EVERSOURCE

Project Approval Form

Project Title: Central CEMI Reliability	Project Number: CD02276
Date Prepared: 04/19/2024	**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: 12/31/23	
Total Capital Request: $1,253K	**Authorization Type:** Full Funding

1. Executive Summary

Full funding is being requested for this project at a cost of $1,253K which is 226% of the partial funding estimate of $554K. The work that has been completed and the work that is remaining has been done as designed with no scope change. The variance is due to a large portion of the work being done by contractors while it was budgeted for internal crews. There were customer issues that required crews to be sent out numerous times to attempt to complete the work resulting in extra labor charges. Eversource set poles when Frontier could not, this created a higher material charge and labor charges for the poles sets that Frontier was responsible for. Some sites required rock drilling and digging that was performed by contractors not accounted for in the initial estimate. Maximo estimates for set up time were lower when the job was initially written.

This project is established to address six laterals in the Central Region, two per district where the device operated numerous times in 2022 which contributed to a high number of Customer Experiencing Multiple Interruptions (CEMI).

- Due to high amount of tree related outages, the initiative that is being done for each location is to reconductor bare wire with 336 TW.
- This will establish a more protected and resilient wire to prevent future tree related outages.
- Also, due to the under-classed and aging infrastructure, majority of the poles are being replaced with 40 ft. Class 2 poles.
- Project Location
    - Division: Central
    - District: Tolland, Cheshire, and Hartford AWC
    - City/Town: Durham, Bethany, Cromwell, Manchester, Ashford, Stafford

2. Project Cost Summary

Note: Dollar values are in thousands.

Financial Evaluation ($000's)

Capital Costs	2023	2024	Year 3+	Total
Internal Labor and Construction Equipment	1.4	33.9	0.0	35.3
Outside Services	0.0	631.7	0.0	631.7
Materials	0.0	60.1	0.0	60.1
Removals	0.1	32.9	0.0	33.0
Risk and Contingency	0.0	24.6	0.0	24.6
Other	0.0	0.0	0.0	0.0
Subtotal	**1.5**	**783.2**	**0.0**	**784.7**

Indirect Capital Costs	2023	2024	Year 3+	Total
Indirects/Overheads (including benefits)	1.9	458.7	0.0	460.6
Capitalized interest or AFUDC, if any	0.1	7.4	0.0	7.4
Subtotal	**2.0**	**466.0**	**0.0**	**468.0**
Total Capital Costs (Gross)	**3.5**	**1,249.2**	**0.0**	**1,252.7**
		0		
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**
		0		
Project Costs (Net of Reimbursement)	**3.5**	**1,249.2**	**0.0**	**1,252.7**

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

District	Circuit	Device	DEMI	CEMI	Rec'd (ft)	Cost (K)
[redacted]						$92
						$206
						$17
						$21
						$44
						$172

Total Combined Outage History of the six devices:

- **Tree-related:** 12
- **Animal:** 2
- **Equip. Failure:** 2
- **Unknown:** 4

Based on the outage history above, majority of outages were caused by a tree-related event. This is because all the laterals were constructed with bare conductor with many of them being non-resilient poles which are not reliable against heavily treed areas.

b. Project Need

[redacted]

c. Project Scope

The scope of this project is as follows:

- [redacted]

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

Major Material:

- 15,733 ft. of 336 TW
- 66 40 ft. Class 2 Poles
- 3 35 ft. Class 2 Poles
- 1 Stub Pole

4. Alternatives Considered

Other Alternatives were considered:

a.) One alternative was to do nothing but that was not a viable option due to the poor reliability of these laterals. [redacted]

- [redacted]

5. Project Schedule

Milestone/Phase Name	Estimated Date
Partial Approval	July 2023
100% Detailed Engineering Completion	August 2023
Construction Start	August 2023
In Service Date	December 2023

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.	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	Meidum	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	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	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. Partial PAF	*YES*

A.

