EVERSOURCE

Project Approval Form

| Project Title: Town of Union Reliability Improvements | Project Number: CD02567 |
|---|---|
| **Date Prepared:** 12/12/2024 | **Company:** Eversource CT |
| **Organization: Distribution Engineering** | **Project Category:** SMART SWITCHES PROGRAM |
| **Project Initiator:** [redacted] | **Project Type:** Specific |
| **Initiating Organization:** Distribution | **Capital Investment part of original Op Plan:** No |
| **Project Manager:** [redacted] | **Emergency Related Request?** Yes |
| **Project Sponsor:** [redacted] | **Facility Type** (check all that apply):<br>☐ PTF ☐ non-PTF ☒ Distribution ☐ N/A (General Plant) |
| **Required in service date: 6/30/2025** | |
| **Total Capital Request: $731K** | **Authorization Type:** Full Funding |

# 1. Executive Summary

Full funding is being requested for this project at a cost of $731K which is 94% of the partial funding estimate of $777K. CD02567 was partially approved on 9/26/2024. There is no scope change on the project. This project falls within the 15% threshold relative to the partial funding estimate and is being requested with no further changes anticipated.

The original project was presented as follows:

*Project CD02567 is being established after a town inquiry into the poor reliability performance in the Town of Union as demonstrated on the 2023 Union Reliability Scorecard.*

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

- *Project Location:*
  - *Division: Central*
  - *District: Tolland*
  - *City: Union*

# 2. Project Cost Summary

Note: Dollar values are in thousands.

| Capital Costs | 2025 | 2026 | Year 3+ | Total |
|---|---|---|---|---|
| Internal Labor and Construction Equipment | 51.9 | 0.0 | 0.0 | 51.9 |
| Outside Services | 36.9 | 0.0 | 0.0 | 36.9 |
| Materials | 310.1 | 0.0 | 0.0 | 310.1 |
| Removals | 10.6 | 0.0 | 0.0 | 10.6 |
| Risk and Contingency | 51.0 | 0.0 | 0.0 | 51.0 |
| Other | 0.0 | 0.0 | 0.0 | 0.0 |
| **Subtotal** | **460.6** | **0.0** | **0.0** | **460.6** |

| Indirect Capital Costs | 2025 | 2026 | Year 3+ | Total |
|---|---|---|---|---|
| Indirects/Overheads (including benefits) | 271.1 | 0.0 | 0.0 | 271.1 |
| Capitalized interest or AFUDC, if any | 0.0 | 0.0 | 0.0 | 0.0 |
| **Subtotal** | **271.1** | **0.0** | **0.0** | **271.1** |

| | | | | |
|---|---|---|---|---|
| **Total Capital Costs (Gross)** | **731.7** | **0.0** | **0.0** | **731.7** |

| | | | | |
|---|---|---|---|---|
| Less Total Customer Contribution | **0.0** | **0.0** | **0.0** | **0.0** |

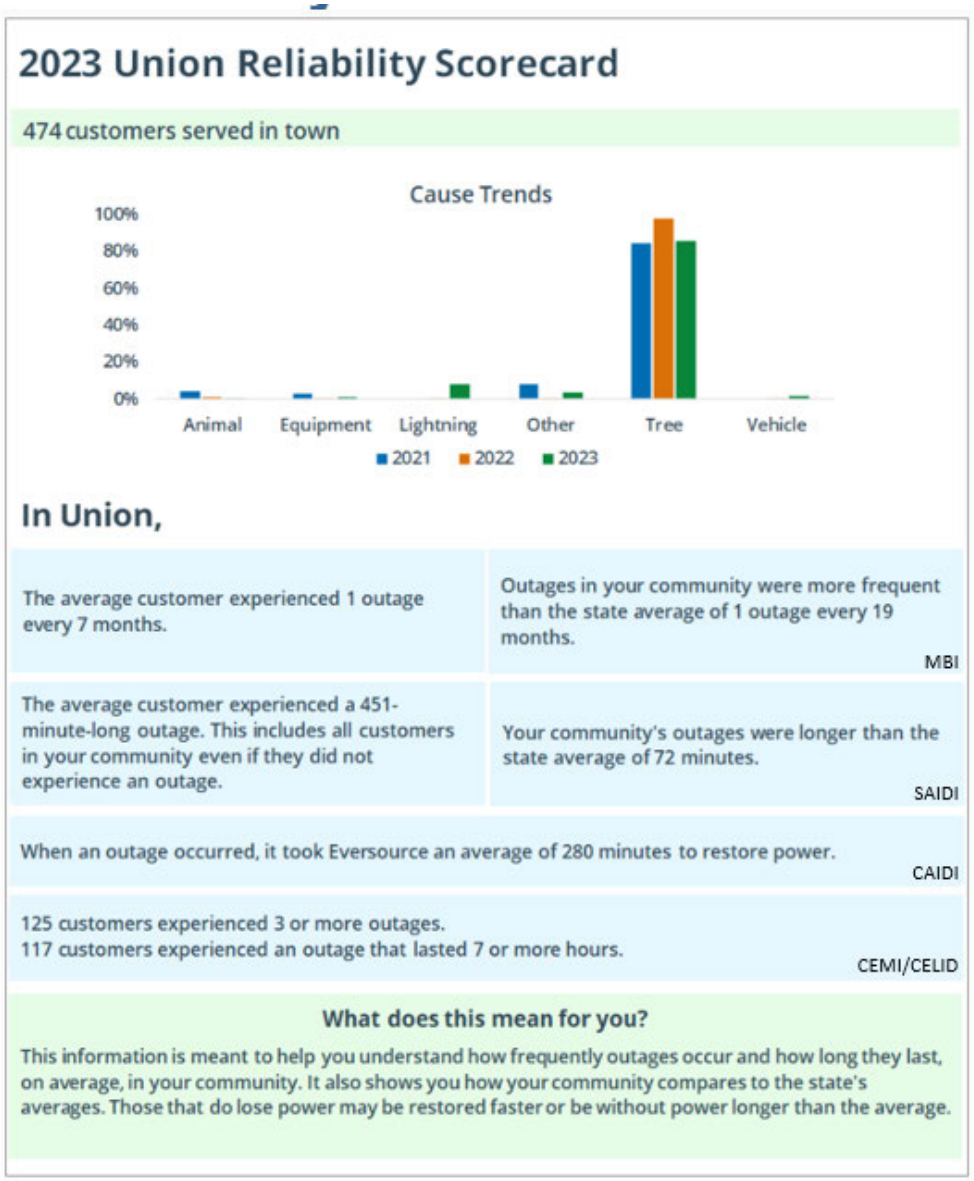
| | | | | |
|---|---|---|---|---|
| **Project Costs (Net of Reimbursement)** | **731.7** | **0.0** | **0.0** | **731.7** |

