EVERSOURCE

Project Approval Form

Project Title: [redacted]	**Project Number: CD01225**
Date Prepared: 11/09/2023	**Company:** Eversource CT
Organization: Distribution Engineering	**Project Category:** ISLANDED SUBSTATION PROGRAM
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: 12/31/2024	
Total Capital Request: $9,983k	**Authorization Type:** Full Funding

1. Executive Summary

[redacted]

[redacted]

Segment 1,7,8,16 and 17 to be completed in 2023 and the remainder to be finished in 2024.

- Approved Initial Funding Authorization: $5,439.2K at the 10/14/21 CT-PAC meeting.
- Requesting Full Funding authorization: $9,983k, a difference of $4,543.8K or 193% of the Initial Funding authorization.
- Project Location:
  - Division: Western
  - District: Torrington AWC
  - Town: Watertown

The variance is due to the following:

- **$1,632k Updated Labor and Material Costs:** The legacy estimating units used to produce the initial funding estimate is about 30% lower than the estimates used today, which were updated to reflect increased labor and material costs.
  - **$893k Material Variances:** The initial estimated material costs were $213k. The ACT estimated material cost is $1,106k. Given the scope of this project there have been issues with acquiring all the necessary components to complete the work. Devices that have contributed to this are primarily reclosers and step transformers required for the sectionalizing and conversion of existing circuit segments.
  - **$475k Labor Variances** The initial estimated labor cost between straight time and overtime labor was $823k. The ACT estimated combined labor cost is $1,298k. Part of this labor increase is due to difficulties with installing the new underground segment of the 24H8 getaway. The remainder of the labor variance is due to greater than anticipated contractor bids.
  - **$643k Removals**: The initial estimated removal costs were $400k. The ACT estimated removal costs are $1,043k. The variance is partially due to a 30% cost increase due to the old initial estimating units. The remainder of the variance is due to increased equipment shifting to accommodate the conversion work as proposed.
- **$2,459k Indirects/Overheads**: The initial estimated indirect/overhead costs were $1,434k. The ACT estimated cost is $3,894k.

2. Project Cost Summary

Note: Dollar values are in thousands.

Capital Costs	2022 Actual	2023 Estimate	2024 Estimate	2025 Estimate	Total
Direct Capital Costs					
Internal Labor and Construction Equipment	28.6	483.1	456.9	329.5	1,298.1
Outside Services	41.7	705.0	666.8	480.9	1,894.4
Materials	24.3	411.6	389.3	280.8	1,105.9
Removals	20.6	400.6	386.2	282.1	1,089.5
Risk and Contingency	0.0	237.7	258.5	202.6	698.9
Other	0.0	0.0	0.0	0.0	0.0
Subtotal	**115.2**	**2,238.1**	**2,157.6**	**1,575.9**	**6,086.8**
Indirect Capital Costs	**2022 Actual**	**2023 Estimate**	**2024 Estimate**	**2025 Estimate**	**Total**
Indirects/Overheads (including benefits)	75.1	1,169.7	1,528.5	1,120.4	3,893.7
Capitalized interest or AFUDC, if any	2.4	0.0	0.0	0.0	2.4
Subtotal	**77.6**	**1,169.7**	**1,528.5**	**1,120.4**	**3,896.2**
Total Capital Costs (Gross)	**192.8**	**3,407.7**	**3,686.1**	**2,696.4**	**9,983.0**
Less Total Customer Contribution	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Project Costs (Net of Reimbursement)	**192.8**	**3,407.7**	**3,686.1**	**2,696.4**	**9,983.0**

Explain unique payment provisions, if applicable:

3. Technical Justification

Background, Project Need/Justification, and Project Scope

a. Background

[redacted]

The Smart Switch Program is a continuation of an initiative that was approved as part of the System Resiliency PURA Docket 12-07-06RE01 which is a multiyear program to improve circuit reliability by adding automatic sectionalizing devices on overhead distribution circuits. The Smart Switch Program focuses on breaking up customer zones and lowering the average number of customers impacted by a backbone interruption.

