# Operations Project Authorization Form

| | |
|---|---|
| **Project Title: 4.8KV Grounding CENTRAL** | **Project Number:01CTRL48P** |
| **Date Prepared:** 05/26/2022 | **Company:** Eversource CT |
| **Organization: Operations Services** | **Class(es) of Plant:** D Line |
| **Project Initiator:** [redacted] | **Project Category:** Lines - General |
| **Project Manager:** [redacted] | **Project Type:** Specific |
| **Project Sponsor:** [redacted] | **Capital Investment part of original Operating Plan:** Yes |
| **Estimated in service date: 05/2022** | **Emergency Related Request?** No |
| **Eng./Constr. Resources Budgeted?** Yes | **Facility Type** (check all that apply)**:** ☐ PTF ☐ non-PTF X Distribution |
| **Total Gross Capital Request: $1,099K** | **Authorization Type:** Full Funding |

## Executive Summary

This initiative captures the cost necessary to remediate 4.8 kV ungrounded Delta system to comply with PURA regulatory requirements under Docket No. 96-05-05, National Electric Safety Code (NESC) 2017 Section 9 "Grounding Methods for Electrical Supply and Communication Facilities" and Eversource' Standards DTR 16.411, DTR 16-704. The proper grounding of electrical circuits and equipment is intended to prevent damage to equipment, to safeguard property against fire, and to reduce the hazard of electrical shock. This project is consistent with the requirements of Docket.

**The total project request is $1,099K**

Appendix 2
Operations Project Authorization Form

## Project Costs Summary

*Note: Dollar values are in thousands*

| Capital Costs | Year 20__ | Year 20__ | Year 2022 | Total |
|---|---|---|---|---|
| **Direct Capital Costs** | | | | |
| Internal Labor and Construction Equipment | | | - | - |
| Outside Services | | | $593.3 | $593.3 |
| Materials | | | $8.6 | $8.6 |
| Removals | | | - | - |
| Risk and Contingency | | | - | - |
| Other | | | - | - |
| Subtotal – Direct Costs | | | $602 | $602 |
| **Indirect Capital Costs** | | | | |
| Indirect/Overheads (including benefits) | | | $496.8 | $496.8 |
| Capitalized interest or AFUDC, if any | | | - | - |
| Subtotal – Indirect Costs | | | $496.8 | $496.8 |
| **Total Gross Capital Costs** | | | **$1,099** | **$1,099** |
| Customer Contribution | | | - | - |
| **Total Net Capital Project Costs** | | | **$1,099** | **$1,099** |

## Technical Justification:

### Project Need, Objective and Justification

The objective of the project is to comply with regulatory, NESC and Eversource' standards to properly ground its 4.8 kV Delta System in the Central region of CT.

Electric circuits are grounded when intentionally or accidentally connected to earth. Grounding prevents the occurrence of dangerous differences in potential between circuits, equipment, or conductor enclosures and the earth or objects in contact with the earth. For 4.8 kV grounding to be effective, the path to ground from circuits and equipment should be permanent and continuous and should have impedance sufficiently low to limit its potential above ground and to facilitate the operation of over-current devices in the circuit. The effectiveness of an intentional ground, such as a driven ground rod, can be nullified by high resistance to ground or loose or broken ground connections, which hamper or prevent the dissipation of fault currents and may contribute to the non-operation of overcurrent protective devices. This project covers grounding 4.8kV circuits in the Central area, specifically the Tolland and Simsbury areas. In the *References* section of this report there are two spreadsheets titled *Asplundh Complete Simsbury 2022_.xlsx* and *Asplundh Completed 4.8kv Tolland Area Asplundh 2022.xls* which showcase the locations that have been remediated in 2022.

### Project Scope

For year 2022, the Company will install grounds and remediate approximately 50 locations in the following towns: Bloomfield, Avon, Farmington, Granby, East Granby, Simsbury, Ashford, Stafford, Tolland, Somers, Suffield, and Windsor Locks.

Appendix 2
Operations Project Authorization Form

**Background**

In order to comply with NESC grounding requirement the Company will install grounding electrodes to its 4.8 kV Delta System in accordance to standards DTR 16.411, DTR 16-704.These project is driven by regulatory requirements under Docket 96-05-05 to upgrade its system in accordance to NESC requirement for "Grounding Methods for Electrical Supply and Communication Facilities"

## Alternatives Considered:

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

There are no alternatives.

## Regulatory Approvals:

*Are Regulatory body approvals needed for the project?*
No

## Project Schedule

| Milestone/Phase Name | Estimated Date |
|---|---|
| 100% Engineering Completion | 3/22 |
| Construction Start | 1/22 |
| In Service Date | 5/22 |
| | |
| | |
| | |

## Risks and Risk Mitigation Plans

For 4.8 kV grounding to be effective, the path to ground from circuits and equipment should be permanent and continuous and should have impedance sufficiently low to limit its potential above ground and to facilitate the operation of over-current devices in the circuit. The effectiveness of an intentional ground, such as a driven ground rod, can be nullified by high resistance to ground or loose or broken ground connections, which hamper or prevent the dissipation of fault currents and may contribute to the non-operation of overcurrent protective devices.

## References

Appendix 2
Operations Project Authorization Form

Asplundh Completed 4.8kv To

Asplundh Complete Simsbury 2022 .xlsx

## Appendices (One-Line Diagrams, Images, etc.)

*Reference appendices items in the appropriate section of the PAF and list items in the same order as referenced in the PAF*

*If the project has future financial benefits, please use the following table to provide the yearly amounts.*

| Financial Benefits | Year 20__ | Year 20__ | Year 20__ | Year 20__ |
|---|---|---|---|---|
| Capital | | | | |
| O&M | | | | |
| Other | | | | |
| **Total Financial Benefits** | | | | |

Describe the estimated future Capital, O&M and/or Other benefits noted above:

What functional area(s) will these benefits be reflected in?_____

***A representative from the respective functional area is required to be included as a project approver.***