDE: [redacted]	**Capital Investment part of 5-year 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)
Current Authorized Amount: $1,424.4K	**Approved In-Service Date:** 6/1/2025
Supplement Request: $2,461.1K	**Estimated In-Service Date:**
Total Capital Request: $3,885.5K	**Authorization Type:** Supplement Request
	Reason: : Cost Overage

1. Project Background

The Full Funding PAF is attached at the end showing the approved amount shown in the table along with requested supplement costs. The supplement request is approximately 272 percent of the approved amount; 127 percent over.

[redacted]

The project is still under construction.

2. Supplement Justification Overview

There is no scope change in the design. The ACT Estimate assumed internal resources were going to complete the underground work. Due to the amount of underground work needed to be completed at the end of last year and in the first half of this year the work was moved to contractors. The civil work bid, material costs and the underground work was greater than the estimate by the figure shown in the table below. The material increase was because of material cost increases since the estimate was created in 2023.

	ACT Approved Amount	Supplement Request	Difference
Material Cost	$ 427	$ 588	$ 161
Civil Work	$ 140	$ 787	$ 647
UG Work	$ 138	$ 428	$ 290

3. Supplement Justification Detail

The reason for the project authorization supplement of 2.461.1K are described below.

a. The ACT Estimate assumed internal resources were going to complete the underground work. Due to the amount of underground work needed to be completed at the end of last year and in the first half of this year the work was moved to contractors. The civil work bid, material costs and the underground work was greater than the estimate by the figure shown in the table below. The material increase was because of material cost increases since the estimate was created in 2023.

1. **Engineering / Design: $0 –**
2. **Environmental Findings / Permits: $0**
3. **Materials (Eversource purchased): $161K – T**he material cost more than anticipated previously,
4. **Construction (including materials supplied by contractors): $937K –** The contractor bid for civil work was higher than estimated; and the work was moved from the area work center crews to the contractor crews.
5. **Other: $0 –**
6. **Risks: $0 –**
7. **Indirect/Overheads: $1,438K**

4. Supplement Cost Summary (Project Total)

Line-item Category	To Date Spend Year(s)	Prior Authorized Year(s)	Variance (Supplemental Request) Year(s)	New Total Request (Add Prior Authorized and Variance) Year(s)
Internal Labor and Construction Equipment	34.8	199.5	-66.0	133.5
Outside Services	551.8	125.1	869.6	994.7
Materials	462.3	427.3	160.3	587.6
Removals	46.0	37.3	43.0	80.3
Risk and Contingency	0.0	99.4	16.7	116.1
Other	0.1	0.0	0.1	0.1
SUBTOTAL DIRECTS W/ RISKS	**1,094.9**	**888.6**	**1,023.6**	**1,912.3**
Indirect / Overhead (including benefits)	943.7	535.7	1,418.5	1,954.3
AFUDC	18.9	0.0	18.9	18.9
Subtotal – Indirect Costs	**962.6**	**535.7**	**1,437.4**	**1,973.2**
TOTAL CAPITAL REQUEST	**2,057.5**	**1,424.4**	**2,461.1**	**3,885.5**
Reimbursables/Customer Contribution				
PROJECT TOTAL (LESS REIMBURSABLES)	**2,057.5**	**1,424.4**	**2,461.1**	**3,885.5**

New Total Request by Year (if applicable)

Note: If multi-year project, include actuals for current and years past, and then show forecasted spend for upcoming years.

Line item Category	Year 2024	Year 2025	Year 20xx +	Total
Internal Labor and Construction Equipment	8.8	124.7		994.7
Outside Services	350.6	644.1		587.6
Materials	460.2	127.4		80.3
Removals	35.9	44.4		116.1
Risk and Contingency	0.0	116.1		0.1
Other	0.1	0.0		**1,912.3**
SUBTOTAL DIRECTS W/ RISKS	**855.6**	**1,056.6**		994.7
Indirect / Overhead (including benefits)	572.8	1,381.5		1,954.3
AFUDC	6.7	12.2		18.9
Subtotal – Indirect Costs	**579.5**	**1,393.7**		**1,973.2**
TOTAL CAPITAL REQUEST	**1,35.1**	**2,450.3**		**3,885.5**
Reimbursables/Customer Contribution				
PROJECT TOTAL (LESS REIMBURSABLES)	**1,435.1**	**2,450.3**		**3,885.5**

5. Lessons Learned

Project Title: [redacted]	Project Number: CD02046
Date Prepared: 10/24/2023	Company: Eversource CT
Organization: Distribution Engineering	Project Category: SPECIFIC PROJECTS-NEW SRVCE
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: 6/1/2024	
Total Capital Request: $1,424.4K	Authorization Type: Full Funding

6. Executive Summary

[redacted]

The NB-12 distribution revenue associated with this new load is $1.5M. Since the NB-12 distribution revenue is greater than the project costs, there is no customer contribution towards this project.

Full Funding.

On November 3, 2022, the project's Partial Funding was approved for $968K. On April 20, 2023, there was Supplement Change in Scope approved for an additional $189K. The total Partial amount now is $1,157K. The Full Funding amount is $1.424.4K. The difference is $267.4K or a 23 percent increase. If updated unit costs were used, the partial estimate comes to $1,524.9K. The Full Funding amount would be approximately 7 percent under.

	Seg One	Seg Two	Seg Three	Seg Six	Total
Subtotal Without adders.	$272,203	$347,042	$380,053	$164,863	$1,164,161
Traffic 15% added on subtotal.	$40,831	$0	$0	$24,729	$65,560
30% adder for contractor labor.					
Subtotal	$313,034	$347,042	$380,053	$189,592	$1,229,721
Contingency (24%)	$75,128	$83,290	$91,213	$45,502	$295,133
Total.	$388,162	$430,332	$471,266	$235,094	$1,524,855

7. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2023	2024	Year 3+	Total
Internal Labor and Construction Equipment	0.0	199.5	0.0	199.5
Outside Services	125.1	0.0	0.0	125.1
Materials	129.0	298.3	0.0	427.3
Removals	12.5	24.9	0.0	37.3
Risk and Contingency	30.0	69.4	0.0	99.4
Other	0.0	0.0	0.0	0.0
Subtotal	**296.6**	**592.0**	**0.0**	**888.6**

Indirect Capital Costs	2023	2024	Year 3+	Total
Indirect/Overheads (including benefits)	133.7	402.0	0.0	535.7
Capitalized interest or AFUDC, if any	0.0	0.0	0.0	0.0
Subtotal	**133.7**	**402.0**	**0.0**	**535.7**
Total Capital Costs (Gross)	**430.3**	**994.0**	**0.0**	**1,424.4**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**430.3**	**994.0**	**0.0**	**1,424.4**

8. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

[redacted]

[redacted]

According to the Distribution System Engineering Manual (DSEM) the switchgear should be limited to 160 amperes. See DSEM excerpt below.

> On page DSEM 05.012, "Present capacity needs must be met, both for normal conditions and for contingency conditions to the degree the Company wishes to accommodate them. In general, for a single-contingency condition, lengthy outages must be avoided, except for the group of customers directly tied to the outage, and this group of customers is generally limited to 500 customers or 160 amps of load."

[redacted]

[redacted]

[redacted]

Business	Address	Projected Load KVA	Amperes
[redacted]			

On page DSEM 05.012, "Present capacity needs must be met, both for normal conditions and for contingency conditions to the degree the Company wishes to accommodate them. In general, for a single-contingency condition, lengthy outages must be avoided, except for the group of

customers directly tied to the outage, and this group of customers is generally limited to 500 customers or 160 amps of load."

b. Project Need

[redacted]

c. Project Scope

[redacted]

- [redacted]

Major Material:

- Two PME-9 switchgear units
- 1,925 feet of 1,000 kcmil Cu EPR cable
- 4,021 feet of 500 kcmil Cu EPR cable
- One 900-ampere GOAB

9. Alternatives Considered

Project Option Comparison

	Option
[redacted]	

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Authorization Type	Full	Full	Full	Full
Capital Cost	$1.4M	$1M	$1M	$3M
Expense Cost	$0.03M	$.3M	$.3M	$1M
Total Cost	$1.43M	$1.3M	$1.3M	$4M
Total Cost / MVA added	$/MVA	$/MVA	$/MVA	$/MVA
Total Cost / CM Saved	$/CM	$/CM	$/CM	$/CM
Total Cost / CI Saved	$/CI	$/CI	$/CI	$/CI
Preferred option	X			

Option Two -- [redacted]

[redacted]

Major Material:

- Two PME-9 switchgear units.
- 1.925 feet of 1,000 kcmil Cu EPR cable.
- 3,700 feet of 500 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted]

Option Three -- [redacted] **($639K.)**

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

Major Material:

- Two PME-9 switchgear units.
- 2,680 feet of 1,000 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted]

Option Four -- [redacted] **($435K.)**

[redacted]

[redacted]

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

[redacted]

Major Material:

- 2,680 feet of 1,000 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted]. For this reason, this option was not selected.

