EVERSOURCE

Operations Project Authorization Form

Project Title: Equip. Replacement & Conversion on [redacted]	**Project Number:** CD02405
Date Prepared: 12/18/2025	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** RELIABILITY IMPROVE SPEC PROJ
Project Initiator: [redacted]	**Project Type:** Specific
Initiating Organization: Distributed Energy Resources	**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: 12/31/2026	**NWS Excludable:** ☐ Yes ☒ No
Total Capital Request: $1,989.1K	**Authorization Type:** Full Funding

1. Executive Summary

This project was established to address deficiencies on the [redacted] circuit.

- Ringed Spacer Cable was found on [redacted]. The project proposes replacement of this cable prone to failure.
- To reduce several large customer zones on the [redacted], a 4.8 KV portion of the circuit is proposed to be converted to 23 KV to allow for recloser installation. Separate project CD01278 specifies the installation of six reclosers to accomplish this.
- Project Location
  - Division: Central
  - District: Tolland AWC
  - City/Town: Enfield

- This project was originally part of project CD01278 and was approved April 2022. After the approval, Central Region Engineering Manager asked for this portion of the project be its own project.
- The partial funding estimate for this project was $1,544.7K and was approved at the 8/29/2024 CTPAC.
- The full funding request is $1,989.1K capital.
- The difference is $455.1K, an increase of 29%.
- There is no scope change to the project.

The difference between the partial and full funding estimates is due to:

- Replacement of [redacted] poles in the conversion portion of the project which accounts for an additional $155K. These poles are being replaced due to either undersized poles (35 ft.) or aging infrastructure (50+ yrs.). These are the streets affected:
  - [redacted]
- [redacted] of additional 3-phase wire is called for which accounts for an additional $65K.
- [redacted]. of neutral is called for which accounts for an additional $25K. The additional neutral was not accounted for along the backbone of the conversion area.
- $43K for tree trimming.
- The remaining difference is due to material inflation and labor cost.

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2025	Total
Internal Labor and Construction Equipment	336.8	336.8
Outside Services	32.1	32.1
Materials	129.6	129.6
Removals	138.9	138.9
Risk and Contingency	138.8	138.8
Other	0.0	0.0
Subtotal	**776.1**	**776.1**

Indirect Capital Costs	2025	Total
Indirects/Overheads (including benefits)	1,213.0	1,213.0
Capitalized interest or AFUDC, if any	0.0	0.0
Subtotal	**1,213.0**	**1,213.0**
Total Capital Costs (Gross)	**1,989.1**	**1,989.1**
Less Total Customer Contribution	**0.0**	**0.0**

Project Costs (Net of Reimbursement)	**1,989.1**	**1,989.1**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

The [redacted] which are at risk for loss of this zone. There has been one outage in this area where the spacer cable is ringed.

The [redacted] zone also has a sizeable portion of 4.8kV infrastructure that needs to be converted to allow for sectionalizing devices to be installed to reduce the large customer zone.

Within this zone, there exists about [redacted] t. of vintage spacer cable that shows signs of conductor ringing, due to a manufacture defect. This subjects the conductor to ultra-violet degradation causing the conductor to form rings in the covering. These rings expose the conductor to possible phase-to-ground fault current exposure. This slowly degrades the conductor itself, resulting it to eventual conductor breakage and downed conductor & power outages.

b. Project Need

This project is established to address [redacted] of ringed spacer cable along [redacted]., [redacted]., and [redacted] in Enfield CT.

c. Project Scope

The scope of this project is as follows:

Major Material:

- [redacted] ft. of #477 TW

- [redacted] ft. of 556 SC
- [redacted] single-phase transformers
- [redacted] three-phase transformers
- [redacted] single-phase poles
- [redacted] three-phase poles
- [redacted] junction poles

4. Alternatives Considered

Project Option Comparison

Design Criteria	Option			
	1 – Conversion and #477 TW	2 – Conversion and 556 Spacer Cable	3- Conversion and Half 556 SC & Half #477 TW	4- NWS
Convert 4.8kV to 23kV	X	X	X	
Spacer cable Replaced	X	X	X	
Increased Reliability	X	X	X	
Estimate Type	Partial	Partial	Full	Partial
Capital Cost	$1,450.8K	$1,661.5K	$1,989.1K	$11.36M
Expense Cost	$82.4K	$94.3K	$112.8K	$0.64M
Total Cost	$1,533.2K	$1,755.8K	$2,101.9K	$12M
Preferred option			X	

Option Summary

Option 1 proposes:

- Replace [redacted] of ringed spacer cable with #477 TW
- Convert area of [redacted] from 4.8KV to 23KV to allow for recloser installation which will reduce large customer count in zone.