[redacted]

b. Project Need

[redacted]

[redacted]

d. Project Scope

The scope of this project is as follows:

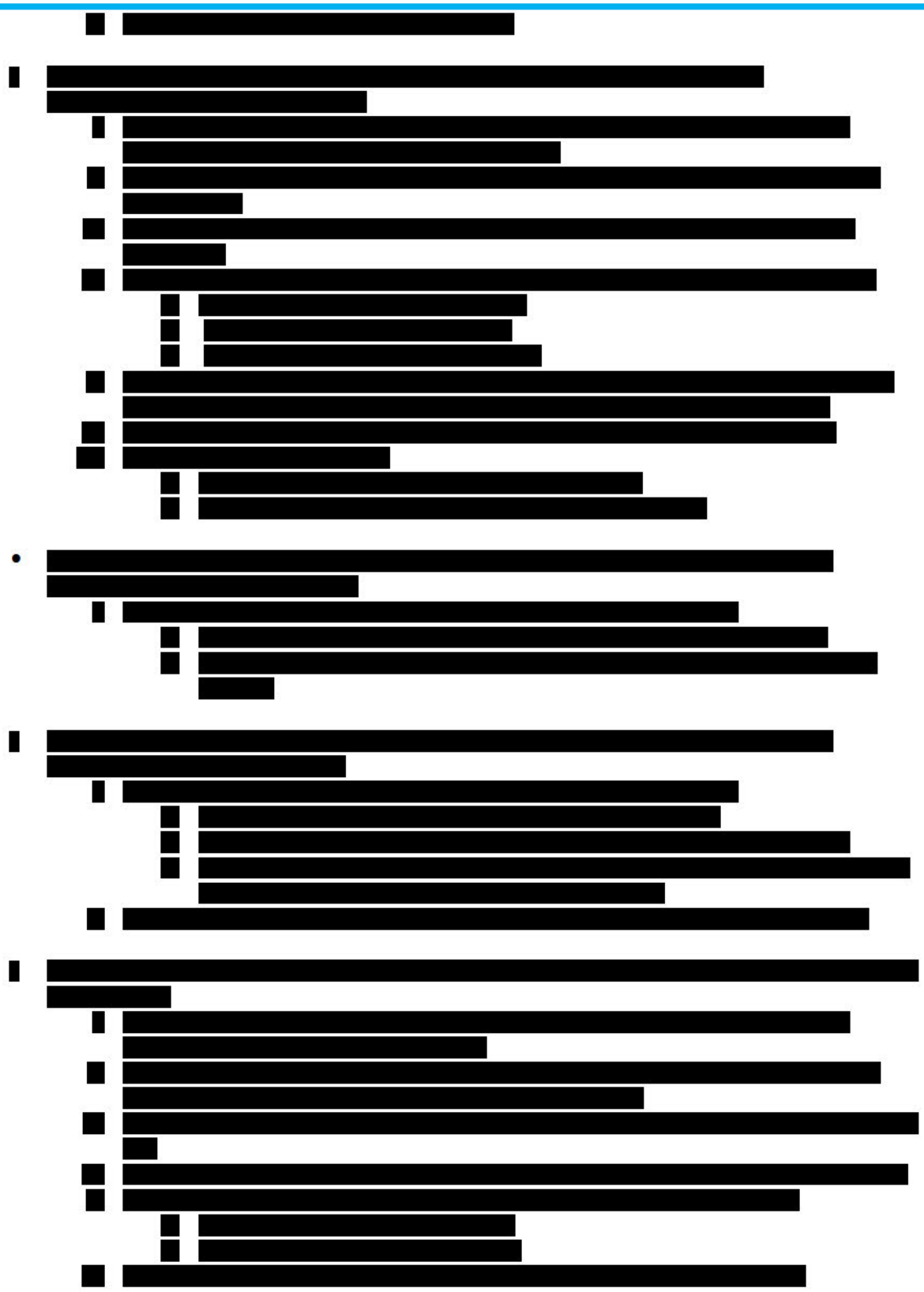
1. [redacted]