Budget Summary - Preferred Option — All 6 Central Locations

2023

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
1	[redacted] WO#13452363	Draft	0	0%	$172,000	$172,000
2	[redacted] WO# 13452255	Draft	0	0%	$44,000	$44,000
3	[redacted] WO# 13151090	Draft	0	0%	$206,000	$206,000
4	[redacted] WO# 13361398	Draft	0	0%	$92,000	$92,000
5	[redacted] WO# 13116045	Draft	0	0%	$21,000	$21,000
6	[redacted] WO# 13116340	Draft	0	0%	$17,000	$17,000
				2023 Total:	**$552,000**	**$552,000**
				Total Project:	**$552,000**	**$552,000**

B.

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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: 12/31/23	
Total Capital Request: $552K	**Authorization Type:** Partial Funding

11. Executive Summary

12. This project is being established to address six laterals in the Central Region, two per district where the device operated numerous times in 2022 which contributed to a high number of Customer Experiencing Multiple Interruptions (CEMI).

- Due to high amount of tree related outages, the initiative that is being done for each location is to reconductor bare wire with 336 TW.
- This will establish a more protected and resilient wire to prevent future tree related outages.

- Also, due to the under-classed and aging infrastructure, majority of the poles are being replaced with 40 ft. Class 2 poles.
- Project Location
  - Division: Central
  - District: Tolland, Cheshire, and Hartford AWC
  - City/Town: Durham, Bethany, Cromwell, Manchester, Ashford, Stafford

13. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	Year 2023	Year 2024	Year 2025+	Total
Direct Capital Costs				
Internal Labor and Construction Equipment	28.9	0.0	0.0	28.9
Outside Services	195.7	0.0	0.0	195.7
Materials	78.5	0.0	0.0	78.5
Removals	69.1	0.0	0.0	69.1
Risk and Contingency	2.7	0.0	0.0	2.7
Other	0.0	0.0	0.0	0.0
Subtotal – Direct Costs	**374.8**	**0.0**	**0.0**	**374.8**
Indirect Capital Costs				
Indirect/Overheads (including benefits)	166.2	0.0	0.0	166.2
Capitalized interest or AFUDC, if any	11.0	0.0	0.0	11.0
Subtotal – Indirect Costs	**177.2**	**0.0**	**0.0**	**177.2**
Total Gross Capital Costs	**552.0**	**0.0**	**0.0**	**552.0**
Customer Contribution	0.0	0.0	0.0	0.0

Total Net Capital Project Costs	**552.0**	**0.0**	**0.0**	**552.0**

14. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

District	Circuit	Device	DEMI	CEMI	Rec'd (ft)	Cost (K)
[redacted]						$92
						$206
						$17
						$21
						$44
						$172

Total Combined Outage History of the six devices:

- **Tree-related:** 12
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Based on the outage history above, majority of outages were caused by a tree-related event. This is because all the laterals were constructed with bare conductor with many of them being non-resilient poles which are not reliable against heavily treed areas.

b. Project Need

[redacted]

c. Project Scope

The scope of this project is as follows:

[redacted]

Major Material:

- 15,733 ft. of 336 TW
- 66 40 ft. Class 2 Poles
- 3 35 ft. Class 2 Poles
- 1 Stub Pole

15. Alternatives Considered

Other Alternatives were considered:

c.) One alternative was to do nothing but that was not a viable option due to the poor reliability of these laterals. Currently, these laterals have mostly bare conductors, under-classed poles, and aging infrastructure in a heavily treed area along with multiple device operation.

d.) A second alternative was to reconductor with 1/0 TW, which isn't preferable due to a weaker breaking

strength compared to a bigger cable like 336 TW. The reason 336 TW is recommended is that not only does it have a higher breaking strength, but it also has higher ampacity rating which could benefit for future load growth.

16. Project Schedule

Milestone/Phase Name	Estimated Date
Partial Approval	July 2023
100% Detailed Engineering Completion	August 2023
Construction Start	August 2023
In Service Date	December 2023

17. Regulatory Decisions

No

18. Codes and Standards

N/A

19. Risk and Contingencies

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.
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Wetlands / Environmentally sensitive area	2023	Low	Use of mats and specialty equipment, only work during certain times of the year.