10. Project Schedule

Add any additional milestones that are pertinent to the project.

Milestone/Phase Name	Estimated Date
Partial Approval	11/3/2022
Supplement Partial Approval	4/20/2023
100% Detailed Engineering Completion	9/1/2023
Fully Funded	11/8/2023
Construction Start	12/1/2023
In Service Date	6/1/2023

11. Regulatory Decisions

12. Codes and Standards

13. Risk and Contingencies

Contingencies:

Risk Mitigation:

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	Medium	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.	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	Medium	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	Medium	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	Medium	Use of mats and specialty equipment, only work during certain times of the year.

14. References

References
1.
2.
3.
4.
5.

15. 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. Load Sheets	*YES*
F. Supplemental Partial PAF	*YES*

G. Partial PAF	*YES*

A. Cost Estimate.

Budget Summary - Preferred Option Add [redacted]

2023

ID	Title	Status	Rev	Contingency	Expenditure Amount	Net Estimate
6	Change Source Tap	Draft	0	24%	$187,014	$187,014
				2023 Total:	$187,014	$187,014

2024

ID	Title	Status	Rev	Contingency	Expenditure Amount	Net Estimate
3	Install 500 kcmil Cu EPR in existing loo	Prelim	0	28%	$374,206	$374,206
2	New Switchgear on Century Drive	Prelim	0	24%	$331,024	$331,024
1	Replace [redacted]	Prelim	0	28%	$283,376	$283,376
				2024 Total:	$988,607	$988,607
				Total Project:	$1,175,620	$1,175,620

Project Option Summary

ID	Description	Segments	Preliminary Estimate	Construction Estimate	Variance	IEEE $/CMS	All (w/Storm)	Prfrd
O1	Add New Switchgear [redacted] Supplies	1,2,3,6	$1,175,620	$0	100%	$0.00	$0.00	☑
O2	Off load [redacted] to new [redacted] circuit	2,3,4	$1,140,458	$0	100%	$0.00	$0.00	☐
O3	Replace Getaway and Existing	1,5	$638,908	$0	100%	$0.00	$0.00	☐
O4	[redacted] Getaway work only	4	$435,227	$0	100%	$0.00	$0.00	☐

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Segment

CD02046-01

General Information

Segment: 1 - Replace 4[redacted] Getaway Cables
Status: Prelim Design Approved
Segment Type: NEW SERVICE
Town: BRISTOL
Budget Year: 2024
Work Type: BB-Reconductoring
Trimming ☐
In Service Date: 6/1/2024
Description: [redacted]

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed
1	[redacted]		
2			
3			
4			
5			
6			

Estimate

Preliminary Estimate Summary

Revision Number:	0
Contingency:	28.00%
SubTotal:	$221,387
Contingency Amount:	$61,988
Estimate:	$283,376
Reimbursement:	$0
Net Amount:	**$283,376**

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	$12,000.00
UG CABLE DB/UG - 750/1000 - 3-1/C (3ph) Cu	16-UG114B	184,800.00
POLE DB/UG - Riser - 3ph Pole 9446	16-UG146	$10,794.40
SECTIONALIZE OH-Vertical Disconnect Switches-600/900 amp 3-1ph Replace riser pole [redacted] 600 ampere disconnects.	16-OH43	$10,283.20

[redacted]

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Supplement Authorization Form

Segment

CD02046-02

General Information

Segment:	2 - New Switchgear on Century Drive			Status:	Prelim Design Approved
Segment Type:	NEW SERVICE	Town:	BRISTOL	Budget Year:	2024
Work Type:	Other	Trimming	☐	In Service Date:	6/1/2024
Description:					

Itemized Work List

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

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	24.00%
SubTotal:	$266,955
Contingency Amount:	$64,069
Estimate:	$331,024
Reimbursement:	$0
Net Amount:	**$331,024**

Description:

Item Description	CU		Amount
SWITCHGEAR DB/UG-Switchgear up to 25kV-Auto Type 9/12 (pair)	16-UG126	[redacted]	$197,760.00
ENCLOSURE UG - MANHOLE - Precast	16-UG139		$62,986.40
ENCLOSURE DB/UG - Transformer Pad/Handhole	16-UG143		$6,208.80

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Supplement Authorization Form

Segment

CD02046-03

General Information

Segment: 3 - Install 500 kcmil Cu EPR in existing loo
Status: Prelim Design Approved
Segment Type: NEW SERVICE
Town: BRISTOL
Budget Year: 2024
Work Type: Other
Trimming ☐
In Service Date: 6/1/2024
Description: [redacted]

Itemized Work List

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

Estimate

Preliminary Estimate Summary

Revision Number:	0
Contingency:	28.00%
SubTotal:	$292,349
Contingency Amount:	$81,858
Estimate:	$374,206
Reimbursement:	$0
Net Amount:	**$374,206**

Description:

Item Description	CU		Amount
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu	16-UG114	[redacted]	$128,760.00
UG CABLE DB - Splice Box [redacted]	16-UG154		$14,054.40
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu [redacted]	16-UG114		$128,760.00
UG CABLE DB - Splice Box [redacted]	16-UG154		$14,054.40
DB CABLE DB/UG - 4/0 - 3-1/C (3ph) Al tying into loops	16-UG113		$6,720.00

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Supplement Authorization Form

Design Alternative

CD02046-06

General Information

Segment:	6 - Change Source Tap			Status:	Draft
Segment Type:	NEW SERVICE	Town:	BRISTOL	Budget Year:	2023
Work Type:	Other	Trimming	☐	In Service Date:	6/1/2024
Description:	Install a 5' X 10' manhole to tap onto the existing switchgear supplys.				

Itemized Work List

ID	Major	Minor	escription of Work to be Performed
1	[redacted]		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	24.00%
SubTotal:	$150,818
Contingency Amount:	$36,196
Estimate:	$187,014
Reimbursement:	$0
Net Amount:	**$187,014**

Description:

Item Description	CU	[redacted]	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17		$7,019.20
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18		$24,000.00
DB CABLE DB/UG - 4/0 - 3-1/C (3ph) Al	16-UG113		$5,376.00
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu	16-UG114		$21,228.00
CONDUIT UG-Ductline-up to 12 duct-Non- Traveled/Non-Paved	16-UG138		$18,880.00
CONDUIT UG-Ductline-up to 12 duct-Non- Traveled/Non-Paved	16-UG138		$11,328.00
ENCLOSURE UG - MANHOLE - Precast	16-UG139		$62,986.40

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Supplement Authorization Form

Design Alternative

CD02046-04

General Information

Segment: 4 - Extend the [redacted] getaway Repl Status: Draft

Segment Type: NEW SERVICE Town: BRISTOL Budget Year: 2024

Work Type: Other Trimming ☐ In Service Date: 6/1/2024

Description: [redacted]

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed
1	[redacted]		
2			
3			
4			
5			
6			
7			
8			

Estimate

Preliminary Estimate Summary

Revision Number:	0
Contingency:	28.00%
SubTotal:	$340,021
Contingency Amount:	$95,206
Estimate:	$435,227
Reimbursement:	$0
Net Amount:	**$435,227**

Description:

Item Description	CU	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17	$7,019.20
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18	$13,000.00
UG CABLE DB/UG - 750/1000 - 3-1/C (3ph) Cu	16-UG114B	$257,280.00
POLE DB/UG - Riser - 3ph	16-UG146	$21,588.80
SECTIONALIZE OH - GOAB Switch Birch Steet Pole Number 9445. Tie between 12A15 and 12A17.	16-OH44	$20,566.40
SECTIONALIZE OH-Vertical Disconnect Switches-600/900 amp 3-1ph Riser pole [redacted]	16-OH43	$20,566.40

[redacted]

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Supplement Authorization Form

Design Alternative

CD02046-05

General Information

Segment: 5 - Replace Preferred/Alt with Main-tie-main Status: Draft

Segment Type: NEW SERVICE Town: BRISTOL Budget Year: 2024

Work Type: Other Trimming ☐ In Service Date: 6/1/2024

Description: [redacted]