Option 2 has one difference from Option 1 – the [redacted] of ringed spacer cable is proposed to be replaced with 556 kcmil spacer cable. This option was not chosen because of the light tree conditions in the area.

Option 3 is a mix of both option 1 and option 2. Since [redacted]. has train tracks which causes a clearance issue that 556 spacer cable would avoid. Once the Overhead crosses over the tracks and into residential area, #477 TW is better suited since there's a multiple 3-phase customers in that area and light tree conditions.

This option is preferred due to it addressing the [redacted] deficiencies with the most prudent solutions.

Option 4: Non-Wire Solution (NWS)

The NWS will install a battery capable of providing 1.5 MVA for 4 hours or about 6 MWh to restore customers on the large radial tap in case of upstream outages. The NWS has an estimated cost of $12M*.

This solution was not selected as the preferred option because it is by far the least cost-effective option. This option has varying reliability improvement depending on outage location. In addition, the NWS has diminishing reliability improvements with extended outages. Once the battery is depleted the customers will not have any increase in reliability.

*NWA estimate was calculated at $2M per MWh based on the two lowest of three contractor bids received in Connecticut.

5. Project Schedule

Milestone/Phase Name	Estimated Date
Partial Approval	August 2024
100% Detailed Engineering Completion	December 2025
Fully Funded	December 2025
Construction Start	June 2026
In Service Date	December 2026

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.	2026	Low	Included contingency costs in the funding request. The project will also require a facility study to perform the detailed engineering.
Customer Permission / Siting Council / Municipal approvals	2026	Medium	New service requires limited easement with the existing customer.
Internal construction resources not available to perform the work.	2026	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.	2025	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2025	Low	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2026	Low	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2026	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	2026	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	2026	Low	The new service poles/equipment will require a limited easement to the customer's site and is not anticipated to go in wetlands.

9. References

References
1. N/A

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

Attachment	Included in Submittal?
A. Partial Funding PAF	*YES*

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Operations Project Authorization Form

Attachment A: Partial Funding PAF

Project Title: Equip. Replacement & Conversion on [redacted]	Project Number: CD02405
Date Prepared: 08/29/2024	**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:** 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: 12/31/26	
Total Capital Request: $1,544.7K	**Authorization Type: Partial Funding**

1. Executive Summary

This project is being established to address deficiencies on the Enfield 12C4 circuit.

- Ringed Spacer Cable was found on [redacted]. The project proposes replacement of this cable prone to failure.
- To reduce several large customer zones on the [redacted], a 4.8 KV portion of the circuit is proposed to be converted to 23 KV to allow for recloser installation. Separate project CD01278 specifies the installation of six reclosers to accomplish this.

- Project Location
  - Division: Central
  - District: Tolland AWC
  - City/Town: Enfield

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	Year 2026	Total
Direct Capital Costs		
Internal Labor and Construction Equipment	80.8	80.8
Outside Services	547.6	547.6
Materials	219.6	219.6
Removals	193.2	193.2
Risk and Contingency	0.0	0.0
Other	7.5	7.5
Subtotal – Direct Costs	**1,048.7**	**1,048.7**
Indirect Capital Costs		
Indirect/Overheads (including benefits)	465.0	465.0
Capitalized interest or AFUDC, if any	30.8	30.8
Subtotal – Indirect Costs	**495.8**	**495.8**
Total Gross Capital Costs	**1,544.5**	**1,544.5**
Customer Contribution	0.0	0.0
Total Net Capital Project Costs	**1,544.5**	**1,544.5**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

The [redacted] zone supplies [redacted] customers which are at risk for loss of this zone. There has been one outage in this area where the spacer cable is ringed.

The [redacted] zone also has a sizeable portion of 4.8kV infrastructure that needs to be converted to allow for sectionalizing devices to be installed to reduce the large customer zone.