20. References

References
1. N/A

21. 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	*N/A*

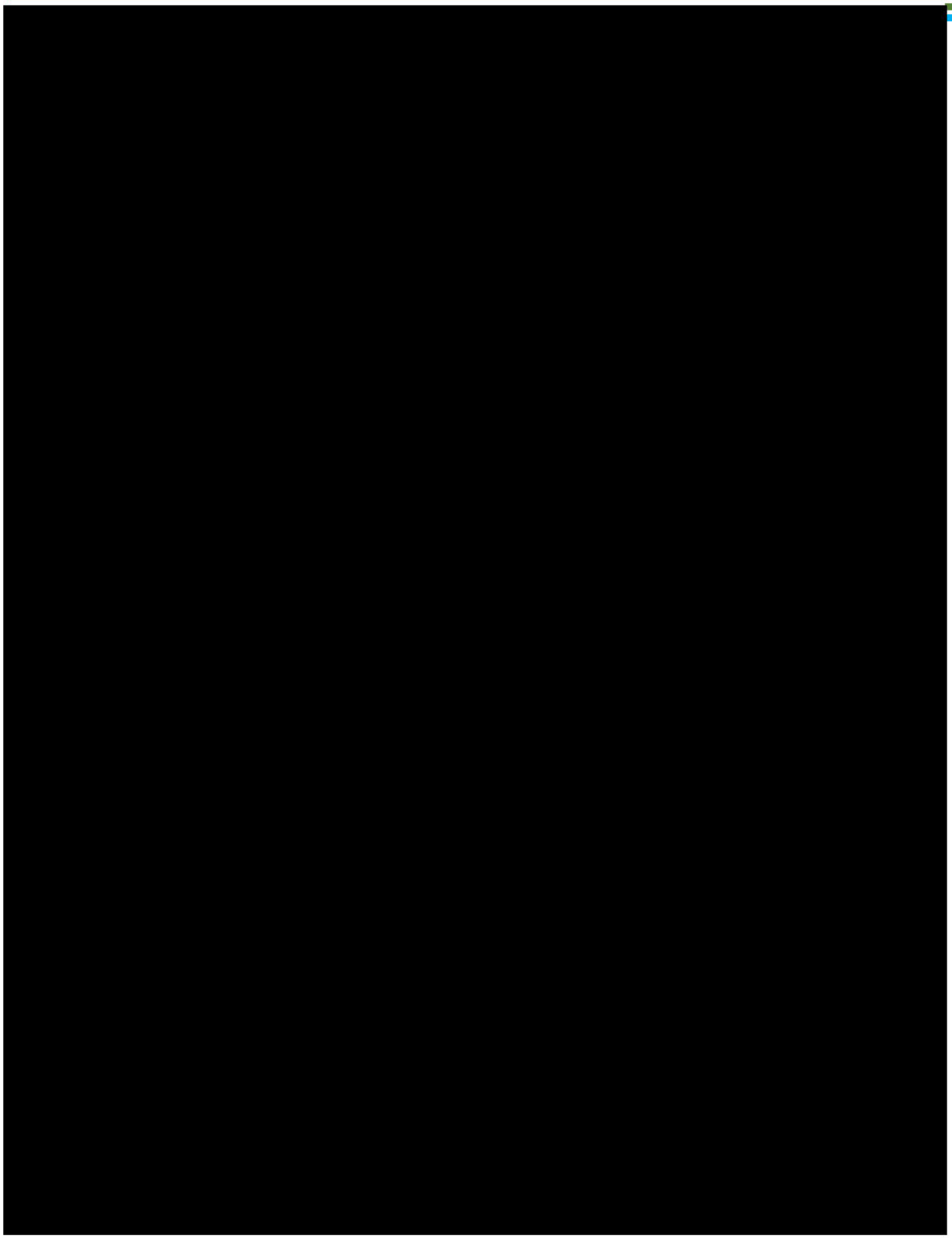
Partial Cost Estimate:

Budget Summary - Preferred Option — All 6 Central Locations

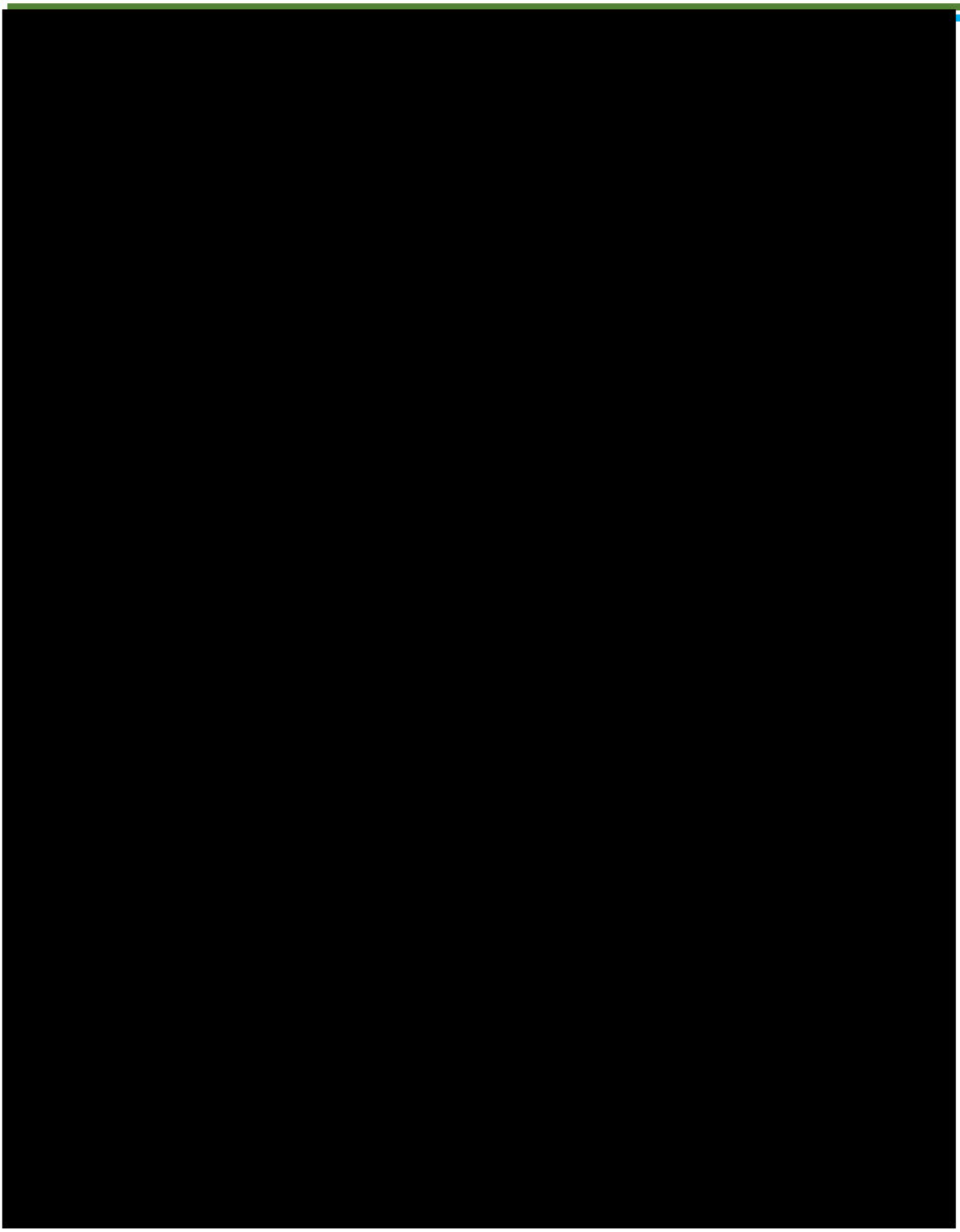
2023

ID	Title	Status	Rev #	Contingency	Expenditure Amount	Net Estimate
1	Tolland: FUSE_OH:11157 WO#13452363	Draft	0	0%	$172,000	$172,000
2	Tolland: FUSE_OH:2067 WO# 13452255	Draft	0	0%	$44,000	$44,000
3	Cheshire: FUSE_OH:1880 WO# 13151090	Draft	0	0%	$206,000	$206,000
4	Cheshire: FUSE_OH:306 WO# 13361398	Draft	0	0%	$92,000	$92,000
5	Hartford: FUSE_OH:1317 WO# 13116045	Draft	0	0%	$21,000	$21,000
6	Hartford: FUSE_OH:505 WO# 13116340	Draft	0	0%	$17,000	$17,000
				2023 Total:	**$552,000**	**$552,000**
				Total Project:	**$552,000**	**$552,000**