# 3. Technical Justification

## Background, Project Need/Justification, and Project Scope

### a. Background

- This project is being established after a town inquiry into the poor reliability performance in the Town of Union as demonstrated on the 2023 Union Reliability Scorecard shown below.



**2023 Union Reliability Scorecard**

474 customers served in town



**In Union,**

| | |
|---|---|
| The average customer experienced 1 outage every 7 months. | Outages in your community were more frequent than the state average of 1 outage every 19 months. MBI |
| The average customer experienced a 451-minute-long outage. This includes all customers in your community even if they did not experience an outage. | Your community's outages were longer than the state average of 72 minutes. SAIDI |
| When an outage occurred, it took Eversource an average of 280 minutes to restore power. CAIDI | |
| 125 customers experienced 3 or more outages.<br>117 customers experienced an outage that lasted 7 or more hours. CEMI/CELID | |

**What does this mean for you?**

This information is meant to help you understand how frequently outages occur and how long they last, on average, in your community. It also shows you how your community compares to the state's averages. Those that do lose power may be restored faster or be without power longer than the average.

[redacted]

## b. Project Need

The project was created to address the Town of Union's concern with poor reliability. The town's reliability suffered in 2023 and is projected to suffer again in 2024 with poor reliability due to the outage events that have occurred already in 2024.

## c. Project Scope

As discussed earlier the project will focus on [redacted]

[redacted]

[redacted]

**Major Material:**

- 3 - Three phase reclosers
- 4 - Single phase reclosers with DSCADA
- 10 Trip Savers
- 1 – 333 kVA 23/13.8 kV Step Transformer

# 4. Alternatives Considered

There are three options considered to help improve the reliability to the Town of Union:

**Option 1 ($761k) –** [redacted]

[redacted]

**Option 2 ($1,530k) –** [redacted]

[redacted]

**Option 3 ($511k) –** [redacted]

[redacted]

[redacted]

**Project Option Comparison**

| [redacted] | **Options** |
|---|---|
| [redacted] | |

[redacted]

| Authorization Type | Full | Partial | Partial |
|---|---|---|---|
| Total Cost | $761k | $1,530k | $511k |
| Capital Cost | $731k | $1,448k | $489k |
| Expense Cost | $30k | $82k | $22k |
| Circuit MVA capacity added/removed | 0 | 0 | 0 |
| Circuit Cost / MVA added | 0 | 0 | 0 |
| Preferred option | X | | |

## 5. Project Schedule

Add any additional milestones that are pertinent to the project

| Milestone/Phase Name | Estimated Date |
|---|---|
| Partial Approval | Sept 2024 |
| 100% Detailed Engineering Completion | Oct 2024 |
| Fully Funded | Dec 2024 |
| Construction Start | Jan 2025 |
| In Service Date | Jun 2025 |