Within this zone, there exists about 4,400 ft. of vintage spacer cable that shows signs of conductor ringing, due to a manufacture defect. This subjects the conductor to ultra-violet degradation causing the conductor to form rings in the covering. These rings expose the conductor to possible phase-to-ground fault current exposure. This slowly degrades the conductor itself, resulting it to eventual conductor breakage and downed conductor & power outages.

b. Project Need

This project is established to address 4,400 ft. of ringed spacer cable along [redacted].

c. Project Scope

The scope of this project is as follows:

Major Material:

- [redacted]ft. of #477 TW
- [redacted] ft. of 556 SC
- [redacted] single-phase transformers
- [redacted] three-phase transformers
- [redacted] single-phase poles
- [redacted] three-phase poles
- [redacted] junction poles

4. Alternatives Considered

Option 1 proposes:

- Replace [redacted]' of ringed spacer cable with #477 TW
- Convert area of [redacted] zone from 4.8KV to 23KV to allow for recloser installation which will reduce large customer count in zone.

Option 2 has one difference from Option 1 – the [redacted]' of ringed spacer cable is proposed to be replaced with 556 kcmil spacer cable. This option was not chosen because of the light tree conditions in the area.

Option 3 is a mix of both option 1 and option 2. Since [redacted]. has train tracks which causes a clearance issue that 556 spacer cable would avoid. Once the Overhead crosses over the tracks and into residential area, #477 TW is better suited since there's a multiple 3-phase customers in that area and light tree conditions.

This option is preferred due to it addressing the [redacted] circuit deficiencies with the most prudent solutions.

Project Option Comparison

Design Criteria	Option		
	1 – Conversion and #477 TW	2 – Conversion and 556 Spacer Cable	3- Conversion and Half 556 SC & Half #477 TW
Convert 4.8kV to 23kV	X	X	X
Spacer cable Replaced	X	X	X
Increased Reliability	X	X	X
Estimate Type	Partial	Partial	Partial
Capital Cost	$1,450.8K	$1,661.5K	$1,544.5K
Expense Cost	$82.4K	$94.3K	$87.7K
Total Cost	$1,533.2K	$1,755.8K	$1,632.2K
Preferred option			X

5. Project Schedule

Milestone/Phase Name	Estimated Date
Partial Approval	May 2024
100% Detailed Engineering Completion	July 2024
Fully Funded	September 2024
Construction Start	July 2026
In Service Date	December 2026

6. Regulatory Decisions

No

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.	2026	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	2026	Low	Design to minimize customer impact. Project Preplanning and customer/community outreach.
Internal construction resources not available to perform the work.	2026	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.	2025	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2026	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2026	Medium	If storm activity delays work, we may be forced to use external resources.

System abnormal configuration	2026	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	2026	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	2026	Low	Use of mats and specialty equipment, only work during certain times of the year.

9. References

References
1. N/A

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. Other: Load Summary Sheet	*YES*

Attachment A. Cost Estimate:

Conversion on [redacted]

Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$334,896
Contingency Amount:	$93,771
Estimate:	$428,667
Reimbursement:	$0
Net Amount:	**$428,667**
Description:	

Item Description	CU	$ / Per	Qty	Amount
OH WIRE OH - Neutral	23-OH31	[redacted]		$46,592.00
EQUIPMENT OH - Conversion Prep Work - 1ph	23-OH56			$62,665.20
EQUIPMENT OH - Conversion Prep Work - 3ph	23-OH57			$21,424.00
EQUIPMENT OH - Conversion - CUTOVER	23-OH58			$48,703.20
XF DB/UG - Padmount XF - 3ph	23-UG131			$65,511.68
TRAFFIC OH/DB/UG - Traffic Control - Flagger 15% Adder for Traffic	23-ALL19			$30,000.00
ACT ACT Estimate for Contractor Crews 30% Adder for Contractor	23-ALL12			$60,000.00

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Operations Project Authorization Form

Reconductor on [redacted]