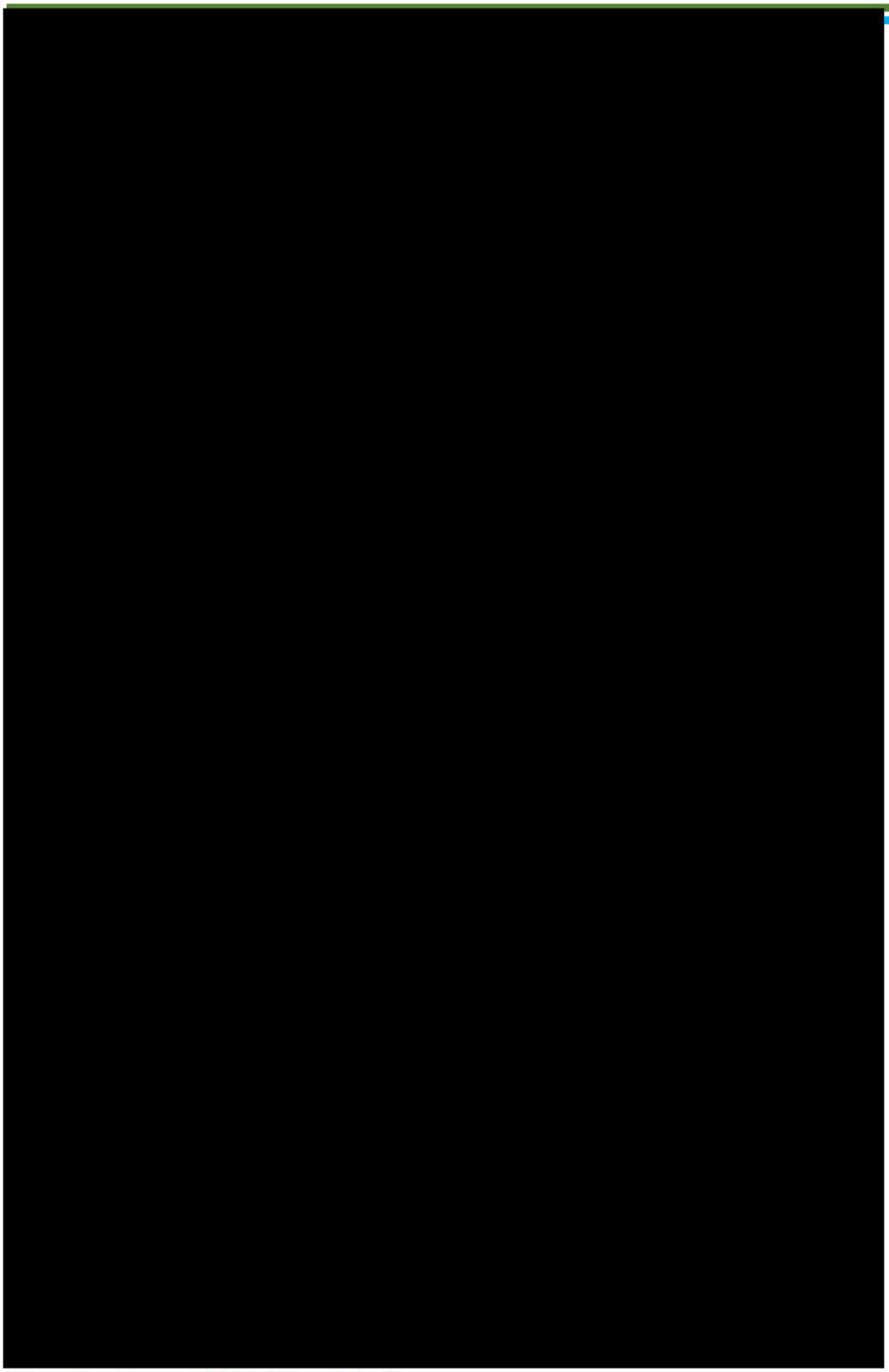
Map for [redacted]