## 6. Regulatory Decisions

N/A

## 7. Codes and Standards

N/A

## 8. Risk and Contingencies

Risk Mitigation:

| Risk Event | Risk Horizon | Likelihood of Occurrence | Risk / Mitigation |
|---|---|---|---|
| Actual cost higher than estimated due to scope changes. | 2025 | Medium | Constructing a 1,000 ft section of line in a heavily treed area proposes some risk of overruns |
| Customer Permission/Siting Council/Municipal Approvals | 2025 | Medium | Constructing a 1,000 ft pole line extension will require adjacent owner consent. Preliminary discussions with the Town will help will obtaining all necessary approvals |
| Internal construction resources not available to perform the work. | 2025 | Medium | The extent of the planned work is not extensive. Internal resources planned. |
| Internal engineering resources not available to perform the work. | 2024 | Medium | External resources may need to write the project. Internal resources tentatively planned to support remainder of the project, particularly within the areas of construction supervision, equipment settings. |
| Materials Shortage or long lead times | 2025 | Medium | Some long lead items are required for this project and will need to be pre-ordered to minimize the impact to the project |
| Storm delays | 2025 | Medium | If storm activity delays work, we may be forced to use external resources |

| | | | |
|---|---|---|---|
| System abnormal configuration | 2025 | Low | Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods. |
| Wetlands / Environmentally sensitive area | 2025 | Low | No poles will be placed in the wetlands |

## 9. References

| References |
|---|
| 1. N/A |

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

| Attachment | Included in Submittal? |
|---|---|
| A1. Partial Funding PAF | *YES* |
| A. Cost Estimate | *YES* |
| B. Geographic Map – Town of Union Backbone | *YES* |
| C. Geographic Map – Buckley Highway Side tap | *YES* |
| D. Geographic map – [redacted] Area | *YES* |
| E. [redacted] One-Line | *YES* |
| F. [redacted] Load Sheet | *YES* |

EVERSOURCE

Project Approval Form

**A1 - Partial Funding PAF:**

| **Project Title: Town of Union Reliability Improvements** | **Project Number: CD02567** |
|---|---|
| **Date Prepared:** 09/05/2024 | **Company:** Eversource CT |
| **Organization: Distribution Engineering** | **Project Category:** SMART SWITCHES PROGRAM |
| **Project Initiator:** [redacted] | **Project Type:** Specific |
| **Initiating Organization:** Distribution | **Capital Investment part of original Op Plan:** No |
| **Project Manager:** [redacted] | **Emergency Related Request?** Yes |
| **Project Sponsor:** [redacted] | **Facility Type** (check all that apply)**:** ☐ PTF ☐ non-PTF ☒ Distribution ☐ N/A (General Plant) |
| **Required in service date: 6/30/2025** | |
| **Total Capital Request: $777K** | **Authorization Type:** Partial Funding |

# 1. Executive Summary

Project CD02567 is being established after a town inquiry into the poor reliability performance in the Town of Union as demonstrated on the 2023 Union Reliability Scorecard.

- [redacted]

- Project Location:
  - Division: Central
  - District: Tolland
  - City: Union

## 2. Project Cost Summary

Note: Dollar values are in thousands.

| Capital Costs | 2024 | 2025 | Total |
|---|---|---|---|
| Internal Labor and Construction Equipment | 24.2 | 26.4 | 50.6 |
| Outside Services | 69.3 | 75.7 | 144.9 |
| Materials | 77.3 | 84.5 | 161.8 |
| Removals | 53.4 | 58.3 | 111.6 |
| Other | 0.5 | 0.5 | 1.0 |
| Risk and Contingency | 0.0 | 0.0 | 0.0 |
| **Subtotal** | **224.7** | **245.4** | **470.0** |