Itemized Work List

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

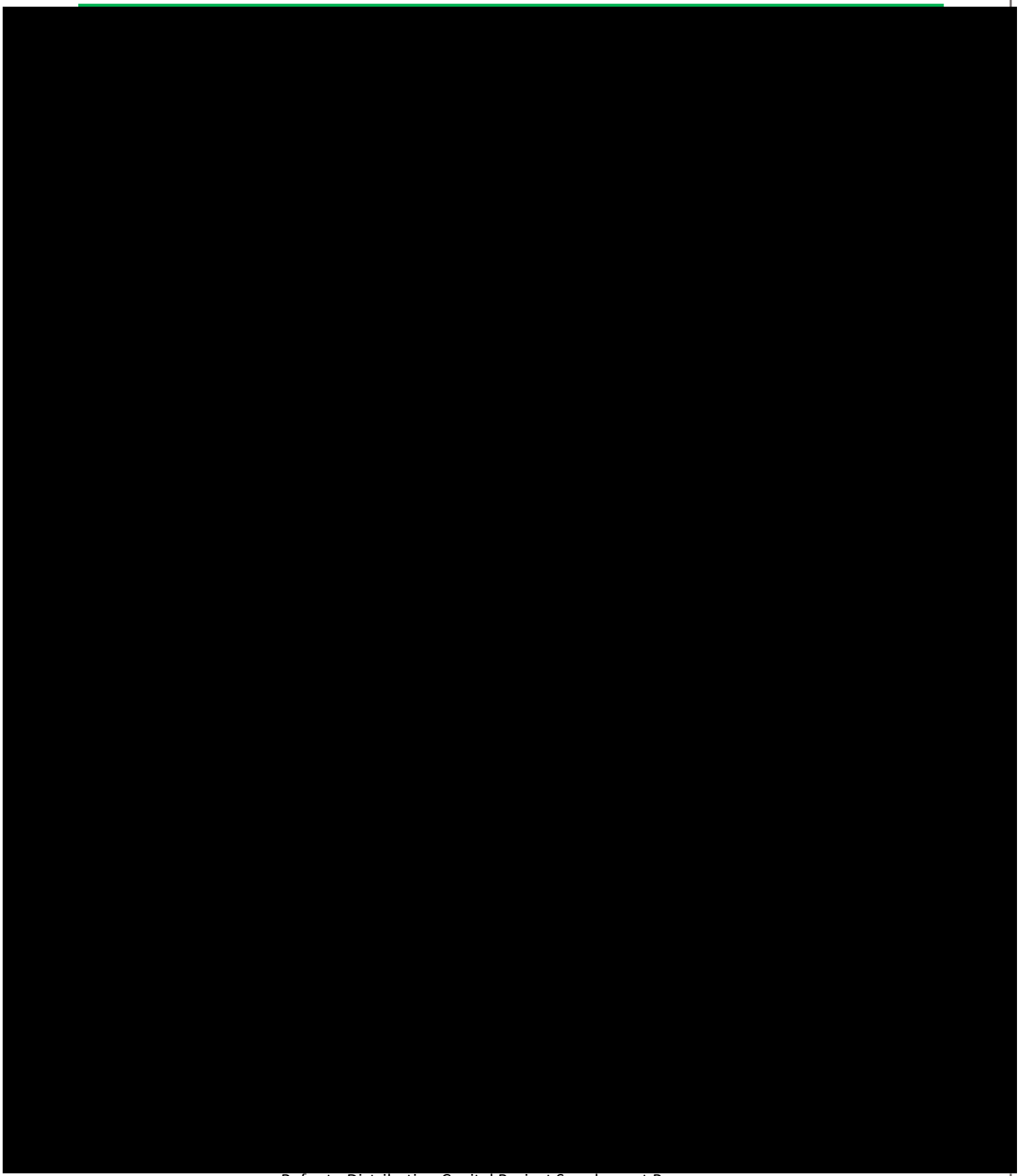
Estimate

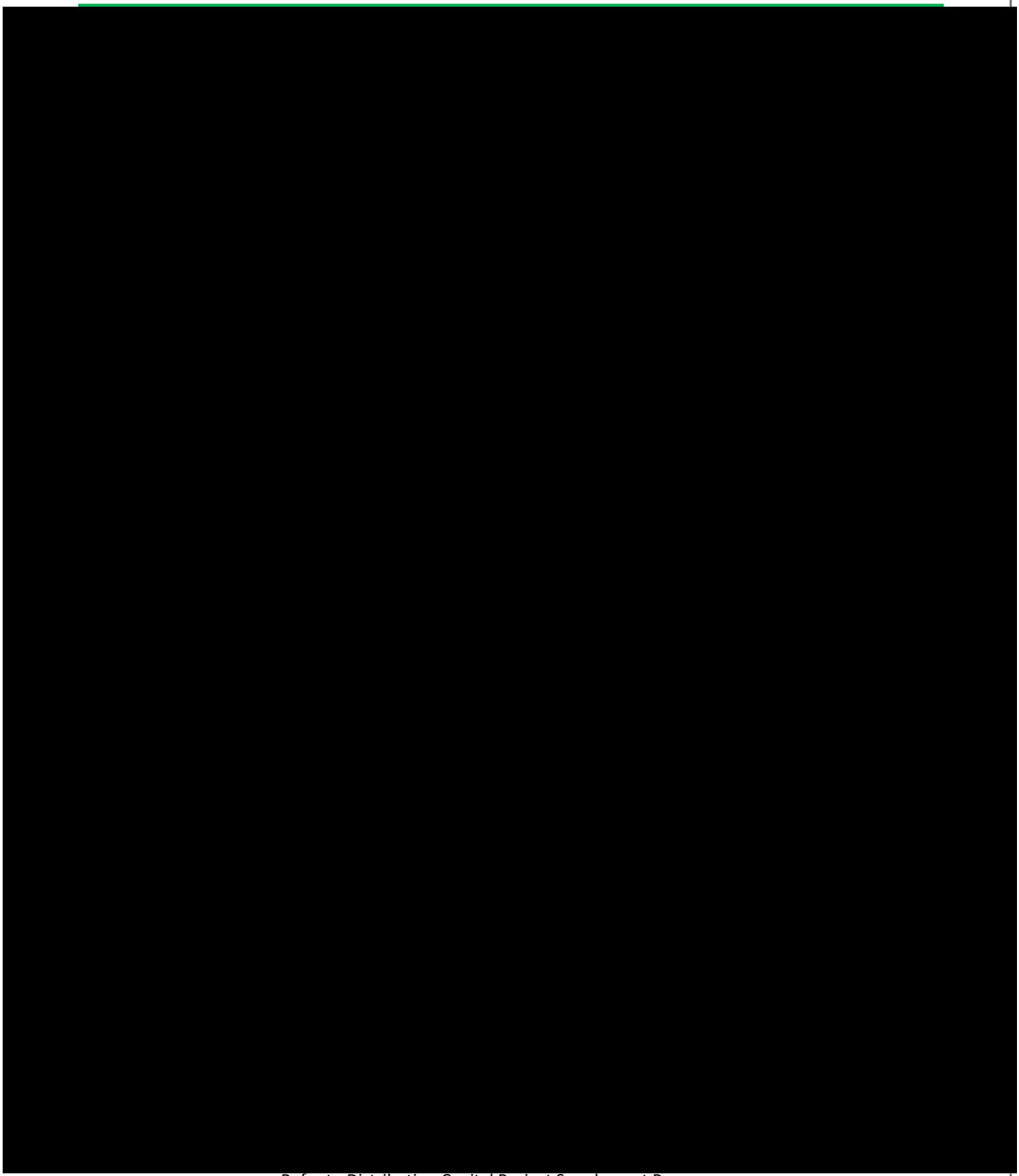
Preliminary Estimate Summary

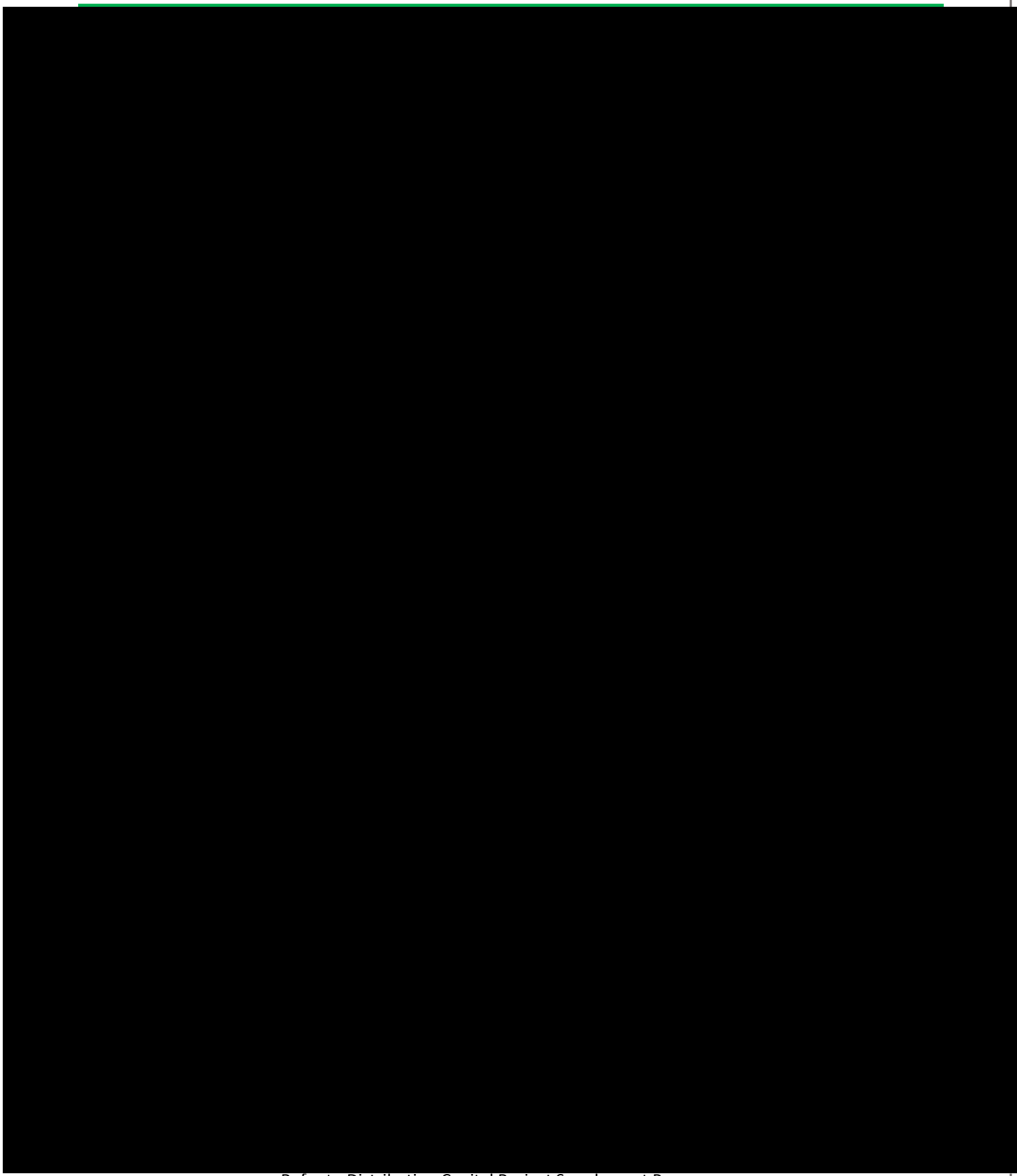