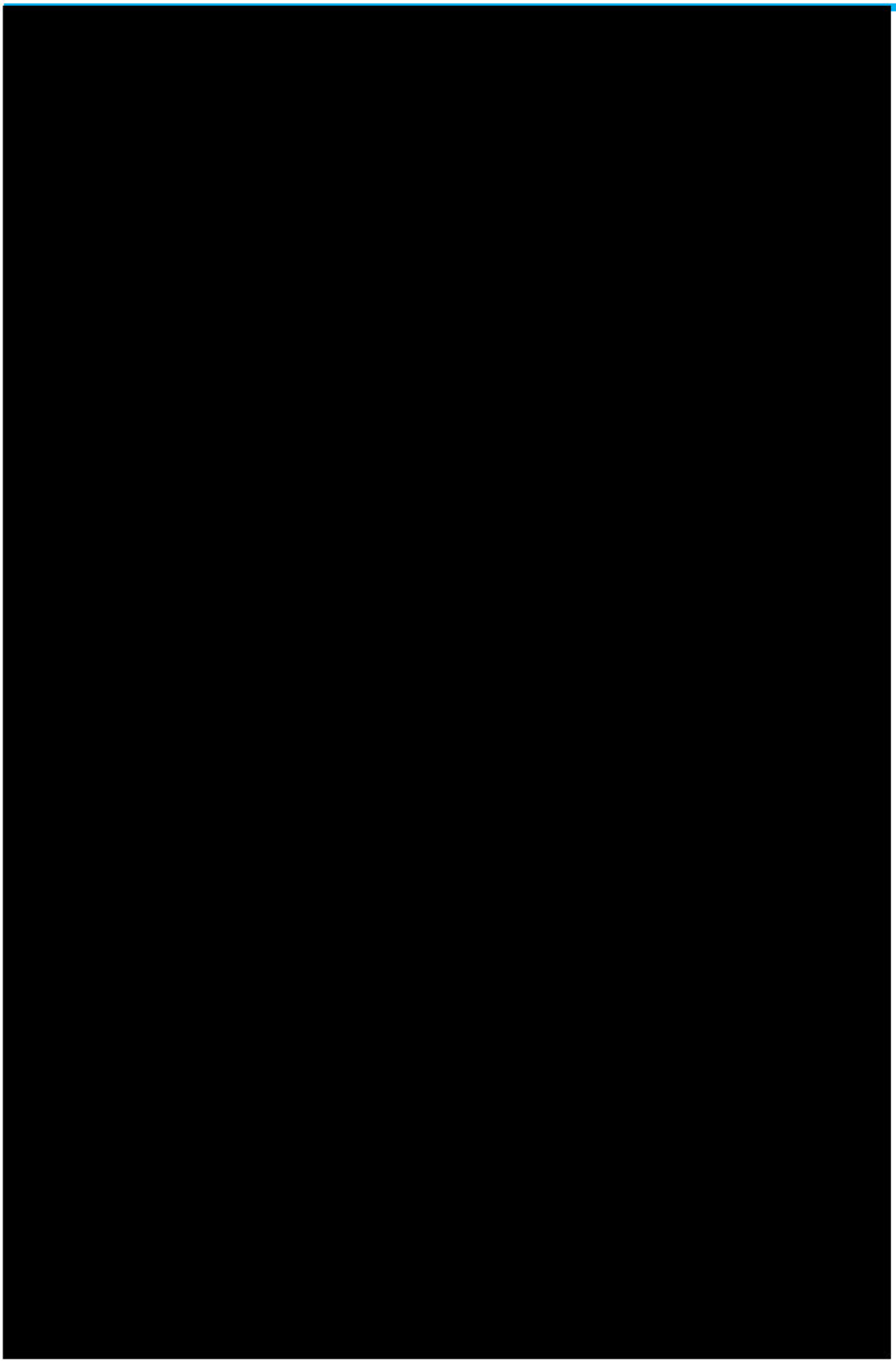
Map for Fuse 505 (Hartford):

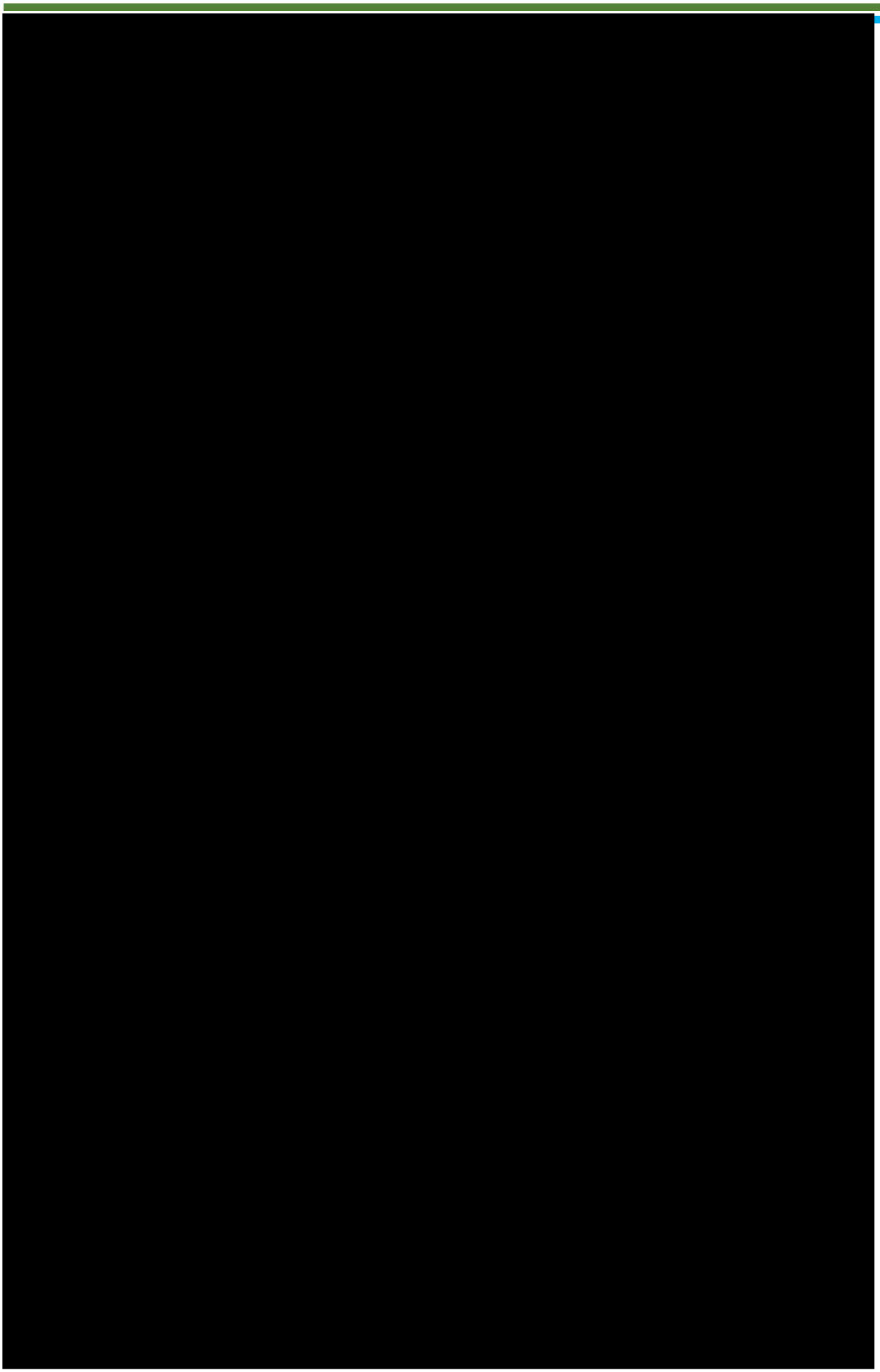


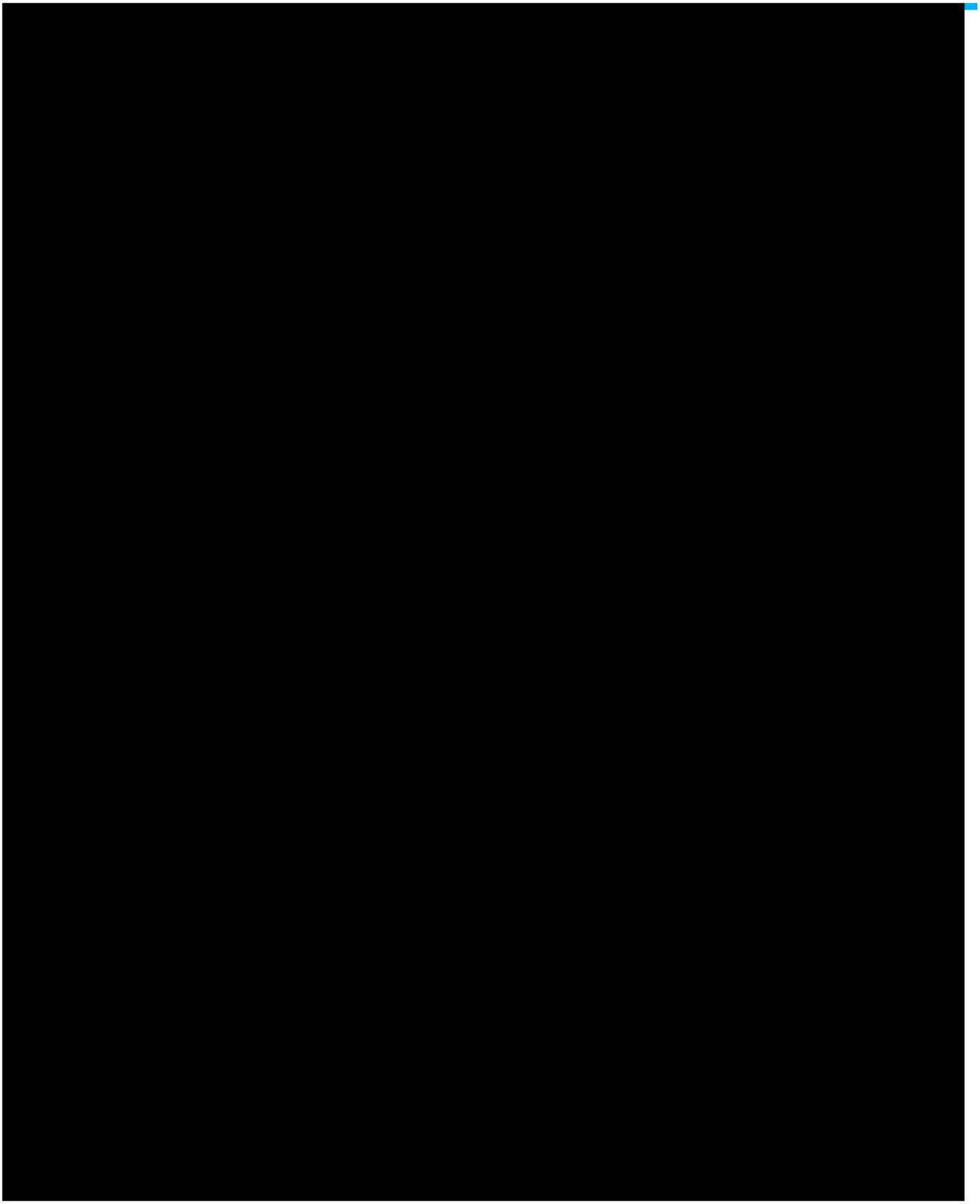
Map for Fuse 306 (Cheshire):



Map for Fuse 1880 (Cheshire):







Map for Fuse 11157 (Tolland):