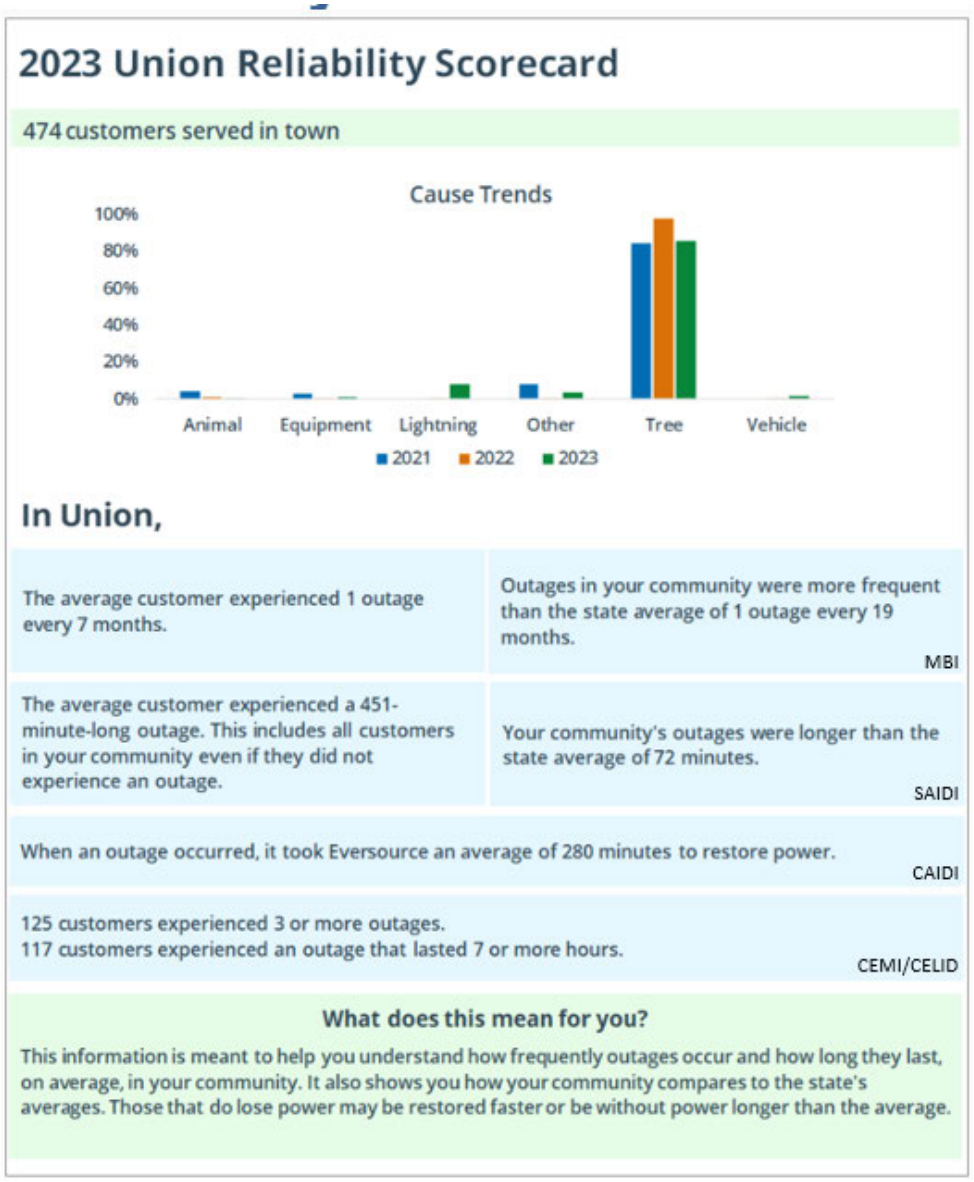
| Indirect Capital Costs | 2024 | 2025 | Total |
|---|---|---|---|
| Indirects/Overheads (including benefits) | 137.7 | 150.4 | 288.2 |
| Capitalized interest or AFUDC, if any | 9.1 | 10.0 | 19.1 |
| **Subtotal** | **146.9** | **160.4** | **307.3** |
| | | | |
| **Total Capital Costs (Gross)** | **371.5** | **405.8** | **777.3** |
| | | | |
| Less Total Customer Contribution | **0.0** | **0.0** | **0.0** |
| | | | |
| **Project Costs (Net)** | **371.5** | **405.8** | **777.3** |

## 3. Technical Justification

### Background, Project Need/Justification, and Project Scope

#### a. Background

- This project is being established after a town inquiry into the poor reliability performance in the Town of Union as demonstrated on the 2023 Union Reliability Scorecard shown below.



## 2023 Union Reliability Scorecard

474 customers served in town

Cause Trends



### In Union,

| | |
|---|---|
| The average customer experienced 1 outage every 7 months. | Outages in your community were more frequent than the state average of 1 outage every 19 months. MBI |
| The average customer experienced a 451-minute-long outage. This includes all customers in your community even if they did not experience an outage. | Your community's outages were longer than the state average of 72 minutes. SAIDI |

When an outage occurred, it took Eversource an average of 280 minutes to restore power. CAIDI

125 customers experienced 3 or more outages.
117 customers experienced an outage that lasted 7 or more hours. CEMI/CELID

**What does this mean for you?**

This information is meant to help you understand how frequently outages occur and how long they last, on average, in your community. It also shows you how your community compares to the state's averages. Those that do lose power may be restored faster or be without power longer than the average.

- [redacted]

- [redacted]

[redacted]

## b. Project Need

[redacted]

## c. Project Scope

[redacted]

[redacted]

**Major Material:**

- 3 - Three phase reclosers
- 4 - Single phase reclosers with DSCADA
- 10 Trip Savers
- 1 – 333 kVA 23/13.8 kV Step Transformer

## 4. Alternatives Considered

There are three options considered to help improve the reliability to the Town of Union:

**Option 1 ($817k) –** [redacted]

[redacted]

**Option 2 ($1,530k) –** [redacted]

[redacted]

[redacted]

**Option 3 ($511k) –** [redacted]

[redacted]

[redacted]

**Project Option Comparison**

| Design Criteria | Options |
|---|---|
| Normal loads < 80% of UG rating | [redacted] |
| Normal loads < 90% of OH rating | |
| Contingency loads < 100% of rating | |

| | | | |
|---|---|---|---|
| All zones < 500 customers | [redacted] | | |
| No single event impacts more than 33% o the Town's customers | | | |
| Uses trip saver automation | | | |
| Uses single phase reclosers with DSCADA automation | | | |
| Uses vacuum fuses automation | | | |
| Authorization Type | Partial | Partial | Partial |
| Total Cost | $817k | $1,530k | $511k |
| Capital Cost | $777k | $1,448k | $489k |
| Expense Cost | $40k | $82k | $22k |
| Circuit MVA capacity added/removed | 0 | 0 | 0 |
| Circuit Cost / MVA added | 0 | 0 | 0 |
| Preferred option | X | | |