Revision Number:	0
Contingency:	28.00%
SubTotal:	$277,760
Contingency Amount:	$77,773
Estimate:	$355,533
Reimbursement:	$0
Net Amount:	**$355,533**

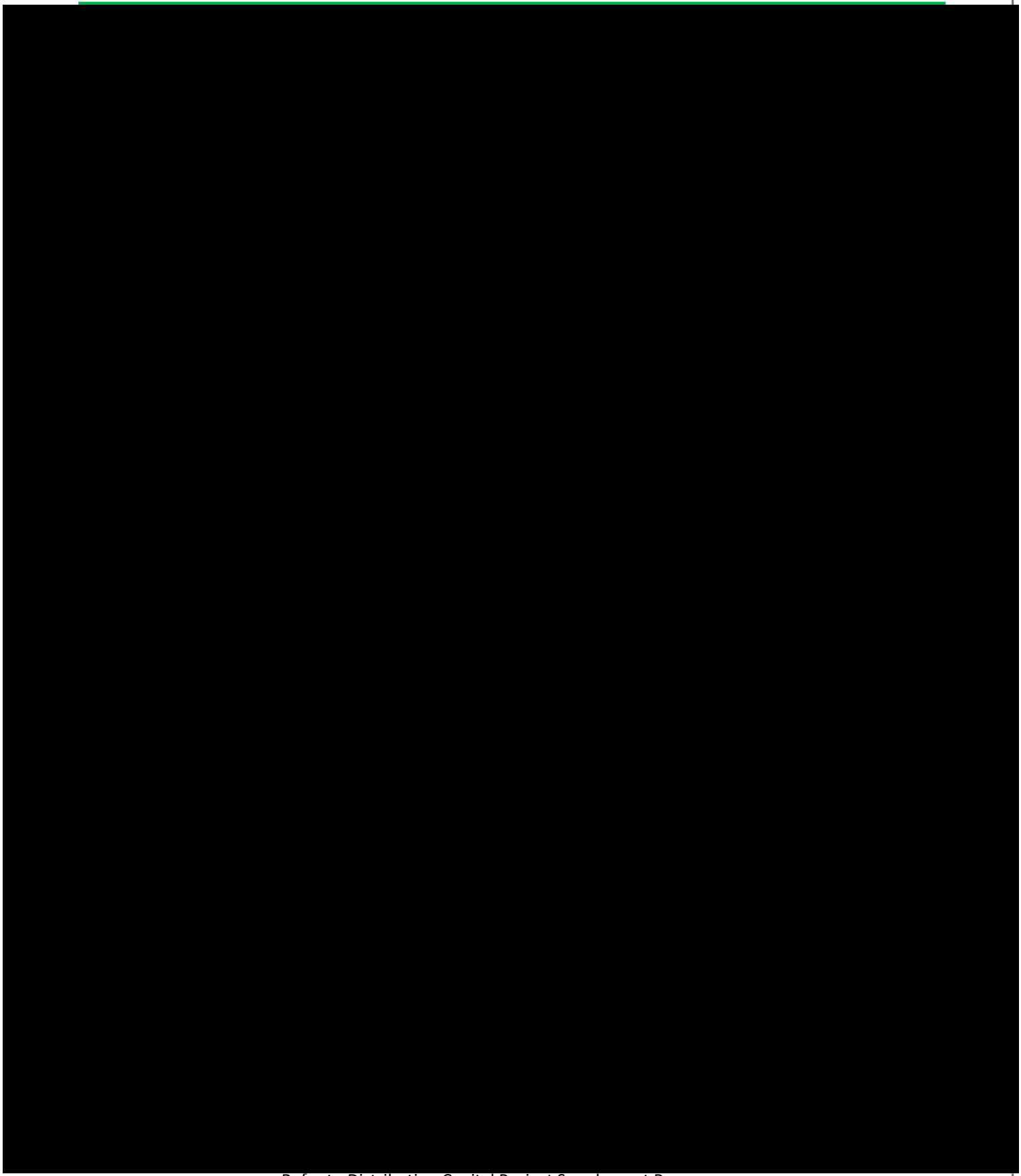
Description:

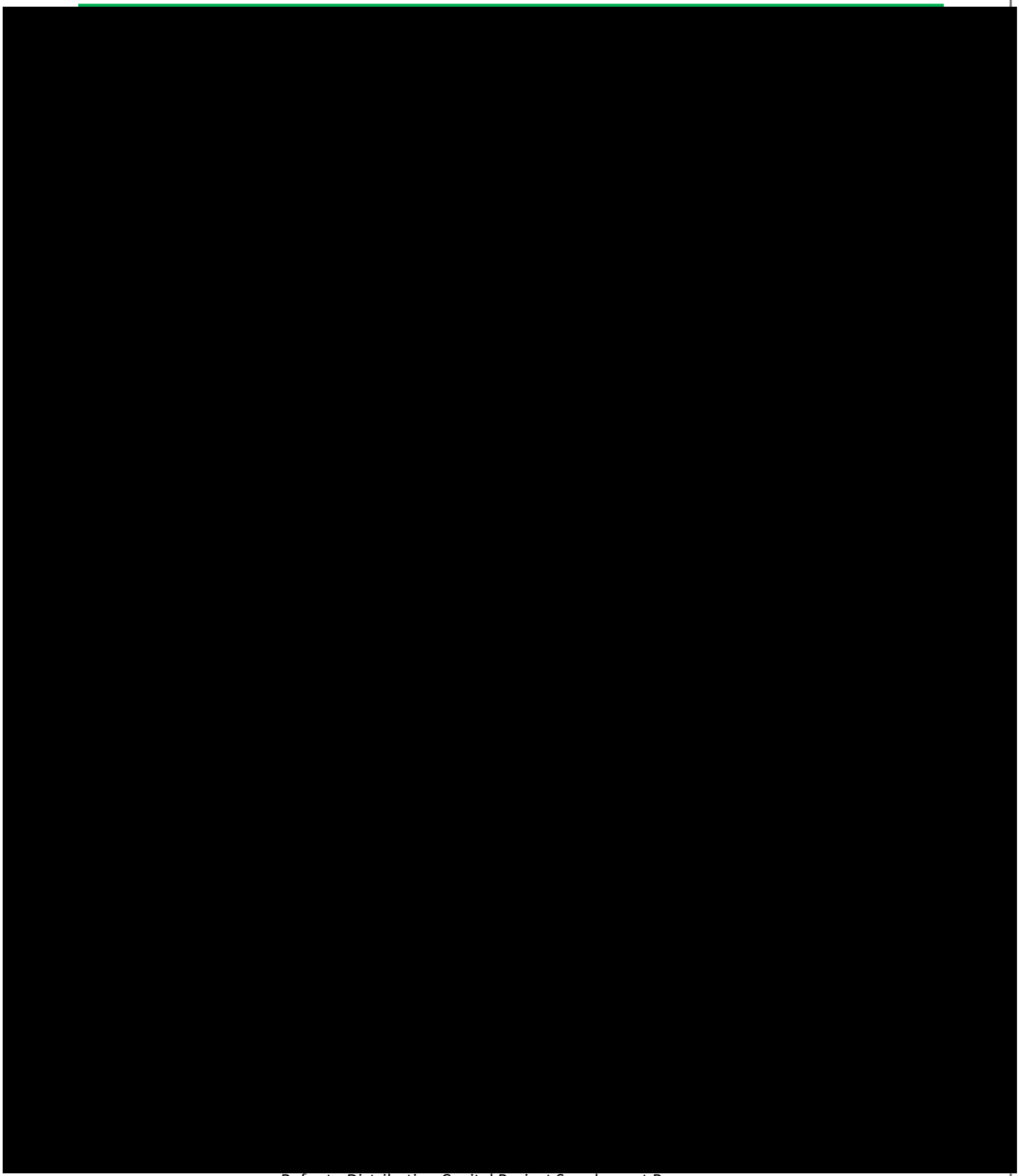
Item Description	CU		Amount
ACT ACT Estimate for Contractor Crews	16-ALL12	[redacted]	$10,000.00
SWITCHGEAR DB/UG-Switchgear up to 25kV-Auto Type 9/12 (pair)	16-UG126		$197,760.00
ACT ACT Estimate for Contractor Crews Replace the two concrete pads	16-ALL12		$70,000.00

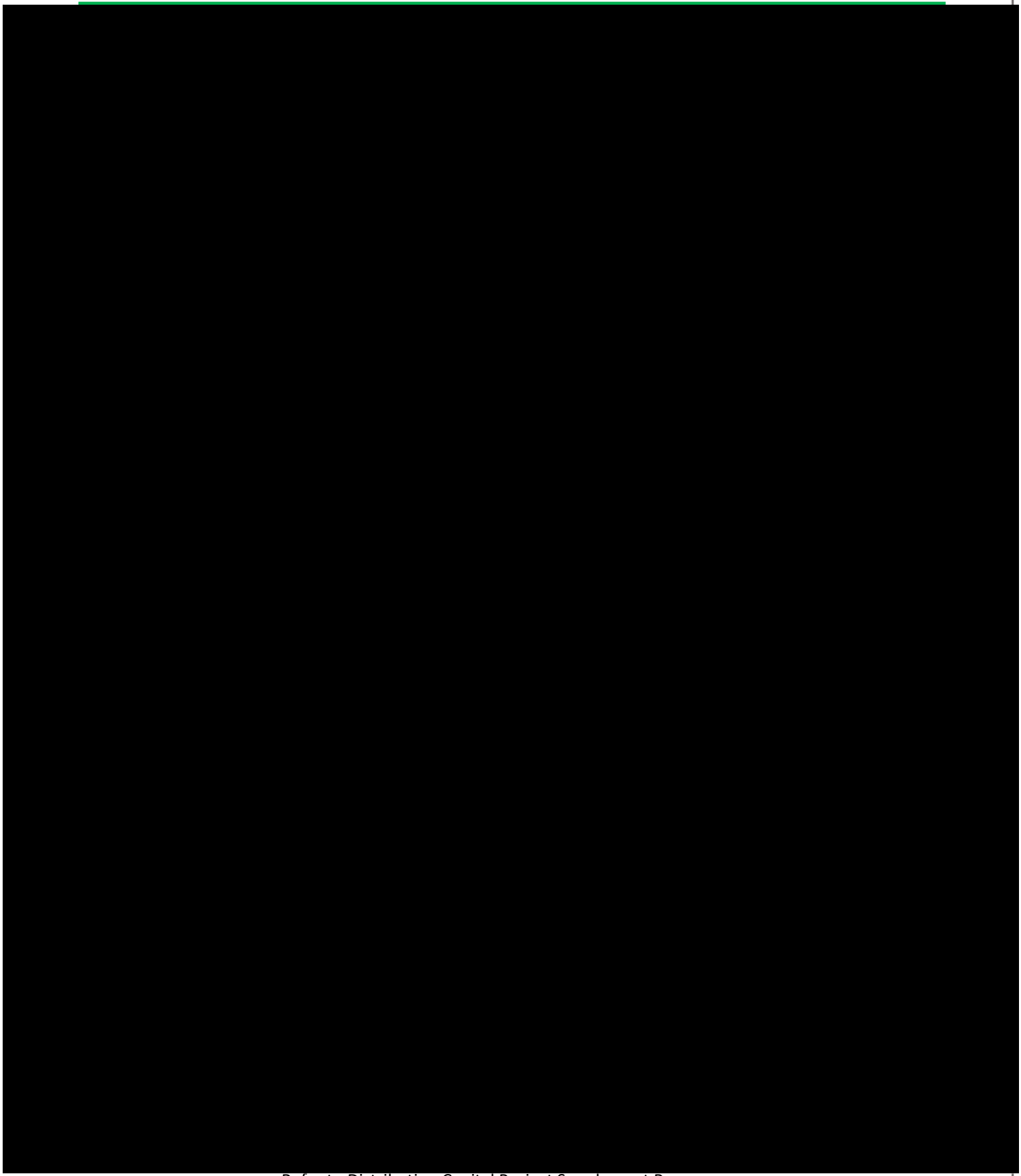


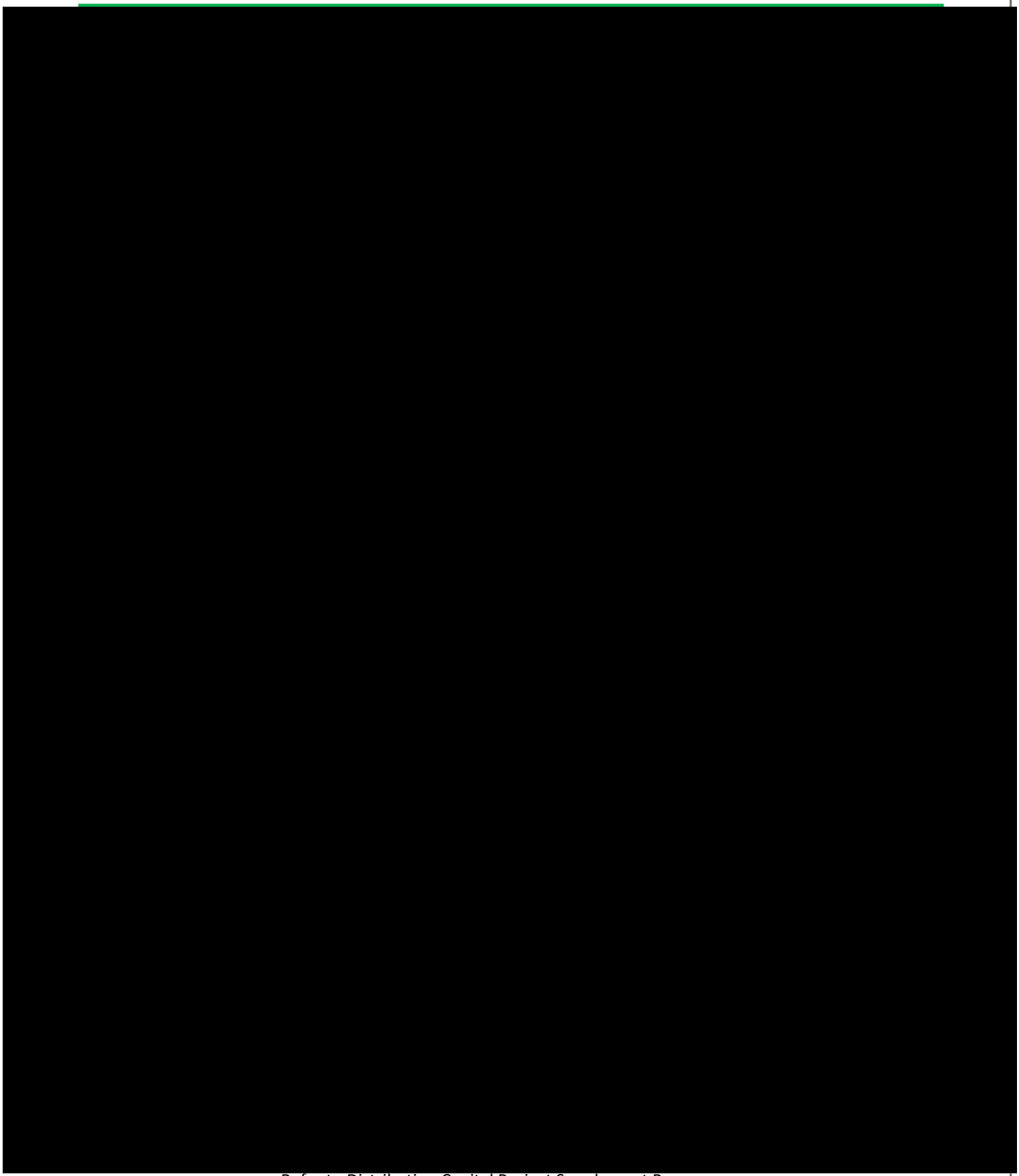


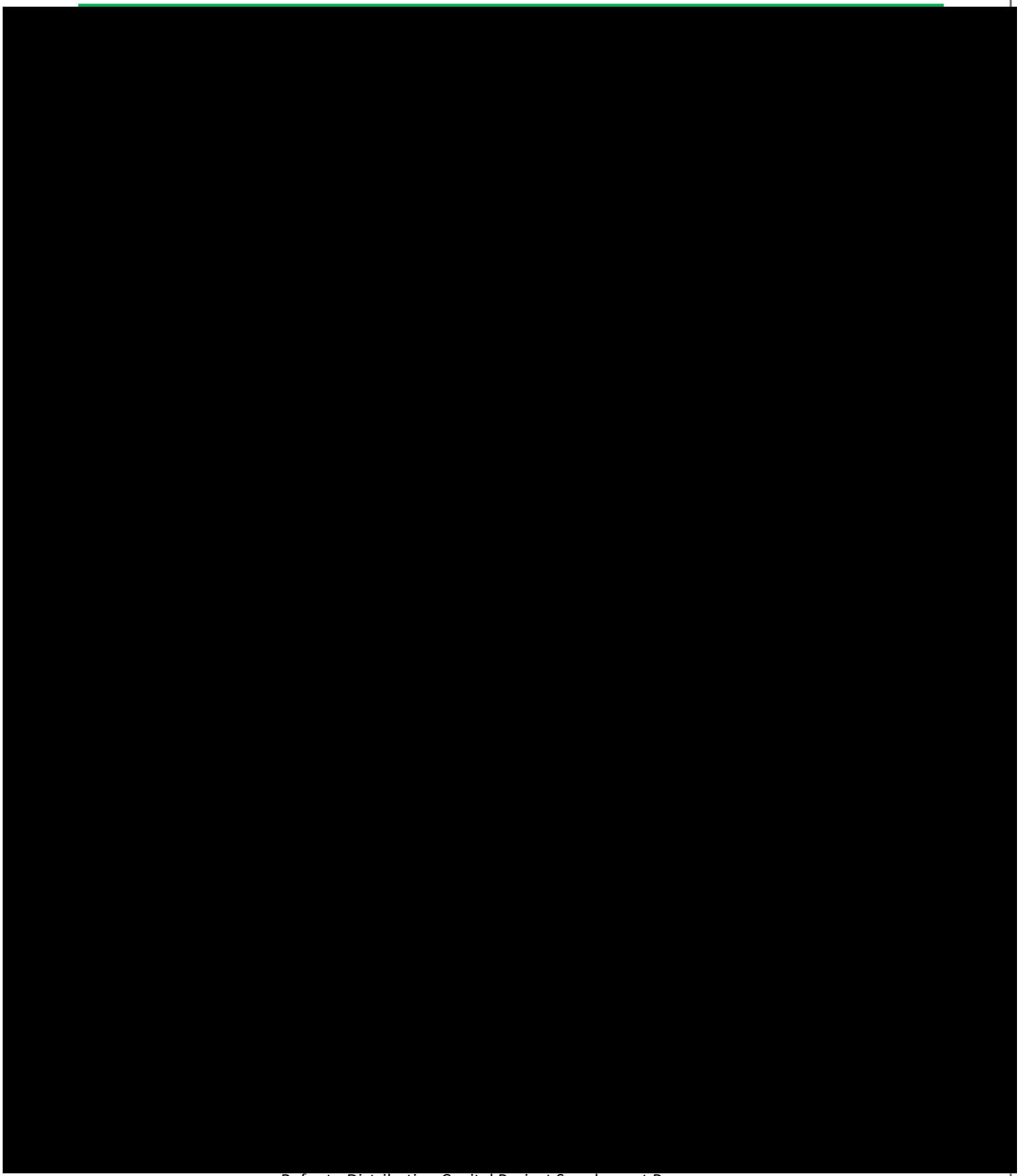


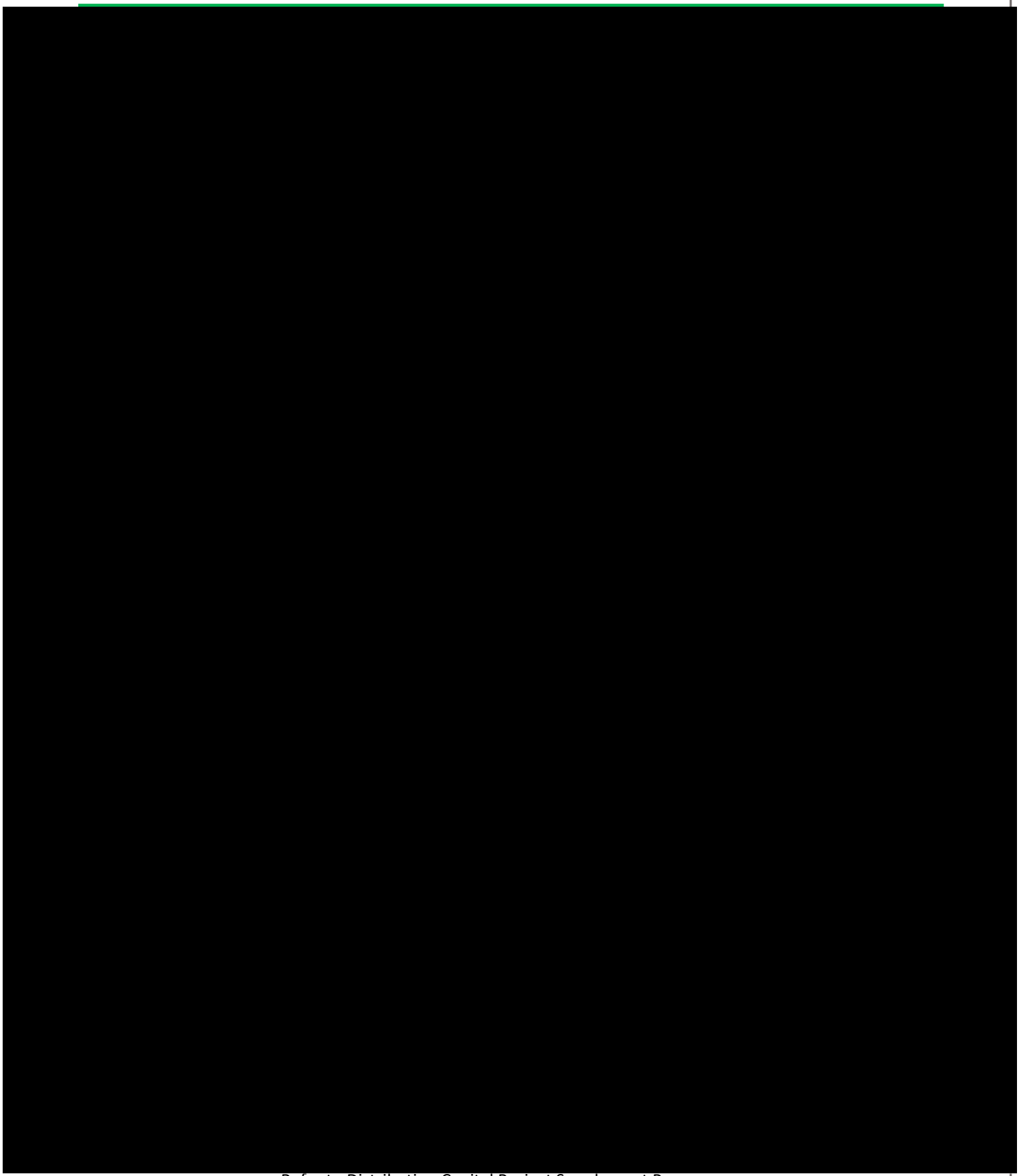


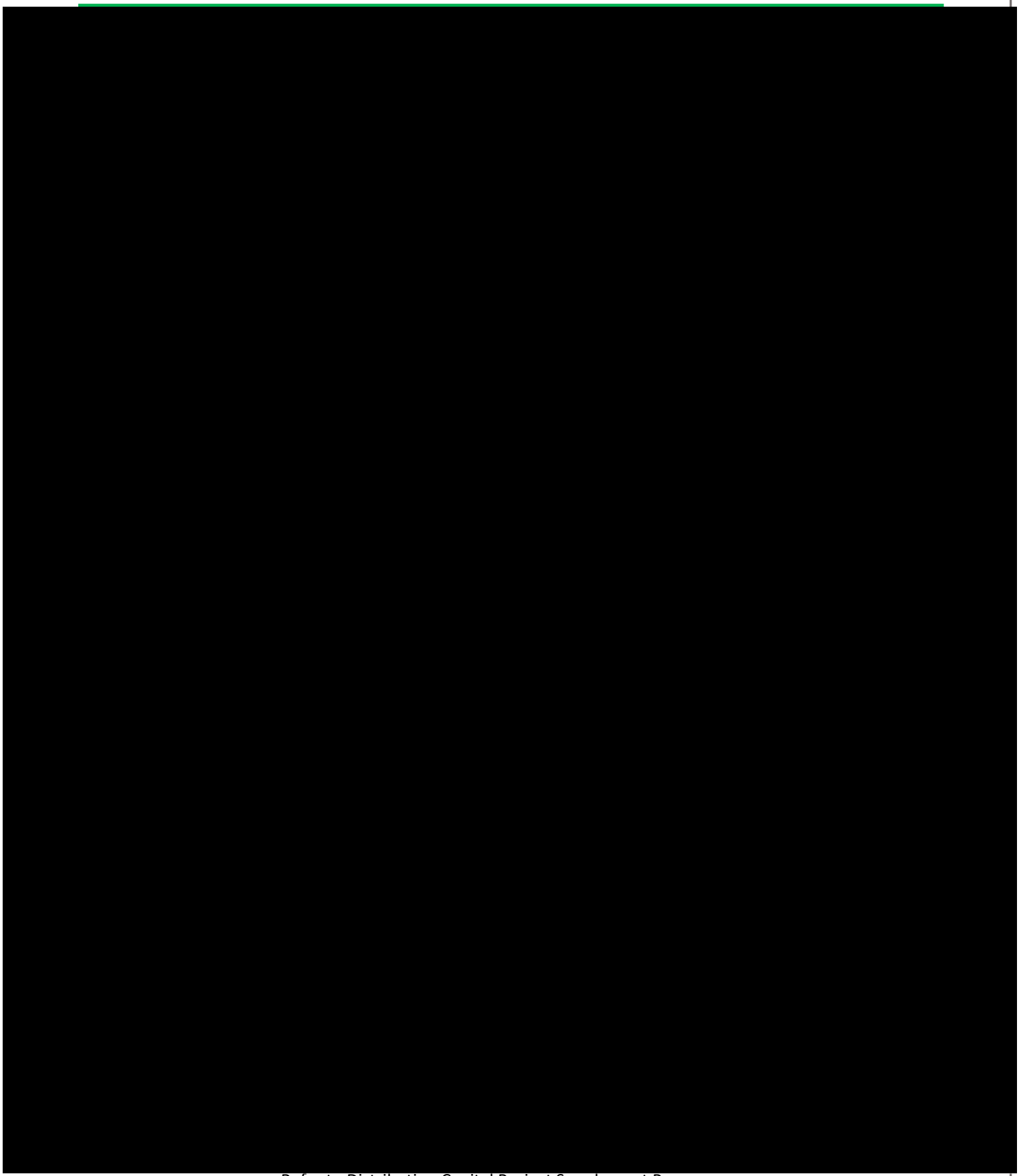












E. Supplemental to Partial PAF.

Supplement Request Form.

Project Title: [redacted]witchgear	**Project Number: CD02046**
Date Prepared: 04/14/2023	**Company:** CL&P Electric Distribution 11
Organization: Electric Field Operations	**Class(es) of Plant:** D Line
Project Initiator:	**Project Category:** SPECIFIC PROJECTS-NEW SRVCE
Project Manager: [redacted]	**Project Type:** Choose an item
Project Sponsor: Engineering Director	**Project Purpose:**
Estimated in service date: 12/30/2023	**Capital Investment part of original Operating Plan:** Choose an item
Current Authorization Amount: $ 968K	**O&M Expenses part of request:** Yes
Supplement Request: $189K	**Other:**

Supplement Justification

Justification for Additional Resources

[redacted]

Supplement Cost Summary

Note: Dollars are in thousands.

Capital Costs	Prior Authorized	Supplemental Request	Total
Direct Capital Costs			
Internal Labor	$81	$16	$95

Outside Services	$274	$53	$327
Materials	$223	$44	$267
Removals	$33	$7	$40
Risk and Contingency	($87)	($17)	($104)
Other	$0	$0	$0
Subtotal	**$524**	**$102**	$626
Indirect Capital Costs			
Indirect/Overheads (including benefits)	$426	$83	$509
Capitalized interest or AFUDC, if any	$18	$3	$21
Subtotal	**$444**	**$87**	**$ 531**
Total Customer Contribution	**$0**	**$0**	**$0**
Total Capital Project Costs	**$968**	**$189**	**$1,157**

Change in Scope Estimate.

EVERSOURCE

Supplement Authorization Form

Design Alternative CD02046-06

General Information

Segment: 6 - Change Source Tap Status: Draft

Segment Type: NEW SERVICE Town: BRISTOL Budget Year: 2024

Work Type: Other Trimming Required: ☐ In Service Date: 12/31/2024

Description: Install a 5' X 10' manhole to tap onto the existing switchgear supplys.

Itemized Work List

ID	Major Grid	Minor Grid	Description of Work to be Performed
1	[redacted]		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

EVERSOURCE

Supplement Authorization Form

Design Alternative CD02046-06

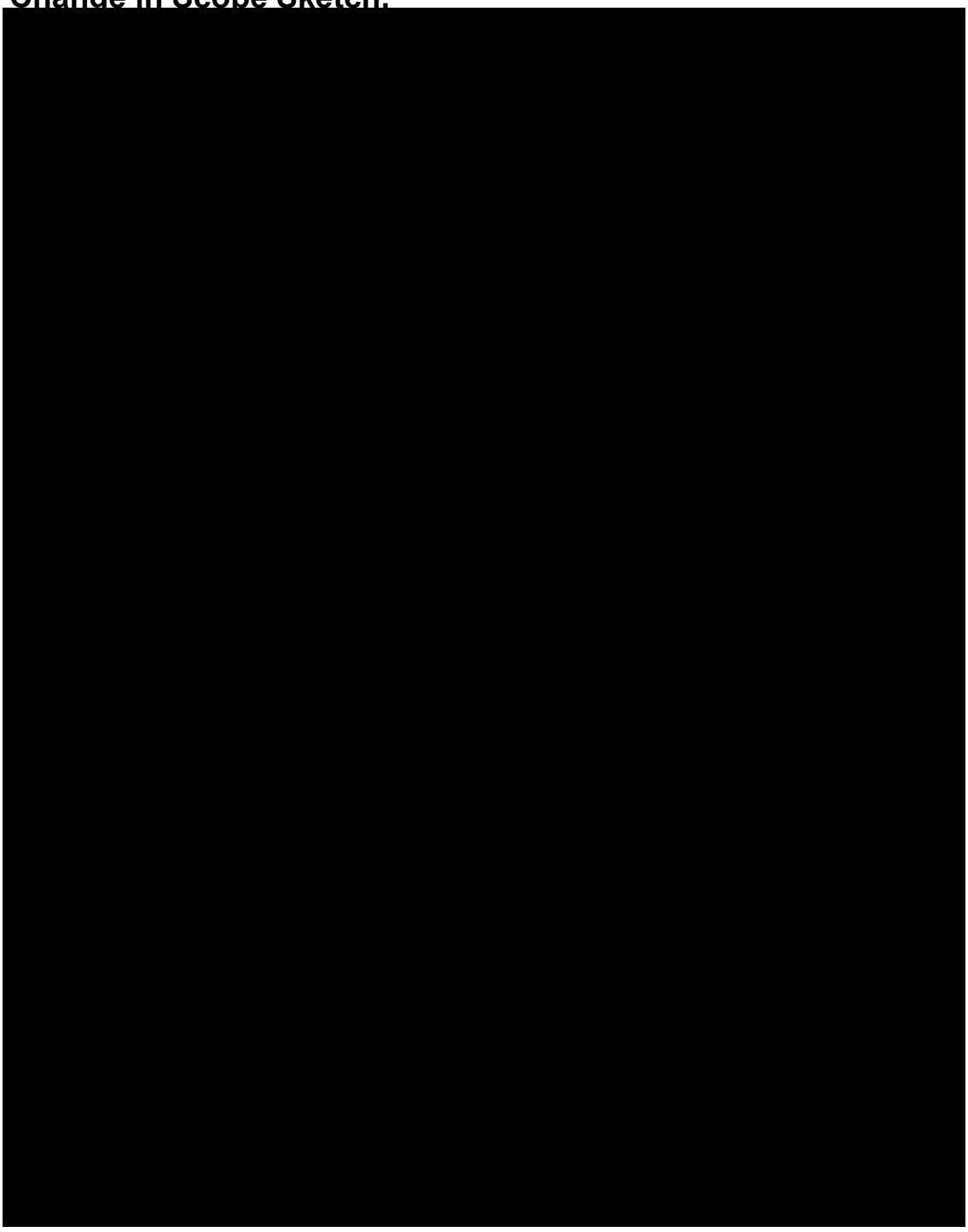
Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$150,818
Contingency Amount:	$42,229
Estimate:	$193,047
Reimbursement:	$0
Net Amount:	**$193,047**

Description:

Item Description	CU	[redacted]	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	16-ALL17		$7,019.20
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	16-ALL18		$24,000.00
DB CABLE DB/UG - 4/0 - 3-1/C (3ph) Al	16-UG113		$5,376.00
UG CABLE DB/UG - 350/500 - 3-1/C (3ph) Cu	16-UG114		$21,228.00
CONDUIT UG-Ductline-up to 12 duct-Non- Traveled/Non-Paved	16-UG138		$18,880.00
CONDUIT UG-Ductline-up to 12 duct-Non- Traveled/Non-Paved	16-UG138		$11,328.00
ENCLOSURE UG - MANHOLE - Precast	16-UG139		$62,986.40

Change in Scope Sketch.



Operations Project Authorization Form

EVERSOURCE

Supplement Authorization Form

Project Title: [redacted] Switchgear	**Project Number: CD02046**
Date Prepared: 10/06/2022	**Company:** Eversource CT
Organization: Electric Field Operations	**Class(es) of Plant:** D Line
Project Initiator: [redacted]	**Project Category:** SPECIFIC PROJECTS-NEW SRVCE
Project Manager: [redacted]	**Project Type:** Specific
Project Sponsor: [redacted]	**Capital Investment part of original Operating Plan:** Yes
Estimated in service date: 6/1/2023	**Emergency Related Request?** No
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution
Total Gross Capital Request: $968K	**Authorization Type:** Initial Funding

Executive Summary

[redacted]

[redacted]

[redacted]

The NB-12 distribution revenue associated with this new load is $1.5M. Since the NB-12 distribution revenue is greater than the project costs, there is no customer contribution towards this project.

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	$81	$0	$0	$81
Outside Services	$274	$0	$0	$274
Materials	$223	$0	$0	$223
Removals	$33	$0	$0	$33
Risk and Contingency	($87)	$0	$0	($87)
Other	$0	$0	$0	$0
Subtotal – Direct Costs	**$524**	**$0**	**$0**	**$524**
Indirect Capital Costs				
Indirect/Overheads (including benefits)	$426	$0	$0	$426
Capitalized interest or AFUDC, if any	$18	$0	$0	$18
Subtotal – Indirect Costs	**$444**	**$0**	**$0**	**$444**
Total Gross Capital Costs	**$968**	**$0**	**$0**	**$968**
Customer Contribution	**$0**	**$0**	**$0**	**$0**
Total Net Capital Project Costs	**$968**	**$0**	**$0**	**$968**

Technical Justification:

Project Need, Objective and Justification:

[redacted]

Project Scope:

[redacted]

Major Material:

- Two PME-9 switchgear units
- 1,925 feet of 1,000 kcmil Cu EPR cable
- 3,700 feet of 500 kcmil Cu EPR cable
- One 900-ampere GOAB

Background:

[redacted]

According to the Distribution System Engineering Manual (DSEM) the switchgear should be limited to 160 amperes. See DSEM excerpt below.

> On page DSEM 05.012, "Present capacity needs must be met, both for normal conditions and for contingency conditions to the degree the Company wishes to accommodate them. In general, for a single-contingency condition, lengthy outages must be avoided, except for the group of customers directly tied to the outage, and this group of customers is generally limited to 500 customers or 160 amps of load."

There are two locations for installing the switchgear: in the transmission ROW or a cul-de-sac easement. The cul-de-sac easement was acquired when the first stage of the development was installed. The

company relinquished one side of the cul-de-sac to the Double Tree hotel. The cul-de-sac location is best location to split up the loops.





Business	Address	Projected	Amperes
[redacted]			

On page DSEM 05.012, "Present capacity needs must be met, both for normal conditions and for contingency conditions to the degree the Company wishes to accommodate them. In general, for a single-contingency condition, lengthy outages must be avoided, except for the group of customers directly tied to the outage, and this group of customers is generally limited to 500 customers or 160 amps of load."

Alternatives Considered:

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

Alternatives were considered (please describe below)

Option Two -- [redacted] **($1,140K.)**

[redacted]

Major Material:

- Two PME-9 switchgear units.
- 1.925 feet of 1,000 kcmil Cu EPR cable.
- 3,700 feet of 500 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted].

Option Three -- [redacted] **($639K.)**

[redacted]

Major Material:

- Two PME-9 switchgear units.
- 2,680 feet of 1,000 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted]

Option Four -- [redacted] **($435K.)**

[redacted]

[redacted]

Major Material:

- 2,680 feet of 1,000 kcmil Cu EPR cable.
- One 900-ampere GOAB.

[redacted]. In addition, the design limit for a load group would be exceeded. For this reason, this option was not selected.

Project Option Comparison

[redacted]				

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cost	$0.989M	$1.140M	$0.638M	$0.435M
Cost $K / MVA added	$/MVA	$/MVA	$/MVA	$/MVA
Cost / CM Saved	$/CM	$/CM	$/CM	$/CM
Cost / CI Saved	$/CI	$/CI	$/CI	$/CI
Preferred option	X			

Regulatory Approvals:

None.

Project Schedule

Milestone/Phase Name	Estimated Date
100% Engineering Completion	12/1/2022
Construction Start	1/1/2023
Testing/Commissioning	5/1/2023
In Service Date	6/1/2023

Risks and Risk Mitigation Plans

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	Medium	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	Medium	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	Medium	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	Medium	Use of mats and specialty equipment, only work during certain times of the year.

References

NB-12 Calculations.

Business	Address	Projected Load	Amper	Projected Annual evenue	Projected Revenue 6.7 years
[redacted]				$57,074.04	$382,396.07
				$3,617.28	$24,235.78
				$82,398.48	$552,069.82
				$44,888.64	$300,753.89
				$40,008.00	$268,053.60
				$227,986.44	$1,527,509.15