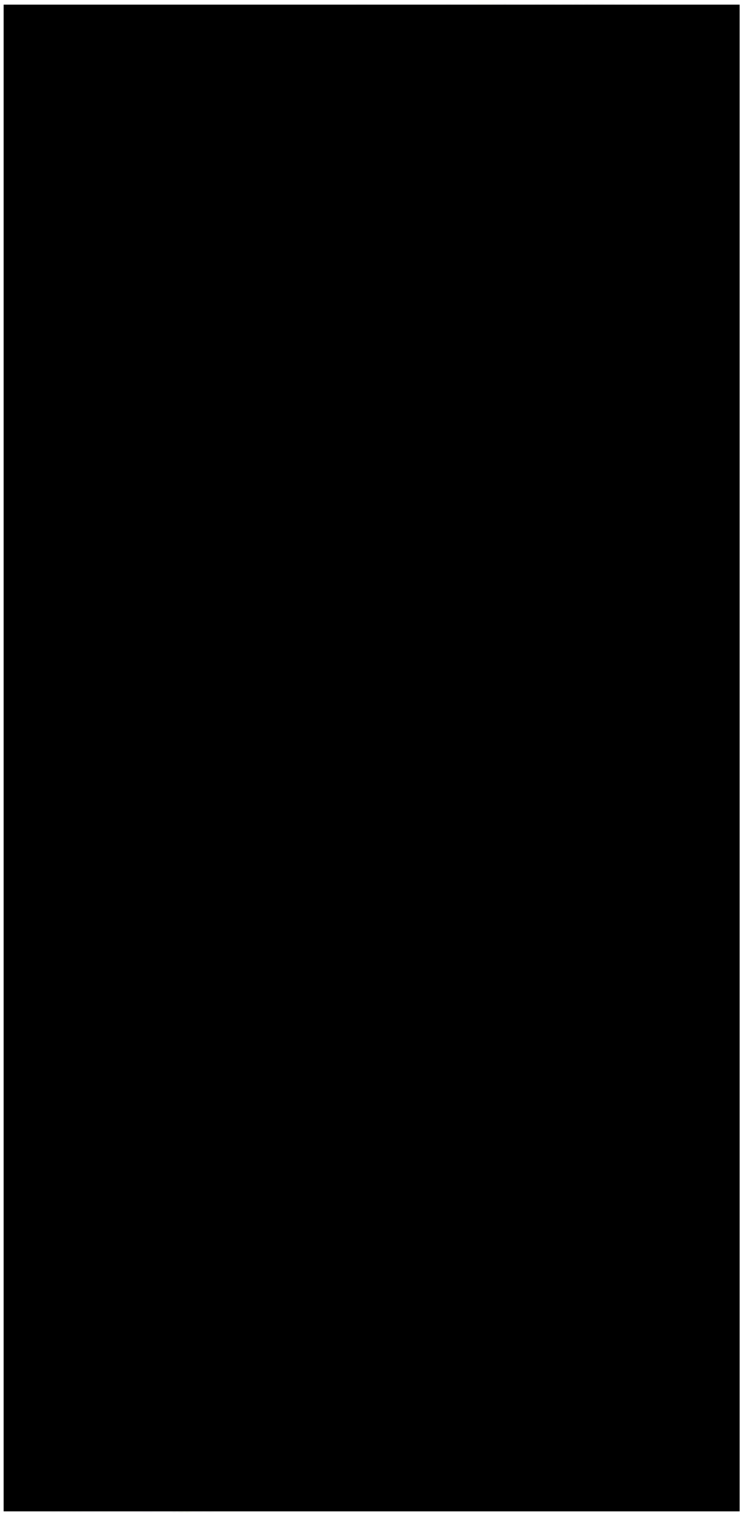
Estimate

	Preliminary Estimate Summary
Revision Number:	0
Contingency:	28.00%
SubTotal:	$940,298
Contingency Amount:	$263,283
Estimate:	$1,203,581
Reimbursement:	$0
Net Amount:	**$1,203,581**