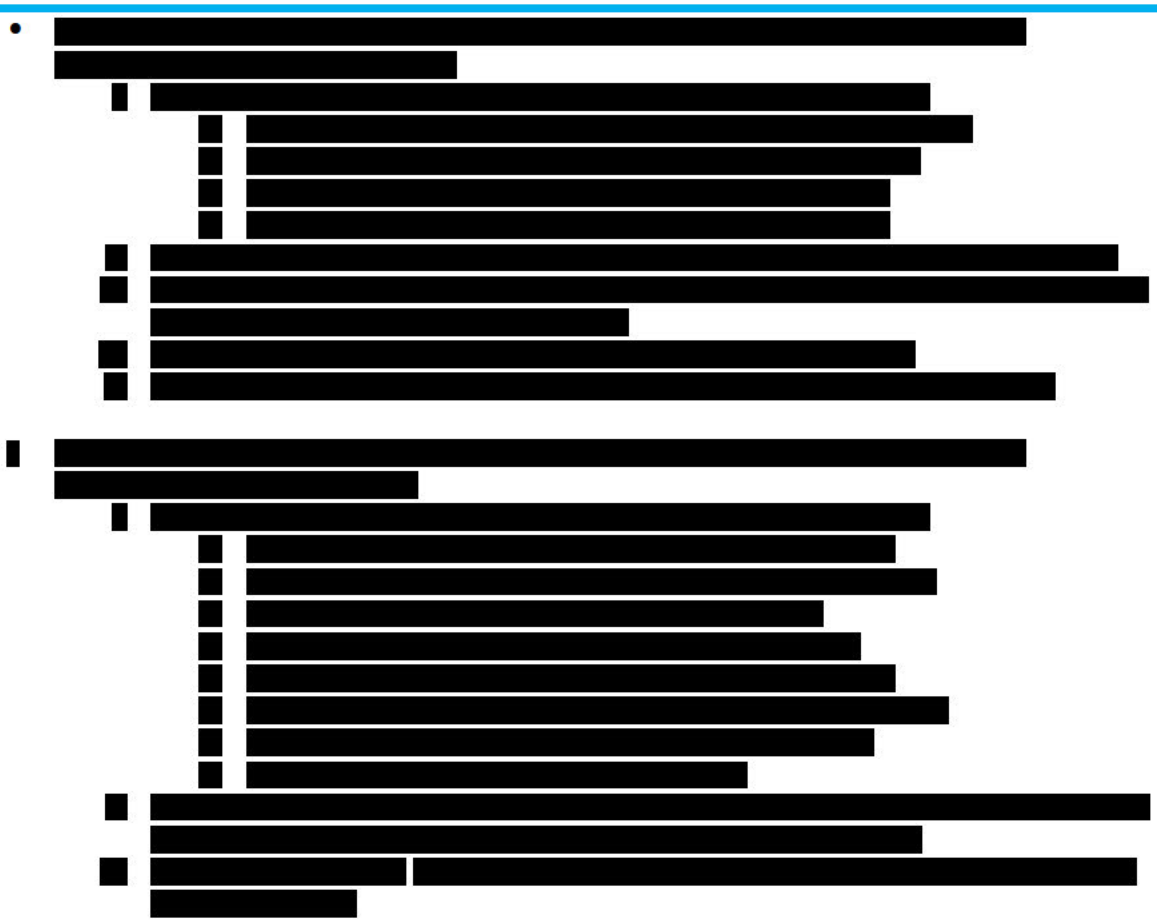
- [redacted]

- [redacted]

[redacted]

2. [redacted]





Major Material:

- 2,900' of UG 1000CU
- 53 – Single Phase 13.8kV transformers 25kVA
- 80 – Single Phase 13.8kV transformers 50kVA
- 17 – Single Phase 13.8kV transformers 75kVA
- 09 – Three Phase 13.8kV transformers 3-25kVA
- 01 – Three Phase 13.8kV transformers 3-50kVA
- 01 – Three Phase 13.8kV transformers 3-75kVA
- 05 – Single Phase Step-Down transformers from 13.8kV to 4.8kV 333kVA
- 01 – Single Phase Step-Down transformers from 13.8kV to 4.8kV 500kVA
- 01 – Three Phase Step-Down transformers from 13.8kV to 4.8kV 3-167kVA
- 05 – Three Phase Step-Down transformers from 13.8kV to 4.8kV 3-333kVA
- 09 – GOAB Switches
- 01 – 3-333kVA Regulators on Rack
- 22 – Cooper Nova Form-6 Reclosers
- 1,650' of 1/0 ACSR 175 MIL Covered Wire
- 1,850' of 556.5 AAC 175 MIL Covered Wire
- 900' of 556.5 AAC 270 MIL 25/30 kV Spacer cable
- 500' of line extension with 556.6 AAC 175 MIL Covered Wire.
- 2,500' of 750AL Aerial cable

5. Alternatives Considered

Project Option Comparison

[redacted]

Eliminating Islanded substation	-	X	-
Customer Interruption saved	174	153	–
Cost / CIS Saved	$37,737.15	$65,114.55	–
Cust Minute saved	187,827	198,596	171,018

Cost / CM Saved	$30.74	$50.17	$2.60
Authorization Type	Partial	Full	Partial
Capital Cost	$5,619k	$9,695k	$432k
Expense Cost	$155k	$268k	$11,916
Total Cost	$5,774k	$9,963M	$444k
Preferred option		X	

*Options Table uses updated 2023 Estimating Units

6. Project Schedule

Add any additional milestones that are pertinent to the project

Milestone/Phase Name	Estimated Date
Preliminary Approval	10/2021
Detailed Design	10/31/2022
Settings Requested	01/01/2023
Construction Start Date	03/2023
Construction End Date	12/2024

7. Regulatory Decisions

None

8. Codes and Standards

None

9. 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	Low	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	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Materials Shortage or long lead times	2024	High	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2024	Low	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2024	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	2024	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	2024	Low	Use of mats and specialty equipment, only work during certain times of the year.

10. References

References
1. DSEM 02.301 – Automatic Sectionalizing Device Guidelines
2. DSEM 05.301 - Contingency Planning

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

Attachment	Included in Submittal?
A. Cost Estimate	*NO*
C. Geographic Map	*NO*
D. Project One-Lines	*NO*
E. Load Summary	*NO*

Operations Project Authorization Form

Date Prepared: 10/14/2021	**Project Title:** [redacted] Smart Switch & Eliminating [redacted]
Company/ies: Eversource CT	**Project ID Number**: CD01225
Organization: Distribution Electric	**Class(es) of Plant:** Distribution
Project Initiator: [redacted]	**Project Category:** Line
Project Manager: [redacted]	**Project Type: Islanded Substation**
Project Sponsor: [redacted]	**Project Purpose: Reliability**
Estimated in service date: 12/31/2023	**If Transmission Project: PTF?** N/A
Eng. /Constr. Resources Budgeted? No	**Capital Investment Part of Original Operating Plan?**
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan?**
Total Request: $5,439,199	

Financial Requirements:

Project Authorization
ERM: _____
FP&A: _____

Executive Summary

[redacted]

[redacted]

Project Costs Summary
Note: Dollar values are in thousands

	Prior Authorized	2021	2022	2023	Totals
Capital Additions - Direct	$0	$0	$0	$2,960,011	$2,960,011
Less Customer Contribution	$0	$0	$0	$0	$0
Removals net of Salvage ____%	$0	$0	$0	$399,649	$399,649
Total - Direct Spending	$0	$0	$0	$3,359,660	$3,359,660
Capital Additions - Indirect	$0	$0	$0	$1,735,444	$1,735,444
Subtotal Request	$0	$0	$0	$5,095,105	$5,095,105
AFUDC	$0	$0	$0	$78,432	$78,432
Total Capital Request	$0	$0	$0	$5,173,537	$5,173,537
O&M	$0	$0	$0	$265,662	$265,662
Total Request	$0	$0	$0	$5,439,199	$5,439,199