## 5. Project Schedule

| Milestone/Phase Name | Estimated Date |
|---|---|
| Partial Approval | September 2024 |
| 100% Detailed Engineering Completion | October 2024 |
| Fully Funded | November 2024 |
| Construction Start | December 2024 |
| In Service Date | June 2025 |

## 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. | 2025 | Medium | Constructing a 1,000 ft section of line in a heavily treed area proposes some risk of overruns |
| Customer Permission/Siting Council/Municipal Approvals | 2025 | Medium | Constructing a 1,000 ft pole line extension will require adjacent owner consent. Preliminary discussions with the Town will help will obtaining all necessary approvals |

| | | | |
|---|---|---|---|
| Internal construction resources not available to perform the work. | 2025 | Medium | The extent of the planned work is not extensive. Internal resources planned. |
| Internal engineering resources not available to perform the work. | 2024 | Medium | External resources may need to write the project. Internal resources tentatively planned to support remainder of the project, particularly within the areas of construction supervision, equipment settings. |
| Materials Shortage or long lead times | 2025 | Medium | Some long lead items are required for this project and will need to be pre-ordered to minimize the impact to the project |
| Storm delays | 2025 | Medium | If storm activity delays work, we may be forced to use external resources |
| System abnormal configuration | 2025 | Low | Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods. |
| Wetlands / Environmentally sensitive area | 2025 | Low | No poles will be placed in the wetlands |

## 9. References

N/A

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

| Attachment | Included in Submittal? |
|---|---|
| A. Cost Estimate | *YES* |
| B. Geographic Map – Town of Union Backbone | *YES* |
| C. Geographic Map – Buckley Highway Side tap | *YES* |
| D. Geographic map – [redacted] Area | *YES* |
| E. [redacted] One-Line | *YES* |

| | |
|---|---|
| F. 1[redacted] Load Sheet | *YES* |

Attachment A: Cost Estimate

Connecticut Light & Power
A Northeast Utilities Company

**Specific Project Proposal - Project #: CD02567**
Town of Union Reliability Improvements

Design Alternative CD02567-01

**Estimate**

Preliminary Estimate Summary

| | |
|---|---|
| Revision Number: | 0 |
| Contingency: | 20.00% |
| SubTotal: | $255,530 |
| Contingency Amount: | $51,106 |
| Estimate: | $306,637 |
| Reimbursement: | $0 |
| Net Amount: | $306,637 |
| Description: | Install 2 new reclosers and replace 1 recloser |

| Item Description | CU | $ / Per | Qty | Amount |
|---|---|---|---|---|
| SWITCHING<br>OH/DB/UG - SWITCHING NonNetwork - Average | 23-ALL17 | [redacted] | | $4,562.48 |
| TRAFFIC<br>OH/DB/UG - Traffic Control - Police Officer | 23-ALL18 | | | $10,000.00 |
| SECTIONALIZE<br>OH-Vertical Disconnect Switches-600/900 amp 3-1ph | 23-OH43 | | | $40,104.48 |
| SECTIONALIZE<br>OH - Recloser Control - setting changes only<br>Change VS to SR pole 35 | 23-OH39A | | | $6,351.28 |
| SECTIONALIZE<br>OH - Remove Recloser (any)<br>Pole 420 | 23-OH42 | | | $7,352.80 |
| SECTIONALIZE<br>OH - Recloser - 3ph<br>Poles 420, 1742 and 190 | 23-OH38 | | | $187,159.44 |

**Associated / Impacted Devices**

| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|
| Existing | [redacted] | | | | | | |

Asset & Investment Management System 9/5/2024 Page 5 of 15

Connecticut Light & Power
A Northeast Utilities Company

**Specific Project Proposal - Project #: CD02567**
Town of Union Reliability Improvements

Design Alternative CD02567-02

**Estimate**

Preliminary Estimate Summary

| | |
|---|---|
| Revision Number: | 0 |
| Contingency: | 20.00% |
| SubTotal: | $70,000 |
| Contingency Amount: | $14,000 |
| Estimate: | $84,000 |
| Reimbursement: | $0 |
| Net Amount: | **$84,000** |

Description: Install tripsavers on Buckley Highway sidetap

| Item Description | CU | $ / Per | Qty | Amount |
|---|---|---|---|---|
| SECTIONALIZE<br>1PH Tripsaver<br>1-40K tripsaver pole 292 | 23-OH41A | [redacted] | | $8,000.00 |
| SECTIONALIZE<br>1PH Tripsaver<br>1-40K tripsaver pole 318 | 23-OH41A | | | $8,000.00 |
| SECTIONALIZE<br>1PH Tripsaver<br>1-65K tripsaver pole 3009 | 23-OH41A | | | $8,000.00 |
| SECTIONALIZE<br>3PH Tripsaver<br>2-80K tripsavers at pole 218 | 23-OH41B | | | $23,000.00 |
| SECTIONALIZE<br>3PH Tripsaver<br>3-100K tripsavers pole 200 | 23-OH41B | | | $23,000.00 |

Connecticut Light & Power
A Northeast Utilities Company

## Specific Project Proposal - Project #: CD02567
Town of Union Reliability Improvements

Design Alternative CD02567-03

**Estimate**

| | Preliminary Estimate Summary |
|---|---|
| Revision Number: | 0 |
| Contingency: | 24.00% |
| SubTotal: | $344,037 |
| Contingency Amount: | $82,569 |
| Estimate: | $426,606 |
| Reimbursement: | $0 |
| Net Amount: | $426,606 |
| Description: | [redacted] |

| Item Description | CU | $ / Per | Qty | Amount |
|---|---|---|---|---|
| TRAFFIC<br>OH/DB/UG - Traffic Control - Flagger<br>15% of subtotal | 23-ALL19 | [redacted] | | $30,000.00 |
| SECTIONALIZE<br>OH - Cutouts or Arresters - 1ph<br>15K fuse pole [redacted] | 23-OH19 | | | $1,782.56 |
| OTHER<br>OTHER<br>24 Vacuum fuses at $2,193 per location for all unfused 13.8 kV transf [redacted] and Webster | 23-ALL14 | | | $52,632.00 |
| OTHER<br>OTHER<br>4 new single phase reclosers with DSCADA at $27K each | 23-ALL14 | | | $108,000.00 |
| SECTIONALIZE<br>1PH Tripsaver<br>Poles 469, 543 and 20885 | 23-OH41A | | | $24,000.00 |
| SECTIONALIZE<br>OH - Cutouts or Arresters - 1ph<br>Replace 30K fuse with solids pole 543 | 23-OH19 | | | $1,782.56 |
| TREE<br>OH - Tree Trimming<br>tree trimming to fill in the gap on Webster Rd | 23-OH61 | | | $39,000.00 |
| OH WIRE<br>OH - Line Extension - 1ph (any gauge)<br>Webster Rd | 23-OH32 | | | $78,000.00 |

Asset & Investment Management System 9/5/2024 Page 11 of 15

Connecticut Light & Power
A Northeast Utilities Company

## Specific Project Proposal - Project #: CD02567
Town of Union Reliability Improvements

Design Alternative CD02567-03

| | | | | |
|---|---|---|---|---|
| XF | 23-OH49 | 8840.00 / LOC | 1 | $8,840.00 |
| OH - Stepdown - 1ph - on POLE<br>Webster Rd | | | | |

**Associated / Impacted Devices**

| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|
| Existing | [redacted] | [redacted] | | | | | |
| Existing | | | | | | | |
| Existing | | | | | | | |

**Reliability Projection**

Title:

Outage Start Date: 9/4/2020 Outage End Date: 9/4/2024 Years History: 4.00

[redacted]