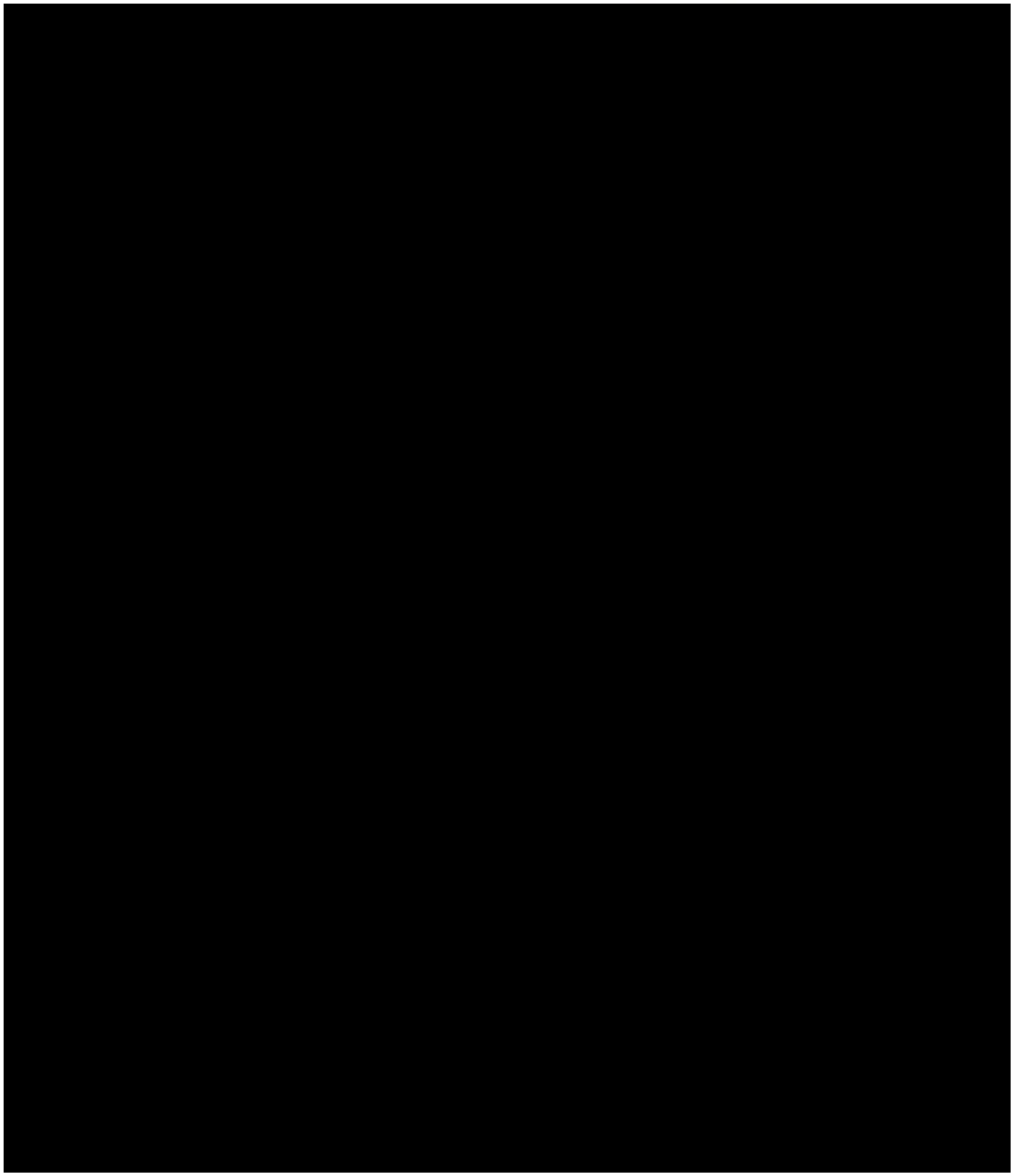
Description:

Item Description	CU	$ / Per	Qty	Amount
SWITCHING OH/DB/UG - SWITCHING NonNetwork - Average	23-ALL17	[redacted]		$4,562.48
TRAFFIC OH/DB/UG - Traffic Control - Police Officer	23-ALL18			$98,000.00
POLE OH - POLE - 1ph (Eversource custodian)	23-OH13			$78,733.20
POLE OH - POLE - 3ph (Eversource custodian)	23-OH14			$36,472.80
POLE OH - JUNCTION POLE - 3ph (Eversource custodian)	23-OH14A			$45,592.56
ACT ACT Estimate for Contractor Crews 30% contractor Adder	23-ALL12			$194,377.00
OH WIRE OH - Reconductor w/Spacer Cable - 556 kcmil Reconductor [redacted] of 336 SC on N River St with 556 SC.	23-OH29			$159,744.00
OH WIRE OH-Reconductor w/175 Mil Tree Wire-3ph- 556 kcmil Reconductor [redacted] of 336 SC on Whitworth St. with #477 TW.	23-OH27			$322,816.00