Financial Evaluation
Note: Dollar values are in thousands

Direct Capital Costs	2021	2022	2023	Total
Straight Time Labor	$0	$0	$378,979	$378,979
Overtime Labor	$0	$0	$69,297	$69,297
Outside Services	$0	$0	$2,370,029	$2,370,029

Materials	$0	$0	$514,517	$514,517
Other, including contingency amounts (describe)	$0	$0	$26,839	$26,839
Total Direct Costs	**$0**	**$0**	**$3,359,660**	**$3,359,660**

Indirect Capital Costs	2021	2022	2023	Total
Indirect/Overheads (including benefits)	$0	$0	$1,735,444	$1,735,444
Capitalized interest or AFUDC, if any	$0	$0	$74,545	$74,545
Total Indirect Costs	**$0**	**$0**	**$1,809,989**	**$1,809,989**
Total Capital Costs	**$0**	**$0**	**$5,169,650**	**$5,169,650**
Less Total Customer Contribution	**$0**	**$0**	**$0**	**$0**
Total Capital Project Costs	**$0**	**$0**	**$5,169,650**	**$5,169,650**
Total O&M Project Costs	**$0**	**$0**	**$269,549**	**$269,549**
Total Project Cost	**$ -**	**$ -**	**$5,439,199**	**$5,439,199**

Note: Explain unique payment provisions, if applicable

Future Financial Impacts:

Technical Justification:

Project Need Statement

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

[redacted]

Project Objectives

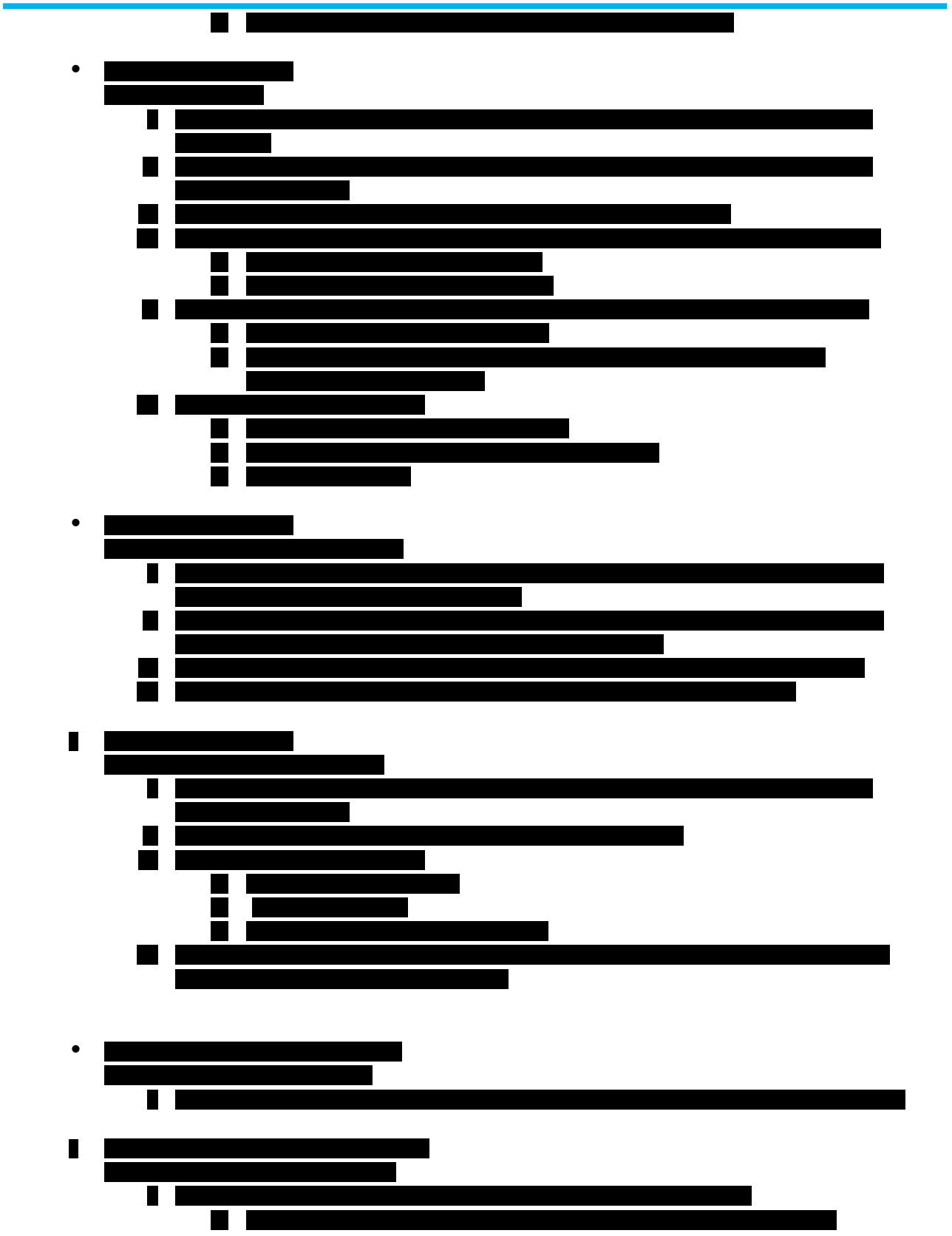
[redacted]

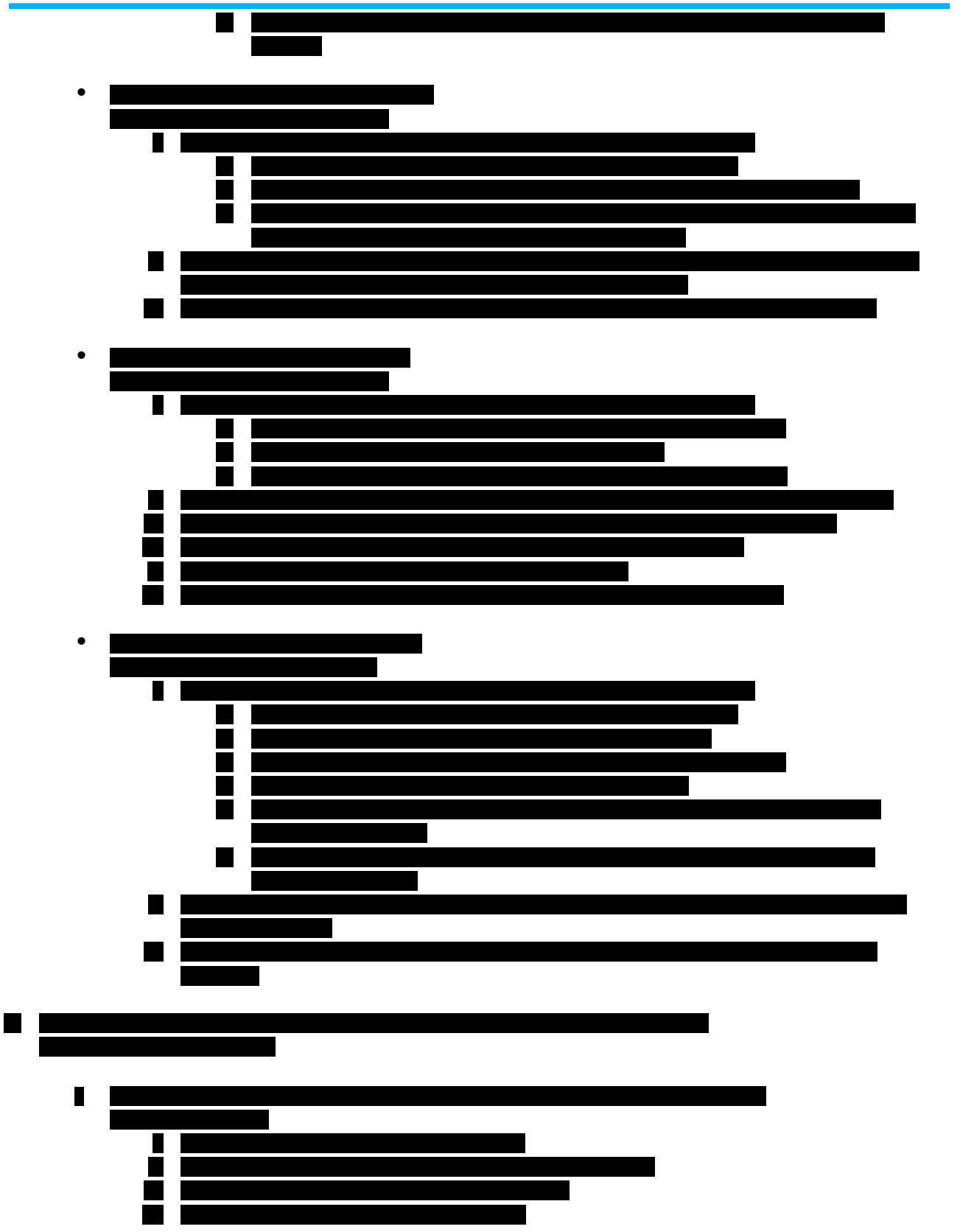
Project Scope

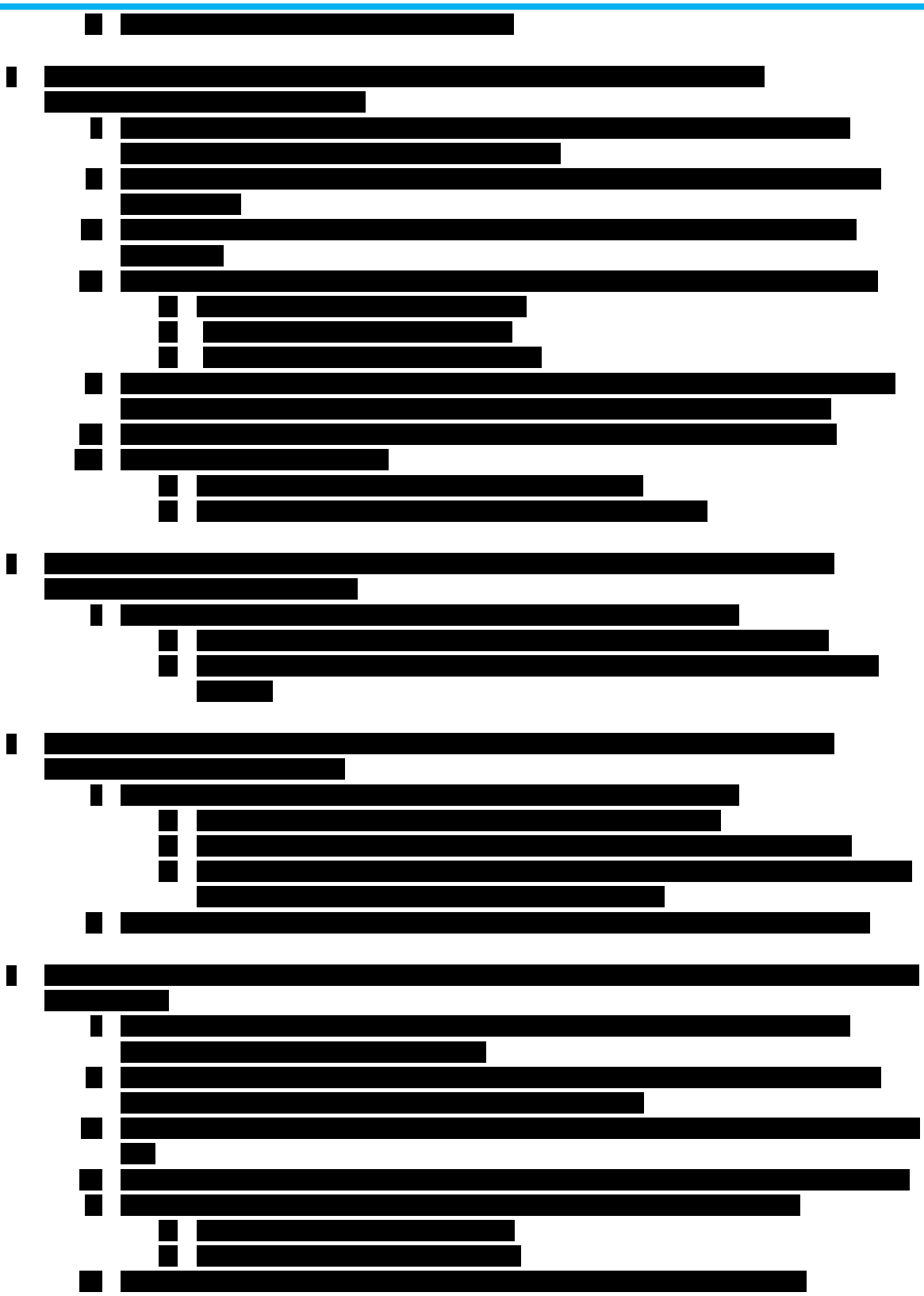
The scope of this project is as follows:

3. [redacted]

[redacted]







- [redacted]
- [redacted]

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- 900’ of 556.5 AAC 270 MIL 25/30 kV Spacer cable
- 500’ of line extension with 556.6 AAC 175 MIL Covered Wire.
- 2,500’ of 750AL Aerial cable

Background / Justification

[redacted]

On completion of this project:

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

The Smart Switch Program is a continuation of an initiative that was approved as part of the System Resiliency PURA Docket 12-07-06RE01 which is a multiyear program to improve circuit reliability by adding automatic sectionalizing devices on overhead distribution circuits. The Smart Switch Program focuses on breaking up customer zones and lowering the average number of customers impacted by a backbone interruption.

The 2018 Smart Switch Ranking Program was created to identify backbone zones that would impact over 500 customers. These zones were then ranked based on the number of customers **impacted** over the past three years as follows:
2018 outages X 100% + 2017 outages X 66% + 2016 outages X 33%.

Projects must be created to reduce the number of customers impacted in that zone to 500 or less.

When creating projects for the highest ranked zones, also reduce the number of customers impacted to 500 or less for any other backbone zone on the same circuit if it is ranked in the top 100 devices.

[redacted]

Business Process and / or Technical Improvements:

Projects within the Smart Switch Program will increase the number of SCADA controlled devices on the system. This upgrade allows for better system visibility, faster restoration, outage isolation and reconfiguration of the system during planned and unplanned switching events. Customer zones are reduced to under 500, where possible (ref. DSEM 02.301).

[redacted]

Alternatives Considered with Cost Estimates

X : Available - : not available

Project Option Comparison

[redacted]

Customer Interruption saved	174	153	–
Cost / CIS Saved	$22,106.56	$35,461.69	–
Cust Minute saved	187,827	198,596	171,018
Cost / CM Saved	$20.51	$27.31	$1.55
Cost	$3.85 Million	$5.42 Million	$265k
Preferred option		X	

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Preliminary Approval	10/2021
Detailed Design	10/31/2022
Settings Requested	01/01/2023
Construction Start Date	03/20223
Construction End Date	07/2023

Regulatory Approvals

None

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	Low	Design to minimize customer impact. Project Preplanning and customer/community outreach
Internal construction resources not available to perform the work.	2023	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.	2023	Medium	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost.
Storm delays	2023	Low	If storm activity delays work, we may be forced to use external resources.
System abnormal configuration	2023	Low	Schedule work to minimize system abnormal time. Most of this work will require system to be abnormal for any extended period of time.

References

DSEM 02.301 – Automatic Sectionalizing Device Guidelines

DSEM02-301.pdf

DSEM 05.301 - Contingency Planning

DSEM05-301.pdf

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

1. **Project Maps**

CD01225 UG Map.pdf CD01225 Existing Map.pdf CD01225 Option#2 Map.pdf

2. **Project One-Lines**

CD01225 One_line.pdf

3. **Project Load Summary**

CD01225 Load Sheet.pdf CD01225 Conversion Load sh CD01225 Conversion Load sh

4. Cost Estimate Backup Details



CD01225_project_needs_statement.pdf