Attachment B: Geographic Map – [redacted] Backbone in the Town of Union

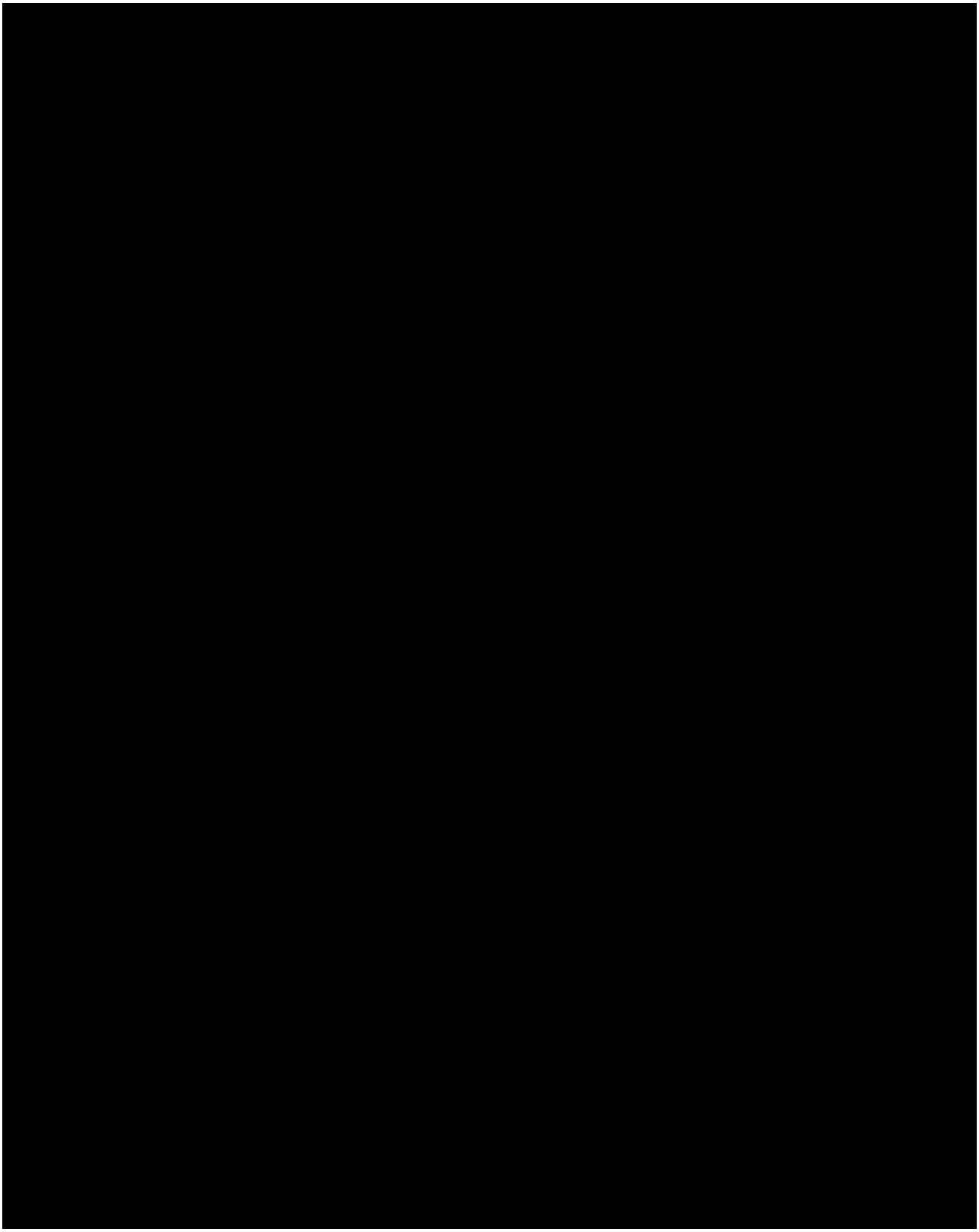
Before:



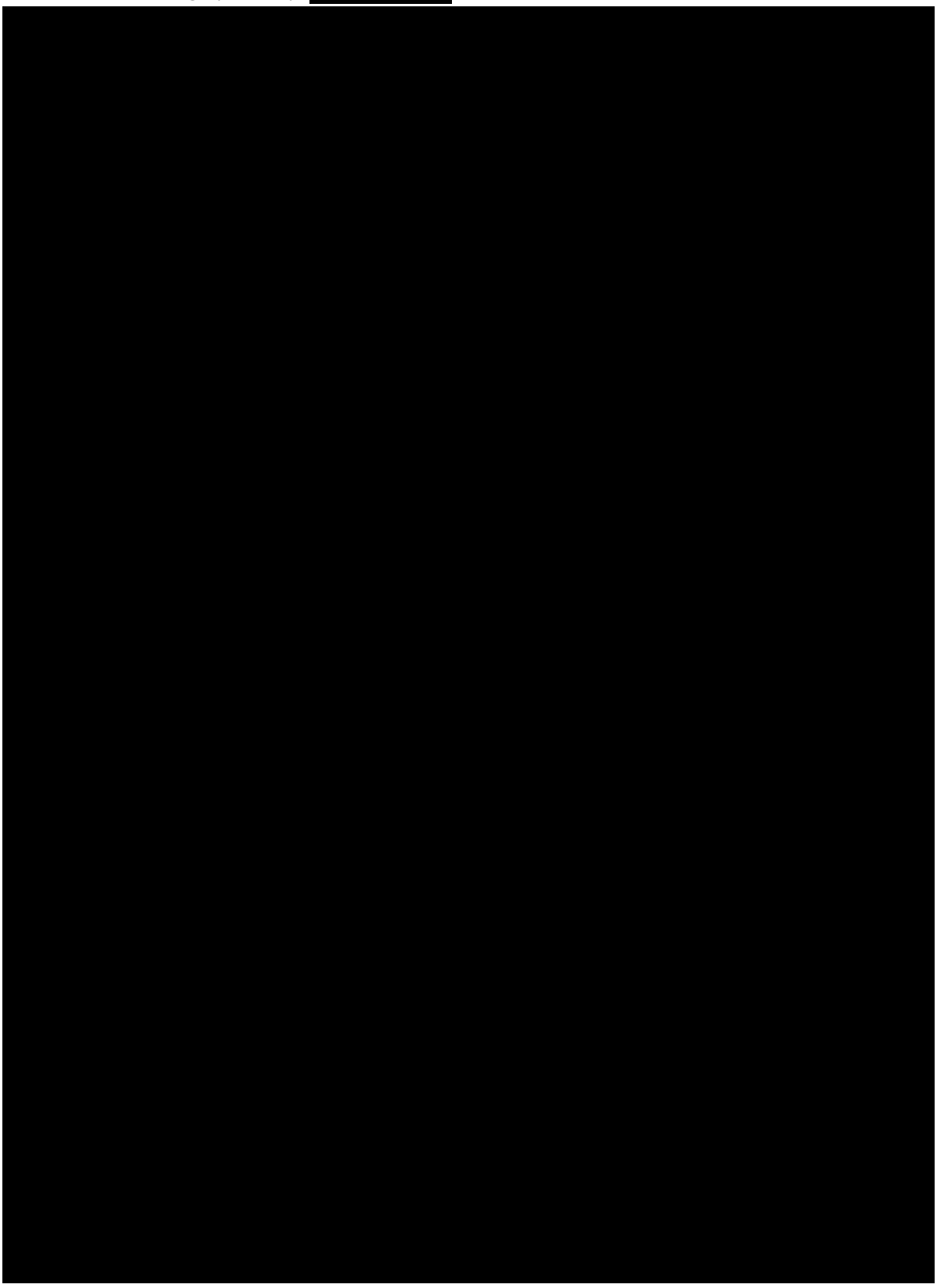
After:



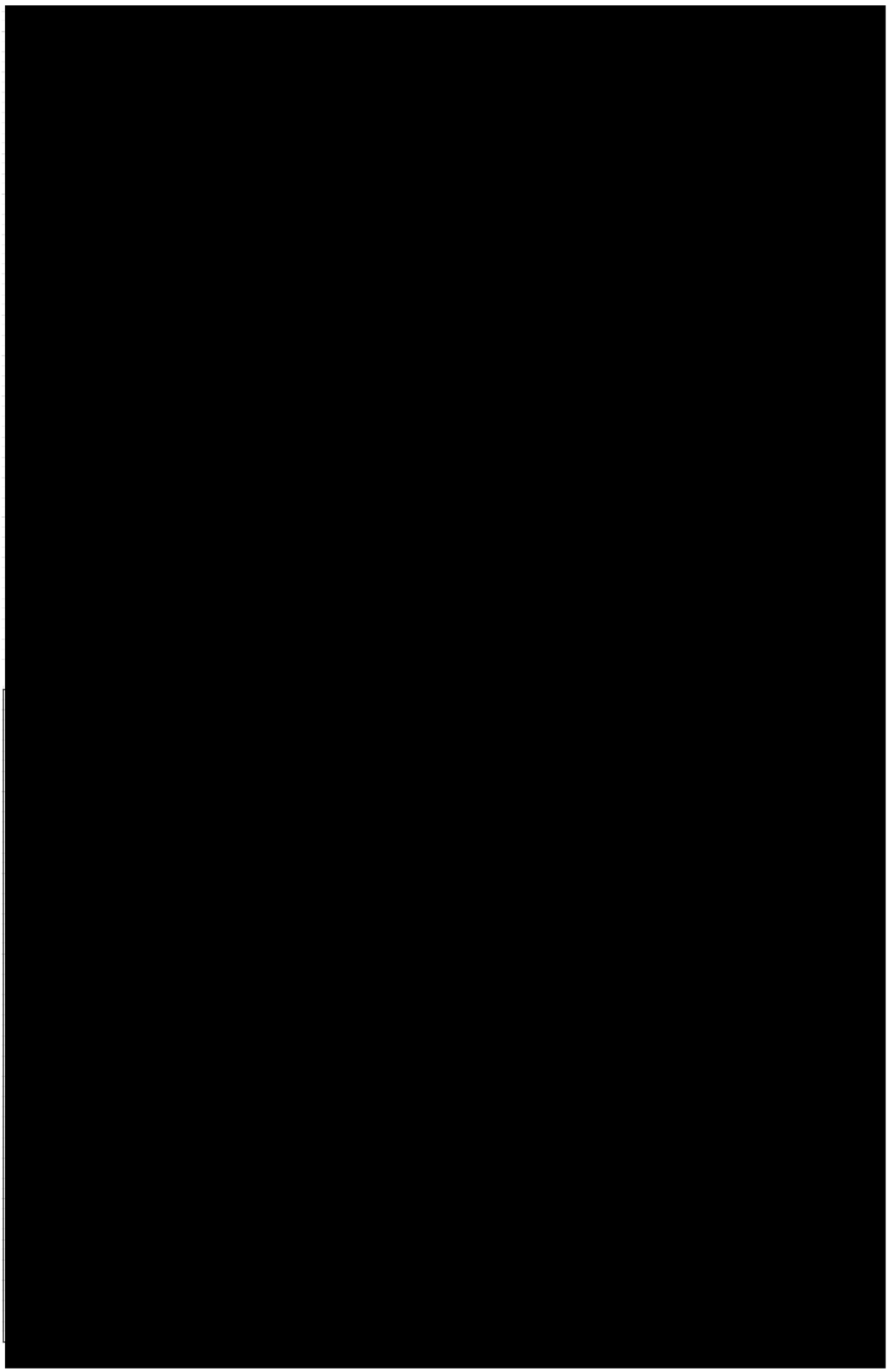
Attachment C: Geographic Map – Buckley Highway Side tap



Attachment D: Geographic Map - [redacted] Area



Attachment E: [redacted] One-line



Attachment F: [redacted]