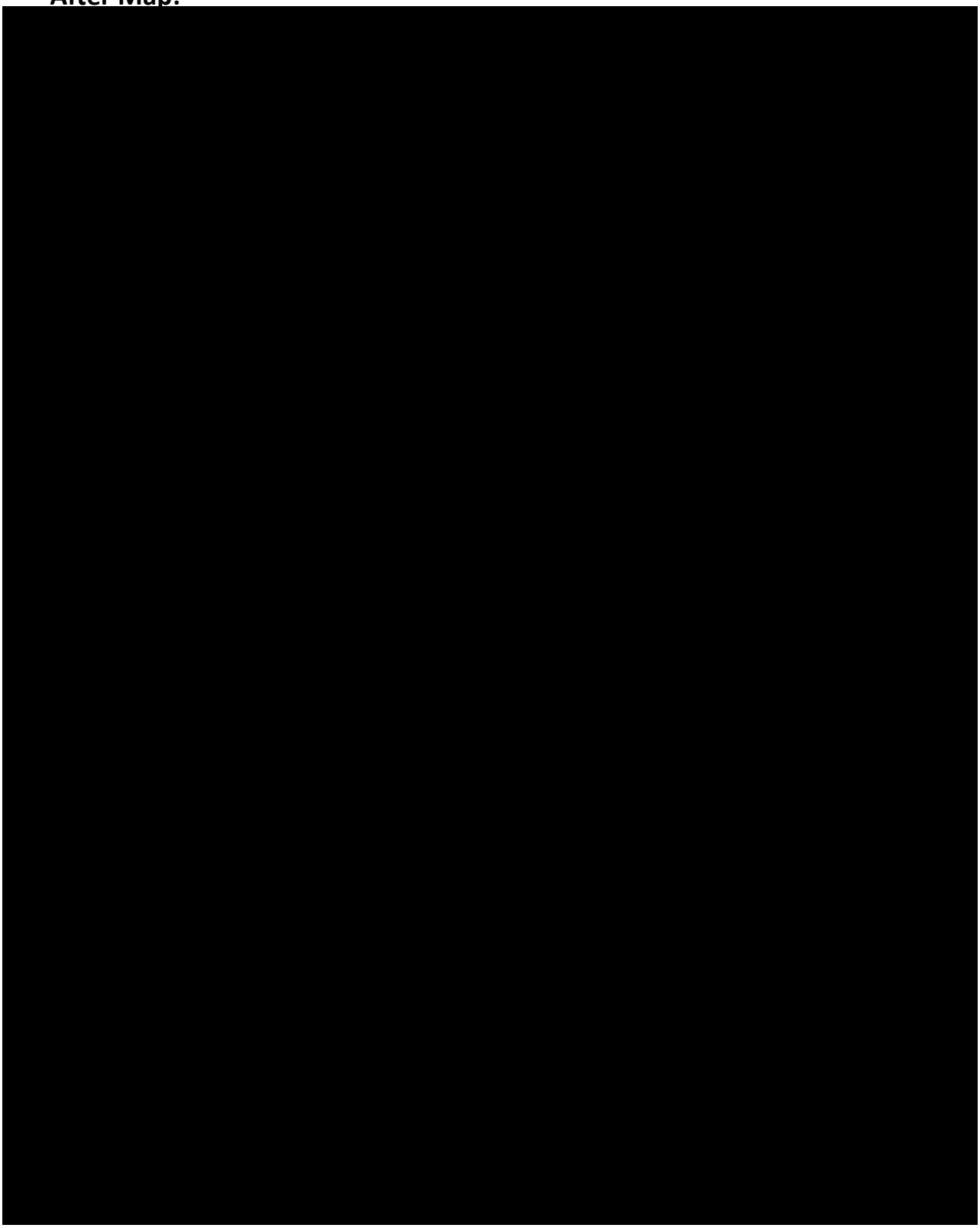
Attachment C: Before Entire Map



Before Area-Focused Map:



After Map:



Attachment D: Existing Oneline:



After Oneline:



Attachment E: Before Load Summary Sheet:



After Load Summary Sheet:

