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Program Release Form

Approved on December 08, 2021 EPAC

Link to Meeting Minutes

Date Prepared: 11/30/2021	**Project Title:** [redacted]
Company: Eversource CT	**Facility Name:** [redacted]
Organization: Asset Management	**Project Number: CS00493**
Project Initiator: [redacted]	**Class(es) of Plant: D SS**
Project Manager: [redacted]	**Project Category: Stations - Circuit Breakers**
Project Sponsor: [redacted]	**Project Type: Program**
Program Level Title: CT OCB Replacement Program	**Capital Investment Part of Original Operating Plan? Yes See associated Program Release Forms**
Program Level Project Number: CS00411	**O&M Expenses Part of the Original Operating Plan? N/A**
Total Request: $2.622M	**Estimated in service date(s): 12/29/2022**
	Facility Type (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution

Executive Summary

This Program Release is requesting full funding of $2.622M to [redacted] he engineering work started under the CT OCB Replacement and Bus Rehabilitation Program (CS00411) blanket capital work order 80099285 in 2021. The Program had $300K of initial funding approved in PowerPlan on November 23, 2020 and was increased to $450K and approved in PowerPlan on May 27, 2021. This release will reallocate the $16K in charges spent to date to this Phase 2 project CS00493. Two phases were set up for this substation due to the scheduling of the outsourced design resources allocated to this and other OCB program substation projects.

To date, the project scope, preliminary constructability walkdown, and planning grade cost estimates have been completed. The work for the [redacted] is divided into two phases. For Phase 1 (CS00416), the project scope, preliminary constructability walkdown, planning grade cost estimate, and the design have been completed; the project is expected to be in service in December 2021. The scope for Phase 1 included the replacement of four (4) 23kV oil circuit breakers (OCBs) and two (2) disconnect switches. For Phase 2 (CS00493), the project scope, preliminary constructability walkdown and planning grade cost estimate have been completed and the project is expected to be in service in December 2022.

This Program Release is requesting dollar authorization in accordance with the program level criteria specified in Program Level PAF CT OCB Replacement Program – CS00411 (Attachment E) and this document for this specific location. The scope for this Program Release is defined in

the Program Level PAF and in this document with modifications necessary that address this location. Location/site modification from the Program Level PAF shall be fully described herein for scope and unit cost.

Project Scope

The scope includes the following:

[redacted]

- Provide civil, electrical, and P&C engineering design and construction documents.
- Test and commission the new equipment.
- Proper disposal of removed equipment.

See Attachment B for the Nomenclature Diagram. A constructability review was performed on 03/08/2021 (see Attachment C).

Table 1 - Equipment List of Existing Equipment to be Replaced or Removed (Phase 2)

Nomenclature Location	Age	Equip Type	Manufacturer	Model	Short CT Rating	Load Rating	V Class
Equipment to be replaced:							
[redacted]							
Equipment to be Removed:							
[redacted]							

Table 2 – Phase 1 Equipment List of Existing Equipment Replaced (for reference)

Nomenclature Location	Age	Equip Type	Manufacturer	Model	Short CT Rating	Load Rating	V Class
[redacted]							

Unitized Release Cost

Note: This section addresses the modifications to the Program Level PAF scope necessary to implement this site/line/cable.

Note: Dollar values are in thousands

Line item Category	Unitized Program Level PAF Cost	Release Cost	Delta
1. ROW / Easements / Land Acquisition	$0	$0	$0
2. Environmental Approvals / Permits	$0	$0	$0
3. Outreach	$2	$2	$2
4. Siting Approvals / Permits	$0	$0	$0
5. Engineering / Design	$47	$48	$1
6. Materials (Eversource purchased)	$153	$105	($48)
7. Construction (incl matl's by contractors)	$700	$692	($9)
8. Testing / Commissioning	$483	$451	($32)
9. Project Mgmt Team	$16	$17	$1
10. Removals	$22	$28	$6
11. Other	$0	$0	$0
12. Risks	$292	$215	($77)
SUBTOTAL DIRECTS W/ RISKS	**$1,716**	**$1,558**	**($158)**
13. Indirects/Overhead	$890	$933	$43
14. AFUDC	$58	$58	$0
PROJECT TOTAL – BASELINE BUDGET	**$2,663**	**$2,549**	**($114)**
15. Contingency	$129	$73	($56)
TOTAL CAPITAL REQUEST	**$2,792**	**$2,622**	**($170)**
16. Reimbursables/Customer Contribution	$0	$0	$0
PROJECT TOTAL (LESS REIMBURSABLES)	**$2,792**	**$2,622**	**($170)**
O&M	$0	$0	$0
Total Request	**$2,792**	**$2,622**	**($170)**

Justification for Modification

1. **ROW / Easements / Land Acquisition: $0K –** No changes with respect to the program.
2. **Environmental Approvals / Permits: $0K –** No changes with respect to the program.
3. **Outreach: $0K –** No changes with respect to the program.
4. **Siting Approvals / Permits: $0K –** No changes with respect to the program.
5. **Engineering / Design: $1K** – Minor changes with respect to the program.
6. **Materials (by Eversource: ($48K) –** This release has less equipment for replacement compared to the program. No reactors and accompanying reactor switches are being replaced in this release.
7. **Construction (including materials supplied by contractors): ($9K) –** This release has less equipment for replacement compared to the program. No reactors and accompanying reactor switches are being replaced in this release.
8. **Testing / Commissioning: ($32K) –** This release has less equipment for replacement compared to the program. No reactors and accompanying switches are being replaced in this release.
9. **Project Management Team: $1K –** Minor changes with respect to the program.
10. **Removals: $6K** - Additional cost due to the additional removal of two (2) spare feeder breakers.
11. **Other: $0K –** No changes with respect to the program.
12. **Risks: ($77K) –** This release has less equipment for replacement compared to the program reducing the risk costs.
13. **Indirects/Overhead: ($43K) –** This release has less equipment for replacement compared to the program reducing direct costs on which Indirects/Overhead costs are based.
14. **AFUDC: $0K –** No changes with respect to the program.
15. **Contingency: ($56K) –** Contingency is less than the program as the overall direct costs for this release are lower.
16. **Reimbursables/Customer Contribution: $0K –** No changes with respect to the program.
17. **O&M: $0K –** No changes with respect to the program.

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Project Costs Summary

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 to Go	2022	2023	2024	2025	2026	Total
1. ROW / Easements / Land Acquisition									
2. Environmental Approvals / Permits									
3. Outreach			$0	$2					$2
4. Siting Approvals / Permits									
5. Engineering / Design		$1	$24	$23					$48
6. Materials (Eversource purchased)				$105					$105
7. Construction (incl matl's by contractors)				$692					$692
8. Testing / Commissioning				$451					$451
9. Project Mgmt Team		$8	$3	$6					$17
10. Removals				$28					$28
11. Other									
12. Risks				$215					$215
SUBTOTAL DIRECTS W/ RISKS	**$450**	**$9**	**$27**	**$1,523**					**$1,559**
13. Indirects/Overhead		$7	$36	$891					$933
14. AFUDC		$0	$2	$55					$58
PROJECT TOTAL – BASELINE BUDGET	**$450**	**$16**	**$65**	**$2,540**					**$2,550**
15. Contingency			$1	$72					$73
TOTAL CAPITAL REQUEST	**$450**	**$16**	**$66**	**$2,540**					**$2,622**
16. Reimbursables/Customer Contribution									
PROJECT TOTAL (LESS REIMBURSABLES)	**$450**	**$16**	**$66**	**$2,540**					**$2,622**
O&M									
TOTAL REQUEST	**$450**	**$16**	**$66**	**$2,540**					**$2,622**

Note: Explain unique payment provisions, if applicable: *Provide a detailed breakdown of Other costs here.*

Risk	Funded Amount
Breaker Control Cable Failures	$20K
Underground Conduit Damaged	$25K
Delays / outages related to breaker energization plans	$80K
Design development Risks	$20K
Severe Weather Delays	$50K
Existing foundations not suitable for re-use	$20K
Total	**$215K**

Breakout Costs

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 to Go	2022	2023	2024	2025	2026	Total
ST Labor		$1	$9	$43					$53
OT Labor									
Outside Services Labor		$8	$18	$1,124					$1,150
Materials*				$114					$114
Removals				$28					$28
Other			$1	$284					$285
Indirects		$7	$36	$891					$933
AFUDC			$2	$56					$58
TOTAL CAPITAL REQUEST - W/O REIMBURSABLES	**$450**	**$16**	**$66**	**$2,540**					**$2,622**

*All materials including Eversource purchased and outside service purchased. Note that outside service purchased material included in construction in project cost summary above

Future Financial Impacts:

Provide below the estimated future costs that will result from the project: **N/A**
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

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

What functional area(s) will these future costs be funded in? **N/A**
A representative from the respective functional area is required to be included as a project approver.

If this is other than a Reliability Project, please complete the section below; N/A

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

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

What functional area(s) will these benefits be reflected in? **N/A**
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

Is there an ARO associated with this project? If yes, please provide details: No

Are there other environmental cleanup costs associated with this project? Possibly.
If yes, please provide details:

No subsurface work resulting in environmental cleanup costs is expected. There is a small risk that some underground conduit and/or some of the foundations will require replacing resulting in contaminated disposal costs.

Alternatives Considered with Cost Estimates

There are no changes from the Program Level PAF.

Regulatory Approvals

None. There are no changes from the Program Level PAF.

Risks and Risk Mitigation Plans

Risk	Mitigation
Control Breaker Cables Failures	Perform continuity checks and insulation integrity test (Megger/Hipot) on control cables and install new control breaker cables if required.
Underground Conduit Damaged	Check for conduit damage and replace underground conduit if required.
Delays / outages related to breaker energization plans	Rescheduling and OT as required if outages cannot be performed during the scheduled times due to unforeseen circumstances.
Design development Risks	Re-design allowances
Severe Weather Delays	Rescheduling and OT as required
Existing foundations not suitable for re-use	Preliminary evaluation has indicated that the foundations can be reused. During construction, further evaluation is required and foundations to be replaced if required.

Risk allocation is included in the estimate to address the risks identified above.

Contingency

Contingency of $68K is included in the estimate for potential risks or project unknowns that do not have a mitigation plan.

Project Schedule

Milestone/Phase Name	Estimated Date
Program (CS00411) Approval at EPAC	May 2021
EPAC Release Full Funding Approval	December 2021
IFC Design Complete	January 2022
Material Procurement Issue PO	February 2022
Construction Start	March 2022
In Service Date	December 2022
Release Close-Out	March 2023

See Attachment D for the P6 Schedule.

Attachments

- Attachment A: CS00493 - [redacted] Phase 2 OCB Estimate C-21-758 R0
- Attachment B: CS00493 - [redacted] Phase 2 OCB Nomenclature Diagram
- Attachment C: CS00493 - [redacted] Phase 2 OCB Constructability Review Document
- Attachment D: CS00493 - [redacted] Phase 2 OCB Replacement Schedule
- Attachment E: CS00411 - CT OCB Replacement and Bus Rehabilitation Program Level PAF

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INSTRUCTIONS:

It is the responsibility of the initiator to contact the subject matter experts in the listed area disciplines to determine if the project considerations contained in this list are applicable to their project. They should fill out the checklist and determine a transition plan for the purpose of project execution. See the PAF Guide for additional instruction.

Project Checklist - Transmission & Substation Capital Project					
Project Name: [redacted] **Replacement Program Release**				**Project Number: CS00493**	
Facility Type: ☐ BPS ☐ BES ☐ PTF ☐ non-PTF ☐ CIP ☒ Distribution					
PLANNING					
Is a NX-9 required?				No	
Is an ISO-NE PAC presentation required?				No	
ISO-NE Presentation Date (if completed):				N/A	
Cost in ISO-NE Presentation ($M) (if completed):				N/A	
Is a PPA required?				No	
Is a TCA Application Required?				No	
TCA Submittal Date (if submitted):				N/A	
Cost in TCA Submittal ($M) (if submitted):				N/A	
Enter ISO-NE RSP / Asset Condition ID, if assigned:				N/A	
PLANNING/PROTECTION & CONTROLS					
Are RAS/SPS/UVLs affected?				No	
OPERATIONS					
Outage Required?	☒ Primary Equipment (Power Transfer)	☒ Secondary Equipment (P&C only)	☐ Outage Not Required		
Do SCLL Conditions Exist?				No	
Has an outage schedule been approved?				No	
Are Operations & Maintenance procedures/training required?				No	
STANDARDS					
Does the project include standard equipment and designs?				Yes	
SUBSTATION ENGINEERING					
Does this impact Revenue Metering				No	
Is preliminary short circuit/ breaker duty analysis required?				No	
Are there any changes to the baseline audible noise?				No	
Is there an impact to the existing ground grid?				No	
Is a Transient Over Voltage (TOV) analysis required?				No	

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Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] **Replacement Program Release**	**Project Number: CS00493**
P&C ENGINEERING	
OP-22 - Are PMUs and DDR required?	No
If BPS, is an NPCC Directory #4 presentation required?	No
Are ISO-NE OP-24 Appendix B updates necessary?	No
TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	No
Are there any changes that affect the baseline EMI?	No
SITING	
Is a Siting filing required? *(If yes, list in regulatory approvals section)*	No
PERMITTING	
Is there any permitting required? *(If yes, list in regulatory approvals section)*	No
SITING & CONSTRUCTION SERVICES (OUTREACH)	
What is the level of outreach expected?	Low
INITIATOR	
Has a field constructability review been completed?	Yes
INVESTMENT RECOVERY	
Does the project require development of an Investment Recovery plan?	No
COST ESTIMATING	
What team/firm prepared the cost estimate?	Estimate was prepared by Eversource Engineering
Name of the person who prepared the estimate:	[redacted]
Was the estimate reviewed by Eversource Estimating?	Yes - Partial Review

Cost Estimate Backup Details

See Attachment A for the cost estimate.

ESTIMATE SUMMARY

Project Title: [redacted]
Project Manager: [redacted]
Project Number: CS00493
WO & Task #: TBD
Estimate revision #: 1
Estimate Type - Station work

Estimate #: C-21-758
Date of Estimate: 11/30/2021
Estimate done by: [redacted]
In Service date (ISD): 12/31/2022

Template Revision # 01-062

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	ROW / Easements / Land purchases	$0	0.0%	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2	Environmental Approvals / Permits	$0	0.0%	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	Outreach	$2,700	0.2%	0.1%	$0	$100	$2,600	$0	$0	$0	$0	$0	$0	$0	$0
4	Siting Approvals / Permits	$0	0.0%	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	Engineering / Design	$48,500	3.1%	1.8%	$1,300	$23,800	$23,400	$0	$0	$0	$0	$0	$0	$0	$0
6	Materials (Eversource purchased)	$105,400	6.8%	4.0%	$0	$0	$105,400	$0	$0	$0	$0	$0	$0	$0	$0
7	Construction (Incl mat'ls by contractors)	$691,800	44.4%	26.4%	$0	$0	$691,800	$0	$0	$0	$0	$0	$0	$0	$0
8	Testing / Commissioning	$450,900	28.9%	17.2%	$0	$0	$450,900	$0	$0	$0	$0	$0	$0	$0	$0
9	PMT Project Mgmt Team	$18,800	1.1%	0.6%	$7,600	$3,400	$5,600	$0	$0	$0	$0	$0	$0	$0	$0
10	Removals	$28,100	1.8%	1.1%	$0	$0	$28,100	$0	$0	$0	$0	$0	$0	$0	$0
11	Other	$0	0.0%	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
12	Risks	$215,000	13.8%	8.2%	$0	$0	$215,000	$0	$0	$0	$0	$0	$0	$0	$0
135	0	$0		0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Project Directs Total w/Risks	**$1,560,800**	100.0%	59.4%	**$9,100**	**$27,300**	**$1,622,600**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
13	Indirects/Overhead	$933,400		35.6%	$6,700	$35,700	$891,000	$0	$0	$0	$0	$0	$0	$0	$0
14	AFUDC	$57,800		2.2%	$100	$2,300	$55,400	$0	$0	$0	$0	$0	$0	$0	$0
135	0	$0		0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Project Total - Baseline Budget	**$2,560,200**		97.2%	**$15,900**	**$65,300**	**$2,469,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
15	Contingency	$72,500		2.8%	$0	$1,000	$71,500	$0	$0	$0	$0	$0	$0	$0	$0
	Project Total - Funding Approval Level	**$2,822,700**		100.0%	**$15,900**	**$66,300**	**$2,540,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
16	Reimbursables/Customer Contribution	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
--	-	$-			$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-
	Project Total (less reimbursables)	**$2,822,700**			**$15,900**	**$66,300**	**$2,540,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cost per key qty (if appl)	- $'s/													
	Amount of Escalation included above	$62,500			$0	$0	$62,500	$0	$0	$0	$0	$0	$0	$0	$0
6	Total materials - Eversource	$105,400			$0	$0	$105,400	$0	$0	$0	$0	$0	$0	$0	$0
	Total materials - Contractor	$8,800			$0	$0	$8,800	$0	$0	$0	$0	$0	$0	$0	$0
	Total materials	$114,200			$0	$0	$114,200	$0	$0	$0	$0	$0	$0	$0	$0

NOTE: Risk / Contingency is 12.3% of Project Total Costs (incl escal/Indirects/AFUDC but excl reimb.)

Estimate Range	**-26%**	**25%**
	$1,967,000	**$3,278,000**

All Estimate Summary for PPI Calc (escalation separate)

Estimate #: C-21-758
Date of Estimate: 11/30/2021

Project Number: CS00493
WO & Task #: TBD

		TOTAL w/ escal broken out
ROW / Easements / Land purchas	$	-
Environmental Approvals / Permit	$	-
Outreach	$	2,600
Siting Approvals / Permits	$	-
Engineering / Design	$	47,800
Materials (Eversource purchased	$	103,800
Construction (Incl mat'ls by cont	$	671,800
Testing / Commissioning	$	437,800
PMT Project Mgmt Team	$	18,600
Removals	$	27,300
Other	$	-
Risks	$	215,000
		$1,622,600
Indirects/Overhead	$	907,400
AFUDC	$	57,800
	$	-
		$2,487,700
	$	-
Contingency	$	72,400
		$2,560,100
	$	-
	$	-
		$2,560,100
	$	62,500
Excel total		**$2,622,600**
Check total		-$100

COMMENTS:

Project Scope:

[redacted]

Assumptions/Clarifications:
Indirect rates based on: 11 - CT - Station work

- Estimate includes risk for all new control cables to be installed in the event of failure during megger testing. This estimate includes addition risk if the switches due to long lead times are not here in time to take advantage of the OCB outages.
- Engineering to be outsourced with in-house review, construction and testing to be out-sourced with external resources.
- This estimate was developed with the use of existing breaker control conduits with no digging in existing soil.
- This estimate was developed utilizing the existing foundation, no new foundations were included in this estimate.
- Material estimates based on previous work, and vendor quotes. Construction - ES Boulous and test vendor - EPST.
- All new equipment will be installed within the confines of the existing fenced yard.
- No additional allowances have been added for aggressive outage recall times.

RISKS

Control Breaker Cables Failures	$	20,000
Underground Conduit Damaged	$	25,000
Delays / outages related to breaker energization schedules	$	80,000
Design development Risks	$	20,000
Severe Weather Delays	$	50,000
Existing foundations not suitable for re-use	$	20,000

CSTXX-CONSTRUCTION	R		Prior Mhrs	Prior DOLLARS	2021 Mhrs	2021 DOLLARS	2022 Mhrs	2022 DOLLARS	2023 Mhrs	2023 DOLLARS	2024 Mhrs	2024 DOLLARS	2025 Mhrs	2025 DOLLARS	2026 Mhrs	2026 DOLLARS	2027 Mhrs	2027 DOLLARS	2028 Mhrs	2028 DOLLARS	2029 Mhrs	2029 DOLLARS	2030 Mhrs	2030 DOLLARS	TOTAL Mhrs	TOTAL DOLLARS
Electrical Construction	LT		0	$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
General Construction	LT		0	$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
SCADA / Automation	LT		0	$0	0	$0		$1,696	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	32	$1,696
Telecom - Field	LT			$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Construction Reps (internal)	LT			$0	0	$0		$22,260	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	420	$22,260
Support Switch/Tap	LT			$0	0	$0		$6,890	0	$0	0	$0	0	$0	0	$0		$0		$0		$0		$0	130	$6,890
Other (specify)	LT			$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0		$0		$0		$0		$0	0	$0
Other (specify)	LT			$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0		$0		$0		$0		$0	0	$0
Other (specify)	LT			$0		$0		$0	0	$0	0	$0	0	$0	0	$0		$0		$0		$0		$0	0	$0
LT Total			0	$0	0	$0		$30,846	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	582	$30,846
Employee Expenses	AE	0%	0	$0		$0		$1,542		$0		$0		$0		$0		$0		$0		$0		$0	0	$1,542
Construction Purchased Material	AM	1%	0	$0		$0		$6,306		$0		$0		$0		$0		$0		$0		$0		$0	0	$6,306
Outside Construction Vendor	AQ		0	$0	0	$0		$630,619	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	4,139	$630,619
Sales tax on Constr. Vendor		0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Inspection services (Outside Vendor)	AQ		0	$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Construction Reg (Outside vendor)	AQ		0	$0	0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Rents and Leases	SR		0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
CSTXX Subtotal				$0		$0		$659,313		$0		$0		$0		$0		$0		$0		$0		$0		$659,313
Escalation			0	$0																					0	$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
CSTXX Total			0	$0	0	$0		$659,313	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	4,721	$659,313
ENRXX-TG ENGINEERING/DESIGN																									0	$0
Project Services/Drafting	LT		0	$0		$1,090		$648	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	26	$1,908
T- Line Engineering/Design	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
D- Street Engineering/Design	LT		0	$0		$846		$424	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	24	$1,272
Ck I Engineering/Design	LT		0	$0		$1,484		$1,908	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	64	$3,392
Substation (T) Engineering/Design	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Substation (D) Engineering/Design	LT		0	$664		$1,896		$2,544	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	80	$5,224
Protection & Controls Engineering	LT		0	$279		$1,908		$2,544	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	84	$4,731
Survey Engineering	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
SCADA / Automation Engineering	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Telecom Engineering	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Other - specify	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Other - specify	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
LT Total			0	$1,263		$6,996		$6,268	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	288	$16,527
Employee Expenses	AE	0%	0	$0		$360		$413		$0		$0		$0		$0		$0		$0		$0		$0	0	$763
Contractor Engineering - T-Lines	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - D-Street	AQ		0	$0		$1,812		$1,812	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	24	$3,624
Contractor Engineering - T -Station	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - D-Station	AQ		0	$0		$7,296		$6,080	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	88	$13,376
Contractor Engineering - PSC	AQ		0	$0		$7,344		$6,120	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	88	$13,464
Contractor Engineering - Survey	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - SCADA / Automation	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - Telecom	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - Specify	AQ		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - Specify	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Contractor Engineering - Specify	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
ENRXX Subtotal			0	$1,263		$23,798		$22,893		$0		$0		$0		$0		$0		$0		$0		$0		$47,754
Escalation			0	$0																					0	$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
ENRXX Total			0	$1,263		$23,798	248	$22,893	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	488	$47,754
LNDXX-TG LAND																									0	0
Real Estate	LT		0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Purchase Expenses	AE	0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Purchase Land	AM		0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Fees and Payments	SF		0	$0																					0	$0
LNDXX Subtotal				$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0
Escalation			0	$0																					0	$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
LNDXX Total			0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
MATXX-TG MATERIAL																									0	0
Eversource	AM		0			$0		$93,485		$0		$0		$0		$0		$0		$0		$0		$0	0	$93,485
Outside Services	AM		0			$0		$8,606		$0		$0		$0		$0		$0		$0		$0		$0	0	$8,606
	AM		0	$0																					0	$0
Freight		0%	0	$0																					0	$0
Sales Tax Eversource/outside services	5.9%	5.9%	0	$0		$0		$4,000		$0		$0		$0		$0		$0		$0		$0		$0	0	$4,000
Other		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
MATXX Subtotal				$0		$0		$106,091		$0		$0		$0		$0		$0		$0		$0		$0		$106,091
Escalation			0	$0																					0	$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
MATXX Total				$0		$0		$106,091		$0		$0		$0		$0		$0		$0		$0		$0	0	$106,091
PSMXX-PROJECT MANAGER & SUPPORT																										$0
Project Management (PM)	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Planning/Cost (CP)	LT		0	$0		$424		$848		$0		$0		$0		$0		$0		$0		$0		$0	24	$1,272
Contracts/Purchasing (CP)	LT		0			$212		$424		$0		$0		$0		$0		$0		$0		$0		$0	12	$636
System Planning	LT		0			$318		$636		$0		$0		$0		$0		$0		$0		$0		$0	18	$954
Environmental	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
SCS - Notification	LT		0	$0		$2		$126	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$126
Legal	LT		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Estimating	LT		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Siting - None	LT		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Asset Management	LT		0			$648		$424		$0		$0		$0		$0		$0		$0		$0		$0	24	$1,272
Other -	LT		0			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Other -	LT					$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Other -	LT		0			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Other -	LT		0			$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
LT Total				$0		$1,604		$2,456	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	78	$4,282
Employee Expenses	AE	0%	0	$0		$60		$123	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$213
Project Support Vendor - PM	AQ		0	$7,786		$1,200		$3,000		$0		$0		$0		$0		$0		$0		$0		$0	28	$11,986
Project Support Vendor - IP	AQ	0.0%	0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - CP	AQ		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - System Plannin	AQ		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - Environmental	AQ	0.0%	0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - SCS - Notificatio	AQ	0.0%	0			$2,400		$2,400	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$2,400
Project Support Vendor - Legal	AQ	0.0%	0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - Estimating	AQ	0.0%	0			$300		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$300
Project Support Vendor - Siting - None	AQ	0.0%	0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - Asset Management	AQ	0.0%	0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0
Project Support Vendor - Other

[redacted]

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Constructability Review Form: **Substation**

Project Title: [redacted] Replacement Release	☐	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00416	**Project Constructability Phase:**	
Date(s) of Constructability Review: **02/22/2021** 02/22/2021	☐ Conceptual Engineering Design ☒ Preliminary Engineering Design ☐ Detailed Engineering Design	
Project Scope Statement: **as of 3/8/21** [redacted]		

Department Review/Walkdown Attendees*:

Required [X]	Attended [X]	Department	Name	Required [X]	Attended [X]	Department	Name
☒	☒	Project Management	[redacted]	☐	☒	S/S Engineering	[redacted]
☐	☐	Asset Management		☐	☐	P&C Engineering	
☐	☒	Constr. Management	[redacted]	☐	☐	Civil Engineering	
☐	☐	S/S Technical / LCE		☐	☐	Telecom	
☐	☐	S/S Operations**		☐	☐	Environmental	
☐	☐	Field Engineering		☐	☐	Real Estate	
☐	☐	Line Engineering		☐	☐	T&D ROW	
☐	☐	Vegetation Management		☐	☐	Survey Engineering	
☐	☐	Siting		☐	☐	Cost Estimating	
☐	☐	Safety		☐	☐	Outreach (SCS)	
☐	☐	SCADA		☐	☐	Material Procurement	

*** Sign-off in the table above for the Detailed Engineering Design Constructability Review indicates that all Action Items/Concerns from prior Constructability Reviews have been mitigated/resolved as documented in this form. Not every department is required to attend walkdowns for every project but should be consulted for project impact considerations**

** Internal Eversource Substation Operations must be included in review even if external construction resources are planned

Project Manager certifies that this review was performed to completeness, that all applicable departments were informed of the project and have had opportunity to provide input to this review:___[redacted] *02/22/2021*_[redacted]*_Name / Signature*

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Constructability Review Form: **Substation**

Documents available for use on Constructability Review					
[X]	Deliverable	[X]	Deliverable	[X]	Deliverable
☒	Initial Scope -Birdseye site plan -General Arrangement	☐	Preliminary Drawings -Civil Site Drawing -Electrical Drawing -Section Drawings	☐	Prints in hand for marking up -Panel Front/Read View -Control Enclosure Layout -Floor / Wall Plans
☐	Detailed Scope Document	☐	Previous Notes	☐	Identify Required Contractors
☒	Proposed Schedule	☐	Major Material List	☐	Replace / Reuse of equipment
☐	Construction Sequence/Timeline	☒	Major Equipment Items	☐	Pre-Walkdown Comments / Observations

Action Items and Resolutions:

Item No.	Const. Review Action Item/Concern	Design Resolution/Mitigation:
1	Verify replacement of "Spare Breakers" [redacted] ("removal only" was discussed)	Asset Management/Project Management
2	Consider installing 90-degree grounding studs at blade-side of [redacted] replacements.	Electrical Engineering
3	Verify need to replace [redacted] since it is new. (Mfr. 3/17)	Asset Management/Project Management
4	Verify need for aux. transformers required at breakers that do not have a neutral for the necessary 120 volts.	Electrical Engineering
5	Civil engineers to verify structural integrity of existing foundations & structural steel supports	Civil Engineering
6	Verify existing feeder bus connections, being 2/hole NEMAs, are compatible with new conductor design. May need to upgrade to 4/hole NEMA.	Asset Management/ Electrical Engineering
7	New switches, if not designed at same height and length, may require bus alterations/adjustment(bus side), conductor alterations(cable side).	Electrical Engineering
8	[redacted] are incorrect on the nomenclature print. Actually, attached to line-side of -5. Do we replace like other feeder scopes?	Asset Management/ Electrical Engineering
9	[redacted] are incorrect on the nomenclature print. Actually, attached to line-side of -5. Do we replace like other feeder scopes?	Asset Management/ Electrical Engineering

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
A	**General**		
1	**Any safety hazards specific to the facility? i.e. Low Bus, Deterioration, etc.**	☒	

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
2	**Prior known Site-Specific Conditions - Common or Obvious station Issues**	☐	May be issues with control cables
3	**Scope Adequately Developed** Consider Physical Installation, P&C Scope, Civil Scope, Engineering studies, Design standard adherence	☐	See action items above.
4	**Materials Identified/Ordered** Long Lead Equipment? Specialty material considerations? Review BOM lead times and project need dates Bids for Specialty Major Materials - Identify Specialty Equipment & Materials potentials - temporary/replacement Any Materials needed to facilitate construction access?	☐	Breakers not ordered, need project approval. Could be delayed at US/Mexico border. 21+ weeks lead-time for breakers.
5	**Any impacts that would drive T-Line Eng Scope?**	☒	~~TBD~~
6	**Any other known projects that could overlap or impact outage work?**	☐	Asset management to identify.
B	**Construction**		
1	**Site Plan / Access:** -Confirm maintenance access for proposed new or replaced equipment -Review station expansion areas (if needed) for structures, old foundations, etc. -Verify clear footprint for yard equipment / Property Plan -General access to site, can areas outside substation be utilized? -Substation Entry Plan (driveway and drive path modifications) -Site Development Plan (grading and drainage) with Cut/Fill -Existing Rock Conditions? Potential Impacts (rock quantity)? -Any Sanitary Civil Requirements? (Septic tanks, etc) -Assess condition of existing yard equipment foundations and viability for reuse (if proposed)	☒	- - - - - - - - - - - - - See action items above.
2	**Any Substation Access and site/yard access Limitations?** -Review turning radius for delivery trucks (if critical) ---------- -Identify Office Trailer / Container / Dumpster Space + source of utilities for construction trailer(s) if needed -Weather impacts to Site (Snow Placement) -Identify Material Laydown and Security -Construction permit for trailers outside substation fence?	☐	- No Issues - Sufficient room for trailers & dumpsters. - - N/A - Space for material is sufficient. - N/A

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
3	**Outage Planning & Construction Sequence** -Working Clearances - Review electrical clearances for equipment during construction – Approach Distances – Outage Requirements to maintain electrical clearances throughout proposed installation -As-Built drawing review (contacts and contributions) -Outage boundaries -Phased approach needs for additional mobilizations -Detail Design package align with schedule and outage sequence? -Lead Commissioning Engineer (LCE), Substation Operations, and Outage Planner - Review or give input to planned construction sequence to insure it is reasonable and scheduled outages associated with the sequence -Review or give input to planned construction sequence to insure it is reasonable -Verify outage sequence supports the planned construction sequence	☐	-Consider using insulated bucket(material handler) to replace -5 disconnect switches. - CR to utilize. - TBD - N/A - TBD - TBD -Further breaker control scheme investigation needed to complete outage requirements. -TBD
4	**Need for mobile generator and where connected (if needed)**	☒	
5	**Need for mobile battery and where connected (if needed)**	☒	
6	**Energization Plan** What outages are required, Detailed look at contributions to equipment, Detailed look at protection zone changes, Locked sequence or random outages, Outage durations minimized Mobile transformer, Additional outage requirements, Working clearance, Railroad Catenaries, Distribution overhead/underground/networks, Fiber outage, SCADA outage, Relay permissions	☐	To be established by CR/CM and reviewed by LCE once IFC drawings issued.
7	**Identify Required Oversite Needed - Estimated level of CR and LCE support needed**	☐	1 LCE and 1 CR required
8	**OT work required or Notable Permit Conditions (special hours)?**	☐	May need weekend work or extended days if schedule is delayed or system reliability dictates.
9	**Seasonal or weather conditions impacts?**	☐	Some equipment outages are dependent on the season. Inclement weather may impact schedule.
10	**Identify Required Depts for Construction? (who is constructor ?)**	☐	TBD
11	**Specialty Contractors Required?**	☒	
12	**Unique Equipment Considerations, Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser**	☒	

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
13	**Underground Obstructions** -Drawing review concerns? -Is preconstruction or test excavation needed? -Is reuse of underground control cables / Conduits /replace Non-Shielded Cable feasible (if applicable) -Are spare conduits available? Are they useable? -Review if any areas will need to be plated for increased load bearing for equipment access (i.e. large Xfmr, etc.)	☐	All conductors should be meggered and replaced if found compromised.
14	**Any other items missing in scope or could be underfunded?**	☐	See action items above.
15	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☒	
C	**Environmental**		
1	Soil Pre-Characterization or Grab Sampling Completed/Planned	☒	
2	Has Desktop investigation and EAD Review form been completed.	☒	
3	Dewatering requirements	☒	
4	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	TBD. Potential PCB oil in existing breakers & possible asbestos wiring.
5	Permit requirements (Wetlands, Rare Species, etc)	☒	
6	Stormwater Considerations	☒	
7	Transformer Spill Containment Recommended?	☒	
8	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☒	
D	**Siting, S&CS, and T&D Real Estate**		
1	Expanding Footprint / New Buildings or future Expansion Plans?	☒	
2	Installation is within Eversource Rights? - Rights and Restrictions Review	☒	
3	Proposed Equipment on same property? - Any Encroachments	☒	
4	Identify existing lighting and determine if additional lighting is needed?	☒	
5	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☒	
6	Visual mitigation screening considerations (feasibility or location)	☒	

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
7	Neighbor/Abutter impacts (noise, visual, sensitive abutters)	☒	
E	**Engineering**		
1	**Scope of Work** Identify if high level scope sufficiently detailed? Any remote station impacts? Does title match the project deliverable/intent?	☐	Scope is not sufficiently detailed. (See Action Items and Resolutions)
2	**Ratings & Dimensions** for Major Equipment. Any concerns upon field review? Equipment Rating One Line (and/or equipment thermal ratings tables) - Review for any errors in field	☐	Eng. to confirm ratings of feeder bus and connection fittings to match. Otherwise, need to upgrade.
3	**Materials** Any concerns with BOM/Major Materials Review? Where will new vs removed equipment go? Review for OH and UG Items	☐	No material ordered. Plenty of room to store old and new.
4	**Control House** - Review: Unmapped equipment interferences, Control/Battery Enclosure Layout, HVAC System (if equipment added), space for new or modified equipment, AC / DC station service and loading, Panel Space, Expansion, one-line and/or riser type panelboard drawings, other.	☒	
5	Identification of Unique Requirements, i.e. (access bridges, station service, etc.)	☒	
6	**BPS Separation Requirements** Is this BPS Substation? Y/N (part of PAF) Changes to pre-existing BPS standards?	☒	
7	IEC 61850 Substation Automation and Communication Requirements - Any Impacts/Retrofit needed?	☒	
8	Any Upgrades to ES Standards - Is retrofit needed to bring up to ES standards? Can that be done?	☒	
9	**Wall, Fence, Gate, and Foundation Considerations** -Any permanent / temporary alterations or relocations required? -Take measurements for Foundation quantities, dimensions and concrete volumes -CIP Review/Ballistic needs. Any Physical Security Requirement Consideration? -Any impacts to construction plan?	☒	Foundations need to be reviewed by civil engineers to verify suitable for re-use or need to be upgraded.

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
10	**Below Grade / Enclosure Raceway** - If possible, evaluate existing raceway and review spacing requirements. Review for any subsurface investigation needs or potential below grade obstructions. GPR/test pits needed? Geotechnical Investigation - is soil boring or resistivity investigation needed?	☐	TBD - If foundations need alterations that warrant.
11	**Grounding Plan (Ground Grid)** - Will footprint impact layout or other equipment? Identify locations to improve grounding. Impacts to foundations and ground grid plans. Observations on wetlands or ability to perform tests	☒	
12	Any Lighting Plan & Fixture Schedule Considerations?	☒	
13	Any Steel Structural Plan Considerations?	☐	Will need steel for new breakers
14	Sound Study Needed? Pre-Project Sound Measurements Needed? Sound Walls?	☒	
15	Engineering Estimates for Design and Technical Support? (EE and EOC) Total Project	☒	
16	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	☐	May need revision if Las & their connections are being moved if not removed.
17	Any design alterations or considerations to Eliminate SCLL Conditions, Reduce Recall Time, Reduce Outage durations, Special Conditions	☐	TBD
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☒	
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☒	
3	Panel fronts conform to drawings	☒	
4	Access to bring new panels into control enclosure	☒	
5	Nameplate list and location of nameplates	☒	
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	☒	
7	Verify auxiliary panels have breaker available or space for new breakers (if needed)	☒	
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	☒	
2	Review path to get telecom circuits into the station and determine whether new underground duct bank is needed.	☒	

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
3	Review current or proposed Telecom equipment power connections and validate with P&C any need for system 1 and system 2 separation.	☒	
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	☒	
5	Confirm whether correct interface equipment is available (i.e.) for fiber termination or multiplexor termination	☒	
6	Confirm whether existing communications cabinets are enough to support additional telecommunications equipment installed	☒	
7	Review space for any required additional communications cabinets which may be required to support additional telecommunications equipment installed	☒	
8	Review third party Telecommunications at substation and confirm whether additional capacity or Ground Potential Rise protection is required	☒	

Photos

(Ex. Equipment control cabinet, Breakers, MODs, CCVTs, PTs, Transformers)

(Note: Includes Photos for Phase 2 only to reduce file size)

Figure 1 [redacted] Nameplate

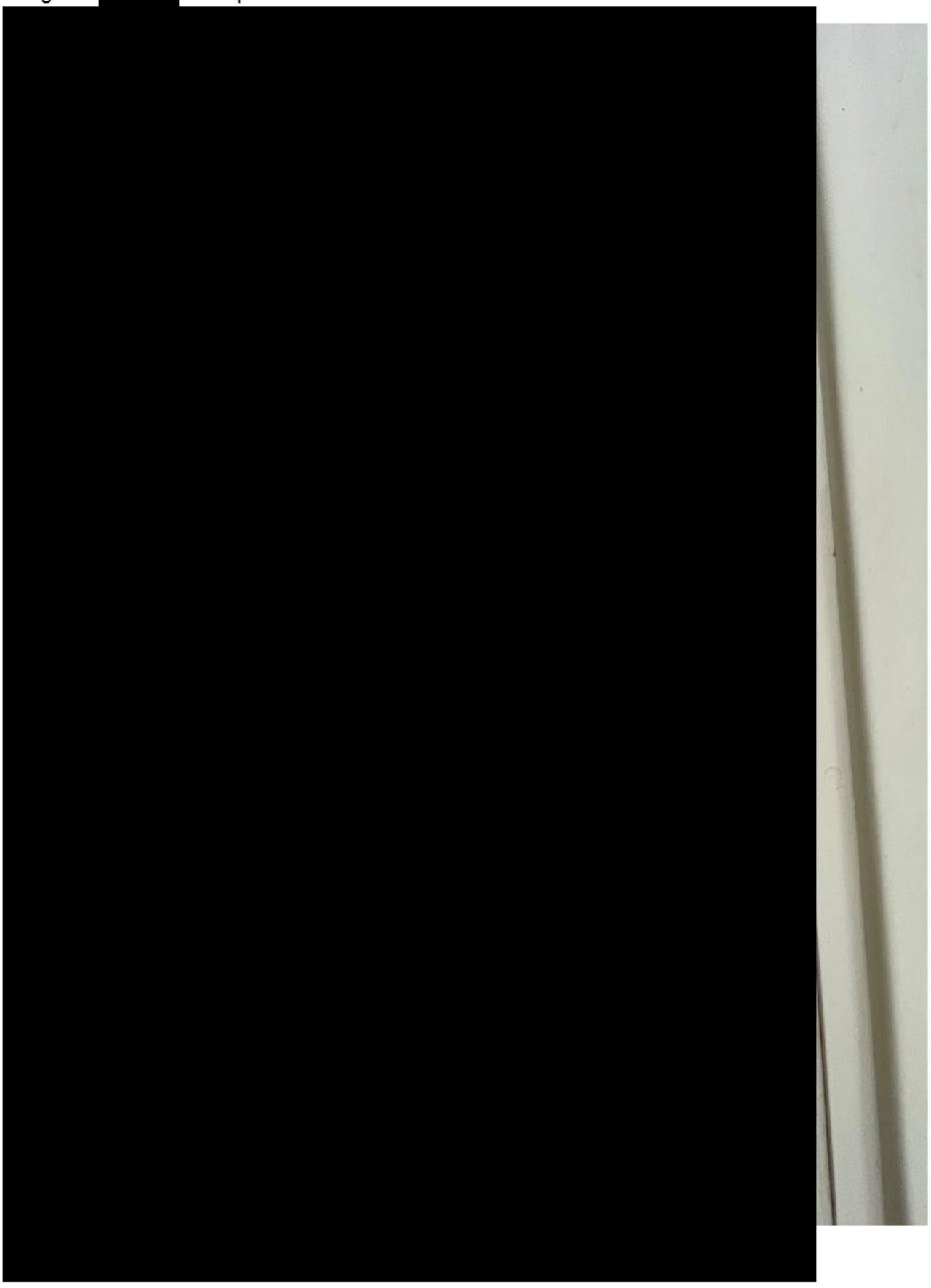

Figure 2 [redacted]



Figure 3 [redacted]



Figure [redacted]



Figure 5 [redacted]



Figure 6 [redacted]



Figure 7 [redacted]

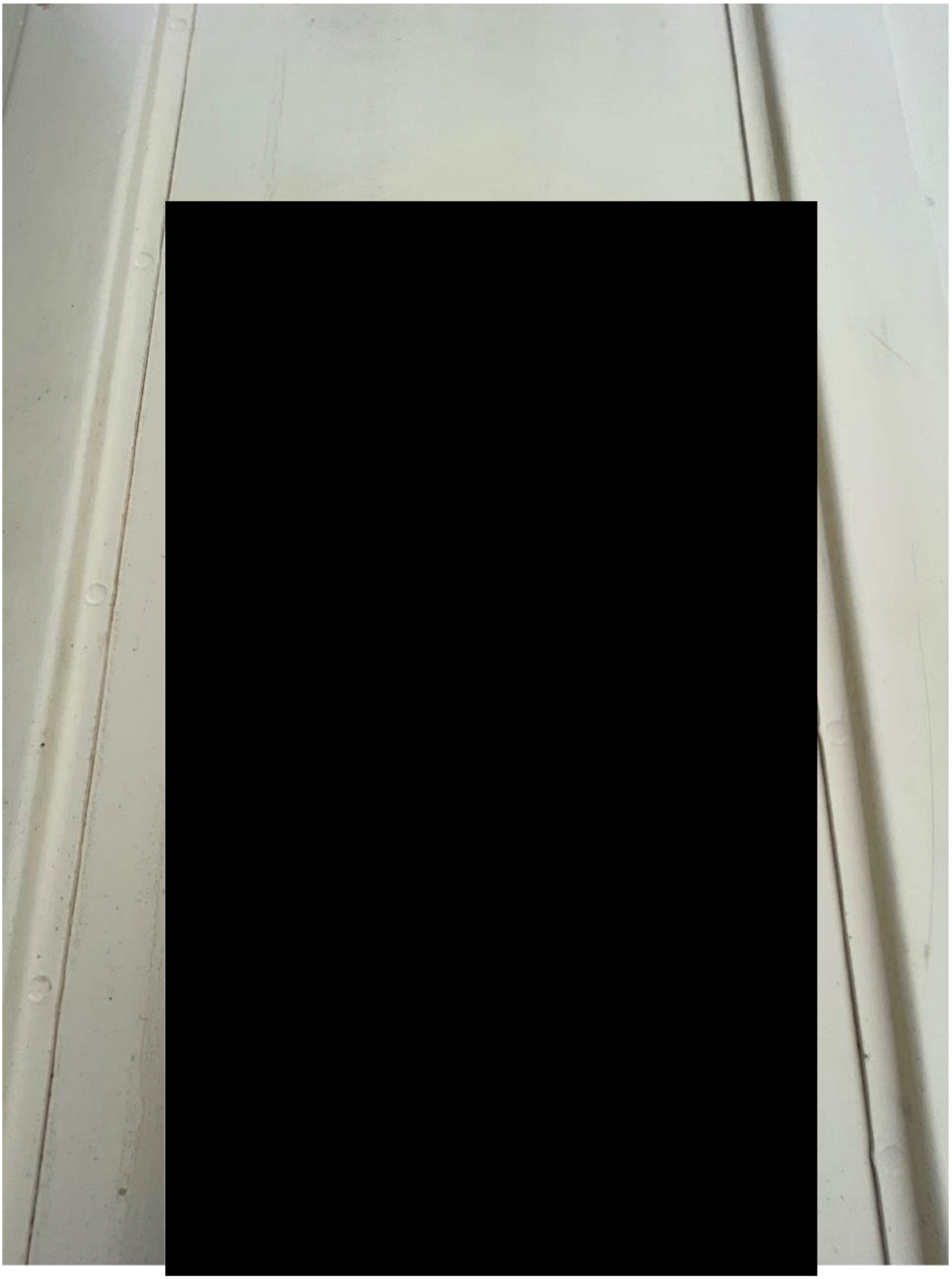

Figure 8 [redacted]

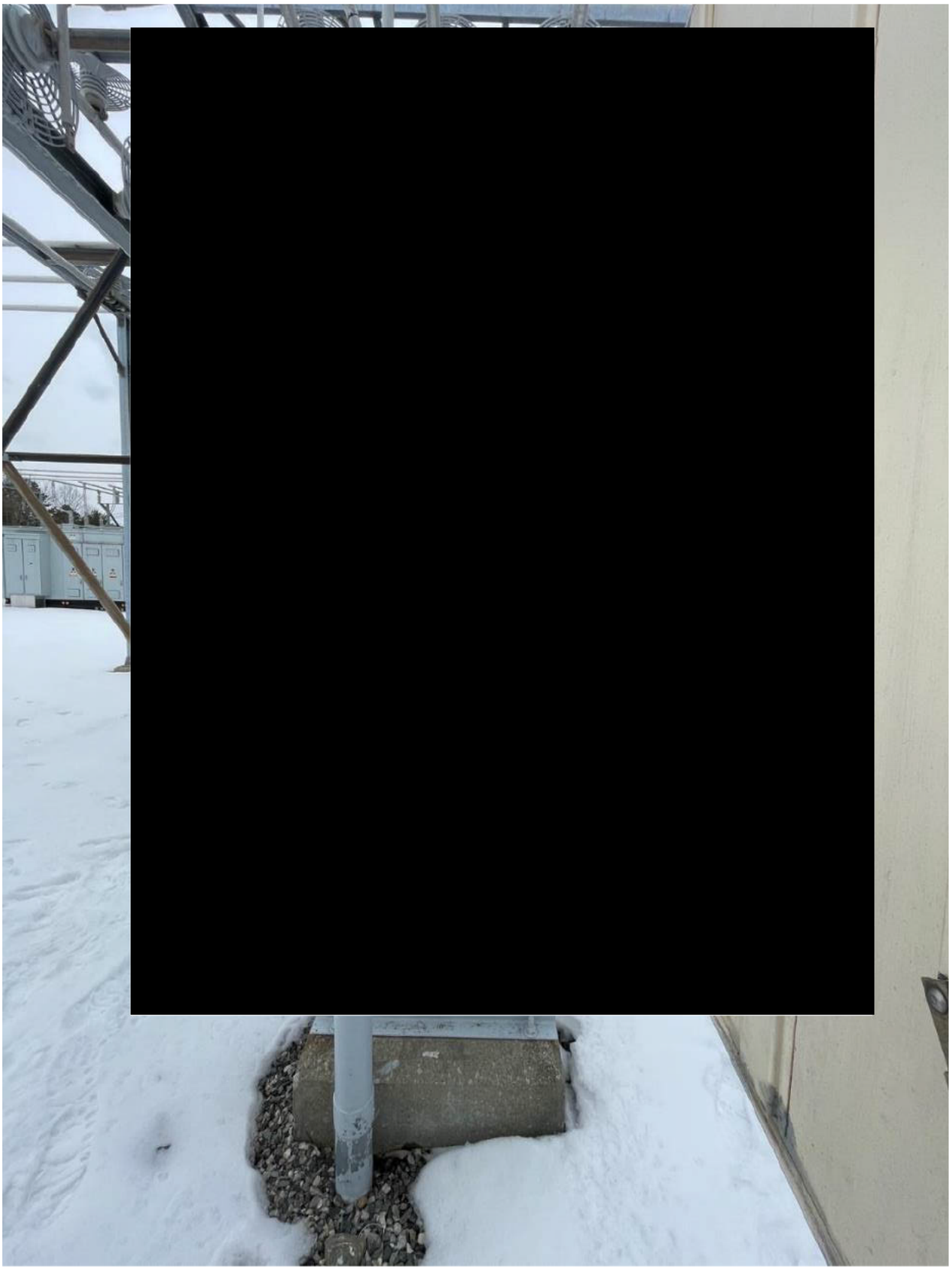

Figure 9 [redacted]



Figure 10 [redacted]



Figure 11 [redacted]



Figure 12 [redacted]



Figure 13 [redacted]



Figure 14 [redacted]



Figure 15 [redacted]



Figure 16 [redacted]



Figure 17 [redacted]

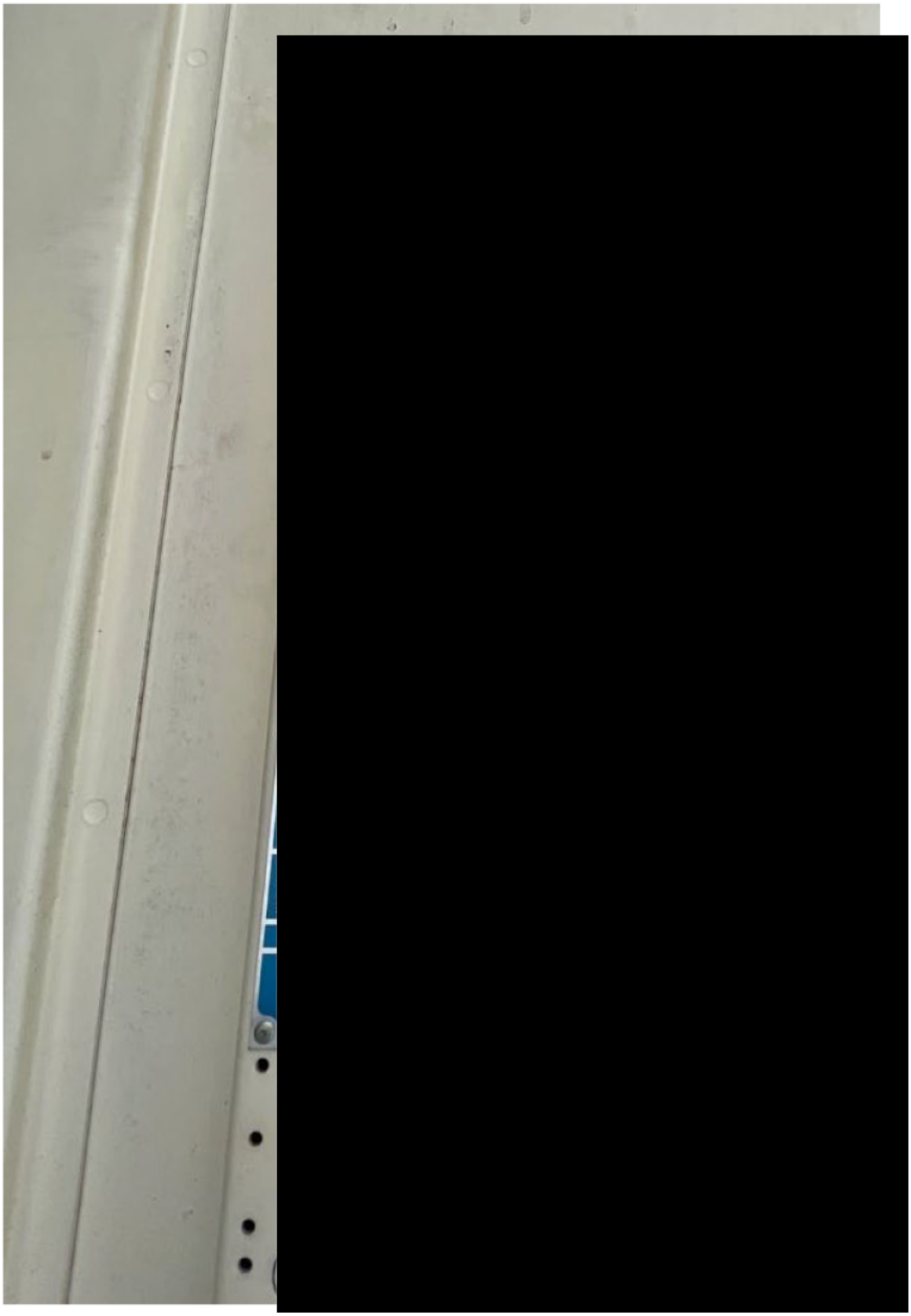

Figure 18 [redacted]



Figure 19 [redacted]



Figure 20 [redacted]



Figure 21 [redacted]



Figure 22 [redacted]



Figure 23 [redacted]



Figure 24 [redacted]



Figure 25 [redacted]

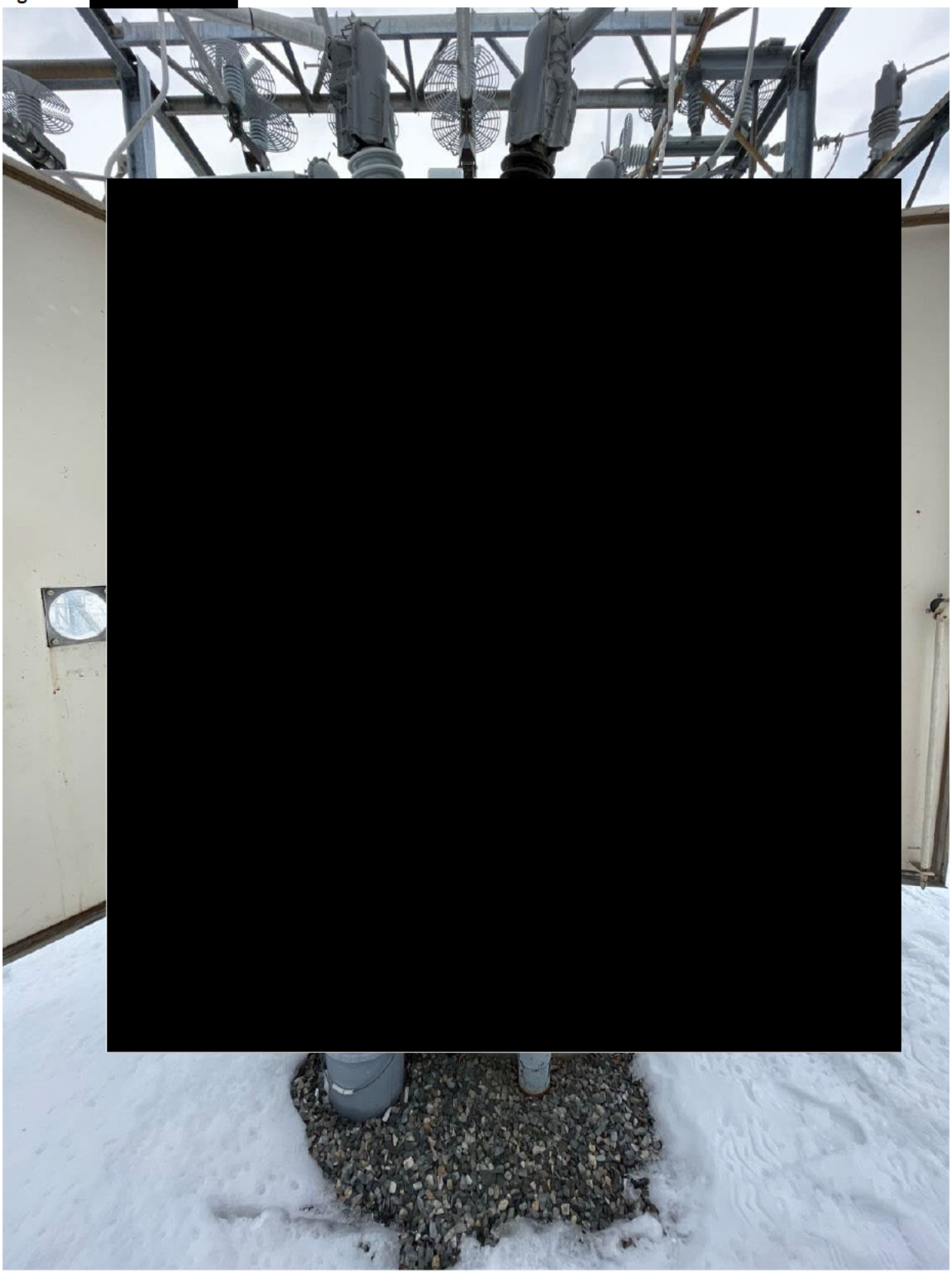

Figure 26 [redacted]



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Constructability Review Form: **Substation**

Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
[redacted]	Phase 2 OCB Replacement Program Release 5 OCB's (RLC)	524	11/03/2020 08 A	03/10/2023 16			
[redacted]	Phase 2 OCB Replacement Program Release 5 OCB's (RLC)	0					
INITIALIZATION AND SCOPE DEVELOPEMENT		406	02/08/2021 08 A	06/28/2022 16			
INITIALIZATION AND SCOPE DEVELOPEMENT		0	02/08/2021 08 A	02/08/2021 08 A			
START	SCHEDULE START MILESTONE	0	02/08/2021 08 A				A1010, PE1000, PE1400, PE1100
Engineering Scope Development		3	03/05/2021 08 A	03/05/2021 16 A			
PE1000	N/R Develop Civil Substation Conceptual Engineering Scope Design in Accordance with	3	03/05/2021 08 A	03/05/2021 16 A		START	
PE1400	N/R Develop P&C Conceptual Engineering Scope Design in Accordance with Deliverab	3	03/05/2021 08 A	03/05/2021 16 A		START	
PE1100	N/R Develop Electrical Substation Conceptual Engineering Scope Design in Accordanc	3	03/05/2021 08 A	03/05/2021 16 A		START	DE1610
Civil Engineering Preliminary Design		20	09/24/2021 08	10/22/2021 16			
DE2010	Vendor Engineer Develop Civil Substation Preliminary Design	10	09/24/2021 08*	10/07/2021 16		TMP1220	DE2020, DE1624, DE1640, DE1600
DE2020	ES Engineering Review Civil Substation Preliminary Design	10	10/08/2021 08	10/22/2021 16*		DE2010	DSSE-500, CE1200, CE1510, AT2605, DE1650
Electrical Engineering Preliminary Design		20	09/24/2021 08	10/22/2021 16			
DE2030	Vendor Engineer Develop Electrical Substation Preliminary Design	10	09/24/2021 08*	10/07/2021 16		TMP1220	DE2040, DE1624, DE1640, DE1600
DE2040	ES Engineering Review Electrical Substation Preliminary Design	10	10/08/2021 08	10/22/2021 16*		DE2030	DSSE-1150, DSSE-520, EE1200, CE1510, BT2605,
P&C Engineering Preliminary Design		20	09/24/2021 08	10/22/2021 16			
DE2090	Vendor Engineer Develop P&C Preliminary Design	10	09/24/2021 08*	10/07/2021 16		TMP1220	DE2100, DE1624, DE1640, DE1600
DE2100	ES Engineering Review P&C Preliminary Design	10	10/08/2021 08	10/22/2021 16*		DE2090	PC1100, NX9A-NC01, CE1510, BT2605, DE1650
EPAC Partial Funding		66	03/01/2021 08 A	04/07/2021 16 A			
CE1521	Schedule Preliminary Constructability Walk Down	5	03/01/2021 08 A	03/05/2021 16 A		CE1510	CE1522
CE1530	N/R - Review Siting & Permitting (If Required)	5	03/01/2021 08 A	03/05/2021 16 A			
CE1540	Preliminary ISD Date Locked Down	5	03/01/2021 08 A	03/05/2021 16 A		CE1510	CE1550
CE1522	Conduct Preliminary Constructability Walk Down	5	03/05/2021 08 A	03/11/2021 16 A		CE1521	CE1524
CE1524	Release Constructability Form Review Complete	5	03/22/2021 08 A	03/24/2021 00 A		CE1522	CE1550, CE1551
CE1550	Develop Preliminary Grade Estimate (-25%+50%)	6	03/22/2021 08 A	04/07/2021 16 A		CE1524, CE1510, CE1540, CE1562	CE1551, CE1552, A3370, A3620, A3590
CE1510	Develop Electrical Substation Preliminary Scope	5	03/24/2021 08 A	03/24/2021 16 A		DE2100, DE2040, DE2020	CE1521, CE1540, CE1550, CE1562
CE1551	N/R - Estimating Request Initiated	3	04/07/2021 08 A	04/07/2021 16 A		CE1550, CE1524, CE1562	CE1552
CE1552	N/R - Review Preliminary Grade Estimate (-25%+50%)	5	04/07/2021 08 A	04/07/2021 16 A		CE1551, CE1550	CE1541, PAPF1510
CE1541	N/R - Develop P6 Schedule for Release EPAC Submittal	5	04/07/2021 08 A	04/07/2021 16 A		CE1552	PAPF1510
PAPF1510	N/R - Submit Partial Funding PAF for Internal Review	3	04/07/2021 08 A	04/07/2021 16 A		CE1552, CE1541	PAPF1511
PAPF1511	N/R - Incorporate Internal Review Comments & Submit Partial Funding PAF to EPAC f	3	04/07/2021 08 A	04/07/2021 16 A		PAPF1510	PAPF1512
PAPF1512	N/R - Present Partial Funding PAF at EPAC Meeting	1	04/07/2021 08 A	04/07/2021 16 A		PAPF1511	PAPF1513
PAPF1513	N/R - Incorporate EPAC Partial Funding PAF Review Comments	3	04/07/2021 08 A	04/07/2021 16 A		PAPF1512	PAPF1514
PAPF1514	N/R - EPAC Partial Funding Approval -Release	10	04/07/2021 08 A	04/07/2021 16 A		PAPF1513	FPR1515, PC1100
CE1562	N/R - Develop Unitized Cost Estimate	5	04/07/2021 08 A	04/07/2021 16 A		CE1510	CE1551, CE1550
FPR1515	N/R - Partial Funding Release Complete Power Plan Approval (Release SCHEDULE T.	0		04/07/2021 16 A		PAPF1514	DSSE-520, DSSE-500, DSSE-1150, TMP1250, DSS
EPAC Full Funding		202	03/05/2021 08 A	12/30/2021 16			
DE1622	Conduct Planning Constructability Walk Down	1	03/05/2021 08 A	03/11/2021 16 A		DE1621	DE1624, DE1600
DE1630	N/R - Review Siting & Permitting (If Required)	5	03/15/2021 08 A	03/15/2021 16 A		DE1610, CE1210, PC1110, EE1210	PAFF1610
DE1610	Develop Electrical Substation Concept Scope	5	03/18/2021 08 A	03/19/2021 16 A		PE1100	DE1621, DE1630, DE1640, DE1650
DE1621	Schedule Planning Constructability Walk Down	5	03/22/2021 08 A	03/26/2021 16 A		DE1610, CE1210, PC1110, EE1210	DE1622
DE1640	Preliminary ISD Date Locked Down	10	10/08/2021 08	10/22/2021 16		DE1610, DE2090, DE2030, DE2010	DE1650
DE1600	Conduct Initial Risk Management & SCLL Review (Project Initiator & PM)	3	10/08/2021 08	10/13/2021 16		DE1622, DE2090, DE2030, DE2010	DE1650
DE1624	Release Constructability Form Review Complete	1	10/08/2021 08	10/08/2021 16		DE1622, DE2010, DE2030, DE2090	DE1650
DE1650	Develop Planning Grade Estimate (-25%+25%)	10	10/25/2021 08	11/05/2021 16*		DE1610, DE1624, DE1640, DE1600, DE20	DE1651
DE1651	Estimating Request Initiated	1	11/08/2021 08	11/08/2021 16		DE1650	DE1652

TASK filter: All Activities

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
DE1652	Review Planning Grade Estimate (-25%+25%)	5	11/15/2021 08	11/19/2021 16*	[redacted]	DE1651	DE1641, PAFF1610
DE1641	Develop P6 Schedule for Release EPAC Submittal	5	11/15/2021 08	11/19/2021 16		DE1652	PAFF1610
PAFF1610	Submit Full Funding PAF for Internal Review	3	11/22/2021 08	11/24/2021 16		DE1652, DE1630, DE1641	PAFF1611
PAFF1611	Incorporate Internal Review Comments & Submit Full Funding PAF to EPAC for Revie	2	12/02/2021 08	12/03/2021 16*		PAFF1610	PAFF1612
PAFF1612	Present Full Funding PAF at EPAC Meeting	0		12/15/2021 16*		PAFF1611	PAFF1613, DSSE-520, DSSE-500, DSSE-1150, DS
PAFF1613	Incorporate EPAC Full Funding PAF Review Comments	5	12/16/2021 08	12/22/2021 16		PAFF1612	PAFF1614
PAFF1614	EPAC Full Funding Approval - Release	5	12/23/2021 08	12/30/2021 16		PAFF1613	FFR1615
FFR1615	Full Funding PowerPlan Approval	0		12/30/2021 16		PAFF1614	A3390, A3420, A3430, A3460, A3500, A3540
T-Minus Milestones Civil		345	02/16/2021 16 A	04/19/2022 16			
AT3001	A-T-30.01 Engr Project Scoping Document Issued (Scope Lockdown) ** Re	0		02/16/2021 16 A			AT00
AT2605	Preliminary Design / Engineering Completed - Civil	0		10/22/2021 16*		DE2020	AT00
AT1811	Detailed Design / Engineering Completed - Civil	0		12/17/2021 16*		CE1210	AT00
AT00	A-T-00 Start Construction Civil	0	01/03/2022 08*			AT0805C, AT0401, AT1811, AT2605, AT300	A1120
AT0805C	Civil IFC - Civil (BG) w/BOM	0		02/02/2022 16		CE1320	AT00
AT0401	Final Civil Material Delivered to Site	0		03/26/2022 16		DSSE-560	AT00
AT0814	Construction Contracts / PSA in Place	0		04/05/2022 16		A3420, A3460	AT00
AT0203	Go / No-Go [CAN] Construction Authorization Notice Form Complete	0		04/19/2022 16		A1170	AT00
T-Minus Milestones Electrical		342	03/09/2021 16 A	06/28/2022 16			
BT1805	N/R A-T-18.05 NX-9 Rating to LCC + ISO for New 'T' Equipment (NC=Per Procedure/	0		03/09/2021 16 A			BT00
BT1003	N/R - PPA (I.3.9) Approval Received	0		03/29/2021 16 A			BT00
BT0901	N/R - T-09 Protection System Data - OP-24 Requirement (Tie to First Start of Construc	0		03/29/2021 16 A			BT00
BT0301	T-03 NX-9 Ratings to LCC & ISO for Existing Equipment (EM=Per Procedure/15 busin	0		07/28/2021 16 A		NX9A-NC23	BT00
BT1202	P/C Description / Draft OI Issued To LCC	0		10/10/2021 16			BT00
BT2605	Preliminary Design / Engineering Completed	0		10/22/2021 16*		DE2100, DE2040	BT00, A3550
BT0404	All Final Relay Protective Settings Issued	0		12/05/2021 16		PC1400	BT00
BT1811	Detailed Design / Engineering Completed	0		12/17/2021 16*		PC1110, EE1210	BT00
BT0409	T-04 ALL FIRM TOA APPLICATIONS DUE TO LCC	0		12/27/2021 16		A1250	BT00
BT00	T-00 Start of Construction (Work Description, INCLUDE the WO#)	0	01/03/2022 08*			BT0203, BT0301, BT0805P, BT1811, BT12(	A1130, CSM
BT0805P	IFC - P&C w/BOM	0		02/01/2022 16		PC1330	BT00
BT0805E	IFC - Electrical (AG) w/BOM	0		02/01/2022 16		EE1310	BT00
BT1201	SCADA Data (Tab) Sheets Sent to LCC	0		02/01/2022 16		CSD1000, CSD1030	BT00
BT2404	Determine / Assign Commissioning Engineer	0		04/05/2022 16		LCE200	BT00
BT0814	Construction Contracts / PSA In Place (Internal Resources)	0		04/05/2022 16		A3420, A3460	BT00
BT0203	Go / No-Go [CAN] Construction Authorization Notice Form Complete	0		04/19/2022 16		B1170	BT00
BT1301	Commissioning Plan Complete	0		05/06/2022 16		LCE400	BT00
BT0401	Final Material Receipt Review Completed *ES Purchased*	0		06/28/2022 16		DSSE-550, DSSE-1130, DSSE-1230	BT00
SITING APPROVALS AND PERMITS		50	03/09/2021 08 A	03/09/2021 16 A			
PERMITTING - Local - Short Form		45	03/09/2021 08 A	03/09/2021 16 A			
A3590	N/R - Permitting - PM Send Scope to Siting Team	5	03/09/2021 08 A	03/09/2021 16 A	[redacted]	CE1550	A3600
A3600	N/R -Permitting - Siting Team Review Scope to Determine Siting Requirements (e.g. zc	10	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3590	A3610
A3610	N/R -Permitting - If Requirements Exist, Pursue Appropriate Actions, Permits, etc.	30	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3600	
PERMITTING - Local - Long Form		50	03/09/2021 08 A	03/09/2021 16 A			
A3620	N/R -Permitting - PM Send Scope to Siting Team	5	03/09/2021 08 A	03/09/2021 16 A	[redacted]	CE1550	A3630
A3630	N/R -Permitting - Siting Team Review Scope to Determine Siting Requirements (e.g. zc	10	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3620	A3640
A3640	N/R -Permitting - If transformer changes substation footprint, conduct zoning review	5	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3630	A3650
A3650	N/R -Permitting - Meet with Building Inspector	10	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3640	A3660

TASK filter: All Activities

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
A3660	N/R -Permitting - Obtain Special Use Permit	20	03/09/2021 08 A	03/09/2021 16 A	Siting and Permitting Generic	A3650	
Engineering & Design		470	11/03/2020 08 A	01/04/2023 16			
Engineering Services Staffing		1	11/03/2020 08 A	11/04/2020 16 A			
A3370	Decision Required Regarding Engineering Staffing (ES, COC, BID)	1	11/03/2020 08 A	11/04/2020 16 A	[redacted]	CE1550	TMP1140
EOC - Engineer of Choice Process		70	11/03/2020 08 A	02/03/2021 16 A			
TMP1140	EOC- Provide RFP to Vendors	2	11/03/2020 08 A	11/04/2020 16 A		A3370	TMP1150
TMP1150	EOC- Vendors Responds with Proposal	5	11/05/2020 08 A	11/18/2020 08 A		TMP1140	TMP1180
TMP1180	EOC- EOC Committee Reviews at Bi-Weekly Meeting & Approves	1	01/26/2021 08 A	01/26/2021 16 A		TMP1150	TMP1200
TMP1200	EOC- DR Prepared by Project Engineer & Project Controls #500065	3	01/29/2021 08 A	02/03/2021 16 A		TMP1180	TMP1220
TMP1220	EOC- PO Issued for Vendor -Preliminary Design Effort	10	02/01/2021 00 A	02/03/2021 00 A	Purchasing Department	TMP1200	DE2010, DE2030, DE2090
TMP1240	EOC- CO Issued for Vendor - Design Effort	10	02/01/2021 00 A	02/03/2021 00 A	Purchasing Department		
TMP1250	EOC- NTP Issued for Vendor -Preliminary Design Effort	4	02/01/2021 08 A	02/03/2021 16 A	Purchasing Department	FPR1515	CE1200, EE1200, PC1100
Civil Engineering Detail Design		30	11/04/2021 08	12/17/2021 16			
CE1200	Vendor Engineer Develop Civil Substation Detail Design	20	11/04/2021 08*	12/03/2021 16	[redacted]	DE2020, TMP1250	OPERM1000, CE1210
CE1210	ES Engineering Review Civil Substation Detail Design	10	12/06/2021 08	12/17/2021 16*		CE1200	CE1300, DE1621, DE1630, AT1811, DSSE-500
Civil Engineering IFC Design		21	01/04/2022 08	02/02/2022 16			
CE1300	Vendor Engineer Develop Civil Substation IFC	10	01/04/2022 08	01/18/2022 16*		CE1210	CE1310
CE1310	ES Engineering Review Civil Substation IFC	10	01/19/2022 08	02/01/2022 16		CE1300	CE1320, DSSE-500
CE1320	ES Engineering Issue Civil Substation IFC	1	02/02/2022 08	02/02/2022 16		CE1310	AT0805C
Electrical Engineering		5	01/26/2022 08	02/01/2022 16			
CSD1000	PE Initiate CASCADE Forms (Appendix A) for Construction Package - Phase 1	5	01/26/2022 08	02/01/2022 16		EE1310	BT1201
Electrical Engineering Detail Design		30	11/04/2021 08	12/17/2021 16			
EE1200	Vendor Engineer Develop Electrical Substation Detail Design	20	11/04/2021 08*	12/03/2021 16		DE2040, TMP1250	OPERM1000, EE1210
EE1210	ES Engineering Review Electrical Substation Detail Design	10	12/06/2021 08	12/17/2021 16*		EE1200	EE1300, DE1621, DE1630, BT1811, A1250, DSSE-1
Electrical Engineering IFC Design		20	01/04/2022 08	02/01/2022 16			
EE1300	Vendor Engineer Develop Electrical Substation IFC	10	01/04/2022 08	01/18/2022 16*		EE1210	EE1310
EE1310	ES Engineering Review Electrical Substation IFC	10	01/19/2022 08	02/01/2022 16		EE1300	CSD1000, BT0805E, DSSE-520, DSSE-1150, DSSE
Substation - Preliminary Thermal Data		4	07/28/2021 08 A	07/28/2021 16 A			
NX9A-NC07	N/R (per M.L. 7/28/21) LTRC Reviews and Makes "GO / NO-GO" Decision for Thermal	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC05	NX9A-NC09
NX9A-NC01	N/R (per M.L. 7/28/21) PE Updates 1-Line Nomenclature Dwgs & Complete PE Check	1	07/28/2021 08 A	07/28/2021 16 A		DE2100	NX9A-NC03
NX9A-NC11	N/R (per M.L. 7/28/21) P&C Develops and Provides LTRC with P&C Checklist (M7-EN	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC09	NX9A-NC13
NX9A-NC21	N/R (per M.L. 7/28/21) TRC Review and Submit NX-9 Data to LCC + ISO-NE for S/S T	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC19	NX9A-NC23
NX9A-NC09	N/R (per M.L. 7/28/21) LTRC Requests P&C Checklist	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC07	NX9A-NC11
NX9A-NC19	N/R - Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOI	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC17	NX9A-NC21
NX9A-NC17	N/R (per M.L. 7/28/21) LTRC Sends Thermal Rating Data for Approval & Submit to NUI	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC15	NX9A-NC19
NX9A-NC15	N/R (per M.L. 7/28/21) TRC Reviews and Approves Thermal Rating Data	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC13	NX9A-NC17
NX9A-NC13	N/R (per M.L. 7/28/21) LTRC Reviews and Sends Thermal Rating Data for TRC Review	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC11	NX9A-NC15
NX9A-NC23	N/R - Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-3, Equipl	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC21	BT0301
NX9A-NC03	N/R (per M.L. 7/28/21) LTRC Reviews and Makes "GO / NO-GO" Decision for 1-Line N	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC01	NX9A-NC05
NX9A-NC05	N/R (per M.L. 7/28/21) LTRC Submits 1-Line Nomenclature to TRC	1	07/28/2021 08 A	07/28/2021 16 A		NX9A-NC03	NX9A-NC07
Substation - NX-9 Pre NX9-DOE		1	12/30/2022 08	12/30/2022 16			
NX9500	Scheduler - Send Email for 48Hrs Notification before DOE.	1	12/30/2022 08	12/30/2022 16		ISD	
Substation - NX-9 Post NX9-DOE/ISD		360	07/28/2021 08 A	01/04/2023 16			
NX9FINAL6	N/R (per M.L. 7/28/21) Receive + Issue Final Affirmed NX-9 Data to NURS	1	07/28/2021 08 A	07/28/2021 16 A		NX9FINAL50	FINISH
NX9FINAL5	Review + Affirm Accuracy of NX-9 for ISO Submission (Tie after Equip DOE or ISD)	3	12/30/2022 08	01/04/2023 16		ISD	NX9FINAL60
P&C Engineering		5	01/26/2022 08	02/01/2022 16			

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
CSD1030	PE Initiate CASCADE Forms (Appendix A) for Construction Package - Phase 1	5	01/26/2022 08	02/01/2022 16	[redacted]	PC1330	BT1201
P&C Engineering Detail Design		30	11/04/2021 08	12/17/2021 16			
PC1100	Vendor Engineer Develop P&C Detail Design	20	11/04/2021 08*	12/03/2021 16		DE2100, TMP1250, PAPF1514	OPERM1000, PC1110
PC1110	ES Engineering Review P&C Detail Design	10	12/06/2021 08	12/17/2021 16*		PC1100	PC1320, A7550, DE1621, DE1630, BT1811, LCE100,
P&C Design Package		59	11/04/2021 08	02/01/2022 16			
OPERM100	Submit Outage Permit / TOA Request - (18 weeks)	10	11/04/2021 08	11/18/2021 16		PC1100, EE1200, CE1200	OPERM1010
OPERM101	Outage Permit / TOA Request - Review/ Approve (18 weeks)	20	11/19/2021 08	12/17/2021 16		OPERM1000	A1170, B1170
PC1320	Vendor Engineer Develop P&C IFC	10	01/04/2022 08	01/18/2022 16*		PC1110	PC1330
PC1330	ES Engineering Review P&C IFC	10	01/19/2022 08	02/01/2022 16		PC1320	CSD1030, BT0805P, LCE100
Relay Settings		1	04/12/2021 08 A	04/12/2021 16 A			
A7420	N/R (per TP-4/12/21)P&C Review Relay Settings Basis Document and Provides Comr	1	04/12/2021 08 A	04/12/2021 16 A		A7540	A7500
A7540	N/R (per TP-4/12/21)Vendor Prepares Relay Settngs Basis Document (IFR)	1	04/12/2021 08 A	04/12/2021 16 A		A7551	A7420
A7500	N/R (per TP-4/12/21)Vendor Incorporate Relay Settings Comments & IFC	1	04/12/2021 08 A	04/12/2021 16 A		A7420	A7440
A7440	N/R (per TP-4/12/21)P&C Prepare and Send Relay Settings to Field	1	04/12/2021 08 A	04/12/2021 16 A		A7500	PC1400
A7550	N/R (per TP-4/12/21)Provide Relay Setting Information to Vendor (ASPEN Model, As-E	1	04/12/2021 08 A	04/12/2021 16 A		PC1110	A7551
A7551	N/R (per TP-4/12/21)Vendor Makes Go/No-Go Decision on Relay Settings	1	04/12/2021 08 A	04/12/2021 16 A		A7550	A7540, LCE100
PC1400	N/R (per TP-4/12/21)Complete P&C Relay Settings	0		04/12/2021 16 A		A7440	BT0404
Material Procurement		103	02/02/2022 08	06/28/2022 16			
Material - Civil		37	02/02/2022 08	03/26/2022 16			
DSSE-500	MATERIAL - CIVIL - Prepare & Issue DR	5	02/02/2022 08	02/08/2022 16		DE2020, FPR1515, PAFF1612, CE1210, CI	DSSE-540, DSSE-1040
DSSE-540	Civil (BG) Material Ordered	0		02/08/2022 16		DSSE-500	DSSE-1040
DSSE-1040	MATERIAL - CIVIL - Procurement Issue PO	10	02/09/2022 08	02/23/2022 16	Purchasing Department	DSSE-540, DSSE-500	DSSE-1050
DSSE-1050	MATERIAL - CIVIL - Material Vendor Delivery Leadtime	30	02/24/2022 08	03/25/2022 16	Material Coordinator Generic	DSSE-1040	DSSE-560
DSSE-560	MATERIAL - CIVIL - Confirm Material Delivery to Site	1	03/26/2022 08	03/26/2022 16	Material Coordinator Generic	DSSE-1050	AT0401
Material - Electrical		37	02/02/2022 08	03/26/2022 16			
DSSE-520	MATERIAL - Electrical - Prepare & Issue DR	5	02/02/2022 08	02/08/2022 16	[redacted]	DE2040, FPR1515, PAFF1612, EE1210, EI	DSSE-530, DSSE-1020
DSSE-530	Electrical (AG) Material Ordered	0		02/08/2022 16		DSSE-520	DSSE-1020
DSSE-1020	MATERIAL - ELectrical - Procurement Issue PO	10	02/09/2022 08	02/23/2022 16	Purchasing Department	DSSE-530, DSSE-520	DSSE-1030
DSSE-1030	MATERIAL - ELectrical - Material Vendor Delivery Leadtime	30	02/24/2022 08	03/25/2022 16	Material Coordinator Generic	DSSE-1020	DSSE-550
DSSE-550	MATERIAL - Electrical - Confirm Material Delivery to Site	1	03/26/2022 08	03/26/2022 16	Material Coordinator Generic	DSSE-1030	BT0401
Material - Breakers		103	02/02/2022 08	06/28/2022 16			
DSSE-1150	MATERIAL - BREAKER - Prepare & Issue DR (breakers)	5	02/02/2022 08	02/08/2022 16	[redacted]	DE2040, FPR1515, PAFF1612, EE1210, EI	DSSE-1180, DSSE-1160
DSSE-1180	Breaker (AG) Material Ordered	0		02/08/2022 16		DSSE-1150	DSSE-1160
DSSE-1160	MATERIAL - BREAKER - Procurement Issue PO	10	02/09/2022 08	02/23/2022 16	Purchasing Department	DSSE-1150, DSSE-1180	DSSE-1140
DSSE-1140	MATERIAL - BREAKER - Material Vendor Delivery Leadtime	124	02/24/2022 08	06/27/2022 16	Material Coordinator Generic	DSSE-1160	DSSE-1130
DSSE-1130	MATERIAL - BREAKER - Confirm Material Delivery to Site	1	06/28/2022 08	06/28/2022 16	Material Coordinator Generic	DSSE-1140	BT0401
Material - Switches		93	02/02/2022 08	06/14/2022 16			
DSSE-1250	MATERIAL - SWITCHES - Prepare & Issue DR (breakers)	5	02/02/2022 08	02/08/2022 16	[redacted]	DE2040, FPR1515, PAFF1612, EE1210, EI	DSSE-1270, DSSE-1260
DSSE-1270	Switches (AG) Material Ordered	0		02/08/2022 16		DSSE-1250	DSSE-1260
DSSE-1260	MATERIAL - SWITCHES - Procurement Issue PO	10	02/09/2022 08	02/23/2022 16	Purchasing Department	DSSE-1250, DSSE-1270	DSSE-1240
DSSE-1240	MATERIAL - SWITCHES - Material Vendor Delivery Leadtime	110	02/24/2022 08	06/13/2022 16	Material Coordinator Generic	DSSE-1260	DSSE-1230
DSSE-1230	MATERIAL - SWITCHES - Confirm Material Delivery to Site	1	06/14/2022 08	06/14/2022 16	Material Coordinator Generic	DSSE-1240	BT0401
Construction		452	03/31/2021 08 A	01/13/2023 16			
Construction Services Selection		5	03/31/2021 08 A	03/31/2021 16 A			
A3550	STAFFING DECISION: EVERSOURCE OR OUTSOURCE BID/COC CONSTRUCT	5	03/31/2021 08 A	03/31/2021 16 A	[redacted]	BT2605	A3430, A3390
Contractor Of Choice Group		35	03/31/2021 08 A	03/31/2021 16 A			

TASK filter: All Activities

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
A3390	N/R - CONST.SERVICES - COC - Eversource Provides Spec / RFQ to COC	5	03/31/2021 08 A	03/31/2021 16 A	Purchasing Department	A3550, FFR1615	A3400
A3400	N/R - CONST.SERVICES - COC - COC Evaluates Spec and Provides Quote	10	03/31/2021 08 A	03/31/2021 16 A	CT/WMA.Construction Contr	A3390	A3410
A3410	N/R - CONST.SERVICES - COC - Eversource Reviews Quote from COC	10	03/31/2021 08 A	03/31/2021 16 A	Purchasing Department, Sea	A3400	A3420
A3420	N/R - CONST.SERVICES - COC - Eversource Awards Contract - PO Issued	10	03/31/2021 08 A	03/31/2021 16 A	Purchasing Department	A3410, FFR1615	A1170, BT0814, AT0814, B1170
BID Process Group		65	01/03/2022 08	04/05/2022 16			
A3430	CONST.SERVICES - BID - Eversource provide Spec / RFP	15	01/03/2022 08	01/24/2022 16	Purchasing Department	A3550, FFR1615, EE1210	A3440
A3440	CONST.SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	15	01/25/2022 08	02/14/2022 16	CT/WMA.Construction Contr	A3430	A3450
A3450	CONST.SERVICES - BID - Eversource reviews contractor proposals	15	02/15/2022 08	03/08/2022 16	[redacted]	A3440	A3460
A3460	CONST.SERVICES - BID - Contract is Awarded - PO Issued	20	03/09/2022 08	04/05/2022 16	Purchasing Department	A3450, FFR1615	A1170, BT0814, AT0814, B1170
Construction - Civil		5	01/03/2022 08	01/07/2022 16			
A1120	Construction - Civil	5	01/03/2022 08	01/07/2022 16	Const Rep Field Sup - Civil	AT00	A1130, CV1000
Construction - Electrical		14	01/08/2022 08	01/21/2022 16			
A1130	Construction - Electrical	14	01/08/2022 08	01/21/2022 16	Const Rep T Generic - SS	A1120, BT00	CFM
Construction - Const. Rep Tasks		268	12/20/2021 08	01/13/2023 16			
A1250	Construction Rep SUBMIT OUTAGE REQUESTS for NON-transformer equipment (4	5	12/20/2021 08	12/27/2021 16	Construction Rep Generic	EE1210	BT0409
A1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD) - Group 1	10	12/30/2022 08	01/13/2023 16	Const Rep T Generic - SS	CFM	A1030
Construction Resource Tracking		250	01/03/2022 08	12/29/2022 16			
ConRep-S	CONSTRUCTION REP	250	01/03/2022 08	12/29/2022 16	Construction Rep Generic	CSM	CFM
CONSTelec	CONSTRUCTION - ELECTRICIAN	250	01/03/2022 08	12/29/2022 16	Distribution - S/S Electrician	CSM	CFM
Construction Outages		250	01/03/2022 08	12/29/2022 16			
CSM	Construction Start Milestone	0	01/03/2022 08			BT00	ConRep-S, CONSTelec, TOA-Const1
TOA-Const1	OUTAGE / General Construction Work (OCB-1)	60	01/03/2022 08	03/12/2022 16	Construction Resources	CSM	SWOUP1B1, SWINP1B1, TOA-Const2
SWOUP1B1	Construction - Switch Out (OCB-1)	1	01/03/2022 08	01/03/2022 16	Distribution Switching Crew	TOA-Const1	
SWINP1B1	Construction - Switch In (OCB-1)	1	03/12/2022 08	03/12/2022 16	Distribution Switching Crew	TOA-Const1	
TOA-Const2	OUTAGE / General Construction Work (OCB-2)	60	03/16/2022 08	05/24/2022 16	Construction Resources	TOA-Const1	SWINP1B2, SWOUP1B2, SWINP1B3, SWOUP1B
SWOUP1B2	Construction - Switch Out (OCB-2)	1	03/16/2022 08	03/16/2022 16	Distribution Switching Crew	TOA-Const2	CFM
SWINP1B2	Construction - Switch In (OCB-2)	1	05/24/2022 08	05/24/2022 16	Distribution Switching Crew	TOA-Const2	CFM
TOA-Const3	OUTAGE / General Construction Work (OCB-3)	60	05/31/2022 08	08/08/2022 16	Construction Resources	TOA-Const2	TOA-Const4, SWINP1B3, SWOUP1B3, CFM, TOA-
SWOUP1B3	Construction - Switch Out ((OCB-3)	1	05/31/2022 08	05/31/2022 16	Distribution Switching Crew	TOA-Const2, TOA-Const3	CFM
SWINP1B3	Construction - Switch In (OCB-3)	1	08/08/2022 08	08/08/2022 16	Distribution Switching Crew	TOA-Const2, TOA-Const3	CFM
TOA-Const4	OUTAGE / General Construction Work (OCB-4)	60	08/18/2022 08	10/26/2022 16	Construction Resources	TOA-Const3	SWINP1B4, SWOUP1B4, TOA-Const5
SWOUP1B4	Construction - Switch Out (OCB-4)	1	08/18/2022 08	08/18/2022 16	Distribution Switching Crew	TOA-Const4	CFM
SWINP1B4	Construction - Switch In (OCB-4)	1	10/26/2022 08	10/26/2022 16	Distribution Switching Crew	TOA-Const4	CFM
TOA-Const5	OUTAGE / General Construction Work (OCB-5)	55	10/27/2022 08	12/29/2022 16	Construction Resources	TOA-Const3, TOA-Const4	SWINP1B5, SWOUP1B5
SWOUP1B5	Construction - Switch Out (OCB-5)	1	10/27/2022 08	10/27/2022 16	Distribution Switching Crew	TOA-Const5	CFM
SWINP1B5	Construction - Switch In (OCB-5)	1	12/29/2022 08	12/29/2022 16	Distribution Switching Crew	TOA-Const5	CFM
CFM	Construction Finish Milestone	0		12/29/2022 16		LCE610, SWINP1B4, SWOUP1B4, A1130,	DSSE-1100, A1020, A1260, A1030, ISD, A 1040, A111
ISD	EQUIPMENT IN SERVICE DATE (requires FOOB constraint)	0		12/29/2022 16		LCE700, CFM	NX9FINAL50, LCE800, NX9500
Test And Commission		317	03/31/2021 08 A	07/21/2022 16			
TEST - SERVICES STAFFING DECISION		5	04/05/2021 08 A	04/09/2021 16 A			
A1010	STAFFING DECISION: EVERSOURCE OR OUTSOURCE BID/COC TESTING	5	04/05/2021 08 A	04/09/2021 16 A	[redacted]	START	A3510, A3470
LCE Planning		88	02/02/2022 08	06/07/2022 16			
LCE100	PM to Request Lead Commissioning Engineer GO/NO-GO	2	02/02/2022 08	02/03/2022 16		A7551, PC1110, PC1330	LCE200
LCE200	Assign Lead Commissioning Engineer	2	04/04/2022 08*	04/05/2022 16		LCE100	LCE310, BT2404
LCE400	Develop Test and Commissioning Plan	21	04/08/2022 08	05/06/2022 16	CT/WMA Test Contractor-GE	LCE310, LCE320	LCE500, BT1301
LCE500	LCE Review and Approve Vendor's Test and Commissioning Plan	21	05/09/2022 08	06/07/2022 16	CT - Lead Commissioning Er	LCE400	LCE620, LCE610

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
TEST SERVICES - CONTRACTOR OF CHOICE		40	03/31/2021 08 A	03/31/2021 16 A			
A3470	N/R - TEST SERVICES - COC - Eversource Provides Spec / RFQ to COC	5	03/31/2021 08 A	03/31/2021 16 A	Purchasing Department	A1010	A3480
A3480	N/R - TEST SERVICES - COC - COC Evaluates Spec and Provides Quote	10	03/31/2021 08 A	03/31/2021 16 A	CT/WMA Test Contractor-GE	A3470	A3490
A3490	N/R - TEST SERVICES - COC - Eversource Reviews Quote from COC	10	03/31/2021 08 A	03/31/2021 16 A	[redacted]	A3480	A3500
A3500	N/R - TEST SERVICES - COC - Eversource Awards Contract - PO Issued	10	03/31/2021 08 A	03/31/2021 16 A	Purchasing Department	A3490, FFR1615	LCE310, LCE320
TEST SERVICES - BID PROCESS		65	08/23/2021 08 A	08/23/2021 16 A			
A3510	N/R - TEST SERVICES - BID - Eversource provide spec / RFP	15	08/23/2021 08 A	08/23/2021 16 A	Purchasing Department	A1010, PC1110	A3520
A3520	N/R - TEST SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	15	08/23/2021 08 A	08/23/2021 16 A	CT/WMA Test Contractor-GE	A3510	A3530
A3530	N/R - TEST SERVICES - BID - Eversource reviews contractor proposals	15	08/23/2021 08 A	08/23/2021 16 A	[redacted]	A3520	A3540
A3540	N/R - TEST SERVICES - BID - Eversource awards contract - PO Issued	20	08/23/2021 08 A	08/23/2021 16 A	Purchasing Department	A3530, FFR1615	LCE310, LCE320
Test Activities		224	08/30/2021 08	07/21/2022 16			
LCE320	Mobilize Testing Vendor Prior to Construction	2	08/30/2021 08	08/31/2021 16	CT/WMA Test Contractor-GE	A3540, A3500	LCE400
LCE310	Mobilize Commissioning Engineer Prior to Construction	2	04/06/2022 08	04/07/2022 16	CT - Lead Commissioning Er	LCE200, A3540, A3500	LCE400
LCE620	Execute Test and Commissioning Plan	30	06/08/2022 08	07/20/2022 16	Engineering Contractor	LCE500	LCE700
LCE610	LCE Oversee Execution of Test and Commissioning Plan	30	06/08/2022 08	07/20/2022 16	CT - Lead Commissioning Er	LCE500	CFM
LCE700	LCE Ensure Test Group Prepare Electrical Field Mark Ups	1	07/21/2022 08	07/21/2022 16	CT - Lead Commissioning Er	LCE620	ISD
Project Close-Out		293	01/10/2022 08	03/10/2023 16			
Project Close-Out		293	01/10/2022 08	03/10/2023 16			
CV1000	FE Prepares Civil Field Mark Ups (Tie after Last Civil Construction Activity)	7	01/10/2022 08	01/19/2022 16		A1120	CV1100
CV1500	FE Files Civil Design Drawings at Station	5	02/25/2022 08	03/03/2022 16		PM1000	FINISH
EV1000	FE Prepare Electrical Field Mark Ups	7	01/18/2023 08	01/26/2023 16	Tester Not Assigned	LCE900	EV1100, PC1340
EV1500	FE Files Substation Design Drawings at Station	5	03/06/2023 08	03/10/2023 16		PM1100	FINISH
PC1500	FE Files P&C Design Drawings at Station	5	03/06/2023 08	03/10/2023 16		PM1100	FINISH
Civil As-Builts		25	01/20/2022 08	02/24/2022 16			
CV1100	Eversource Engineering Prepares & Sends Civil Field Mark Up Packge to Vendor	5	01/20/2022 08	01/26/2022 16	[redacted]	CV1000	CV1200
CV1200	Vendor Engineering Verifies Civil Mark Ups and Updates As-Built Drawing Package. Su	7	01/27/2022 08	02/04/2022 16		CV1100	CV1300
CV1300	Eversource Engineering Verifies Quality of Submitted Civil Drawings	7	02/07/2022 08	02/15/2022 16		CV1200	CV1400
CV1400	ES Create Civil Transmittal, Approve Final As-Built Package, and EDC Files and Issue	5	02/16/2022 08	02/23/2022 16		CV1300	PM1000
PM1000	PM to Document Civil As-Built Drawings Complete	1	02/24/2022 08	02/24/2022 16		CV1400	CV1500
Electrical As-Builts		25	01/27/2023 08	03/03/2023 16			
EV1100	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	01/27/2023 08	02/02/2023 16		EV1000	EV1200
EV1200	Vendor Engineering Verifies Electrical Mark Ups and Updates As-Built Drawing Packag	7	02/03/2023 08	02/13/2023 16		EV1100	EV1300
EV1300	Eversource Engineering Verifies Quality of Submitted Electrical Drawings	7	02/14/2023 08	02/23/2023 16		EV1200	EV1400
EV1400	Electrical Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawi	5	02/24/2023 08	03/02/2023 16		EV1300	PM1100
PM1100	PM to Document Electrical As-Built Drawings Complete (Electrical & P&C)	1	03/03/2023 08	03/03/2023 16		EV1400, PC1310	EV1500, PC1500
P&C As-Builts		24	01/27/2023 08	03/02/2023 16			
PC1340	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	01/27/2023 08*	02/02/2023 16		EV1000	PC1200
PC1200	Vendor Engineering Verifies P&C Mark Ups and Updates As-Built Drawing Package. S	7	02/03/2023 08	02/13/2023 16	[redacted]	PC1340	PC1300
PC1300	Eversource Engineering Verifies Quality of Submitted P&C Drawings	7	02/14/2023 08	02/23/2023 16		PC1200	PC1310
PC1310	P&C Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings	5	02/24/2023 08	03/02/2023 16		PC1300	PM1100
Test Close-Out		11	12/30/2022 08	01/17/2023 16			
LCE800	LCE Ensures Marked up Prints Ready for Pick-up	1	12/30/2022 08	12/30/2022 16	CT - Lead Commissioning Er	ISD	LCE900
LCE900	LCE Review Test Data and Issue Commissioning Report	10	01/03/2023 08	01/17/2023 16	CT - Lead Commissioning Er	LCE800	EV1000
Site Restoration Close-Out		10	12/30/2022 08	01/13/2023 16			
A1110	Restore / Remediate Site	10	12/30/2022 08	01/13/2023 16	CT/WMA.Construction Contr	CFM	FINISH
Material, Equipment, Cost And Asset Management Close-Out		35	12/30/2022 08	02/21/2023 16			

TASK filter: All Activities

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
A1020	Cost Analyst Prepares FINAL Units of Property	21	12/30/2022 08	01/31/2023 16	CT- Cost Analyst Generic	CFM	FINISH
A1030	Asset Management Complete Asset Update(s) in CASCADE	25	01/17/2023 08	02/21/2023 16	[redacted]	CFM, A1260	FINISH
Project Management Close-Out		48	12/30/2022 08	03/10/2023 16			
A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30	12/30/2022 08	02/13/2023 16		CFM	FINISH
DSSE-1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	5	12/30/2022 08	01/06/2023 16	Construction Rep Generic	CFM	
FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0		03/10/2023 16		A1040, A1020, A1110, A1030, EV1500, CV1	
Overhead / Indirects		10	04/06/2022 08	04/19/2022 16			
Project Management		10	04/06/2022 08	04/19/2022 16			
A1170	Prepare Civil CAN (Construction Authorization Notice)	10	04/06/2022 08	04/19/2022 16	[redacted]	A3420, A3460, OPERM1010	AT0203
B1170	Prepare Electrical CAN (Construction Authorization Notice)	10	04/06/2022 08	04/19/2022 16		A3420, A3460, OPERM1010	BT0203

TASK filter: All Activities

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EVERSOURCE

Operations Program Level Project Authorization Form

Approved at May 26, 2021 EPAC

Link to Meeting Minutes

Date Prepared: 05/11/2021	**Program Title: CT OCB Replacement and Bus Rehabilitation Program**
Company: Eversource CT	**Project Number (by state): CS00411 (CT)**
Organization: Asset Management	**Class(es) of Plant:** D SS
Project Initiator: [redacted]	**Project Category:** Stations - Circuit Breakers
Project Manager: [redacted]	**Project Type:** Program
Project Sponsor: [redacted]	**Project Purpose:** Replace Contaminated Circuit Breakers and Bus Rehab
Estimated in service date: Q4 2024	**If Transmission Project: PTF/Non-PTF?** See associated Program Release Forms
Eng. / Constr. Resources Budgeted? See associated Program Release Forms	**Capital Investment Part of Original Operating Plan?** See associated Program Release Forms
Authorization Type: Program Approval	**O&M Expenses Part of the Original Operating Plan?** See associated Program Release Forms
Initial Funding Request: N/A	**Estimated Program Value (by State): CT $32.185M** **CT Projected unit cost: $670.5K Unit cost/breaker**

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

[redacted]. Dollar authorization for these costs shall be through submission of individual program releases. Program Release Form submissions shall occur in accordance with the locations and phases identified in this document. "Project Checklist – Transmission & Substation" will be submitted with each Program Release Form.

An initial funding request for the OCB Replacement and Bus Rehabilitation Program for Connecticut was approved on November 23, 2020 for $300K. The initial funding was requested to allow engineering to complete an analysis, design, and estimate of what will be required for the replacement of OCBs and bus rehabilitation. An additional funding request was sent on April 1, 2021 to increase the total initial funding to $450K to allow additional engineering to be included in the program activities. As of May 20, 2021, $256.6K has been spent in development of this program and has completed ten constructability walkdowns and scope definitions and has completed three estimates.

EVERSOURCE

Financial Unit Cost Evaluation (by State)

Note: Dollar values are in thousands and are unit level costs for Program PAFs

Line item Category	Year 1	Year 2	Year 3+	Total
1. ROW / Easements / Land Acquisition				
2. Environmental Approvals / Permits				
3. Outreach	$1			$1
4. Siting Approvals / Permits				
5. Engineering / Design	$7			$7
6. Materials (Eversource purchased)	$89			$89
7. Construction (incl matl's by contractors)	$157			$157
8. Testing / Commissioning	$86			$86
9. Project Mgmt Team	$3			$3
10. Removals	$10			$10
11. Other				
12. Risks *	$53			$53
SUBTOTAL DIRECTS W/ RISKS	**$406**			**$406**
13. Indirects/Overhead	$195			$195
14. AFUDC	$36			$36
PROJECT TOTAL – BASELINE BUDGET	**$637**			**$637**
15. Contingency	$33			$33
TOTAL CAPITAL REQUEST	**$671**			**$671**
16. Reimbursables/Customer Contribution				
PROJECT TOTAL (LESS REIMBURSABLES)	**$671**			**$671**
O&M				
Total Request	**$671**			**$671**

* *See the* Risks and Risk Mitigation Plans section below for the cost breakdown of the risks.

Unit Breakout Costs (by state)

Note: Dollar values are in thousands

Line item Category	Year 1	Year 2	Year 3+	Total
ST Labor	$10			$10
OT Labor				
Outside Services Labor	$244			$244
Materials*	$89			$89
Removals	$10			$10
Other	$86			$86
Indirects	$195			$195
AFUDC	$36			$36
TOTAL REQUEST	**$671**			**$671**

*All materials including Eversource purchased and outside service purchased. Note that outside service purchased material included in construction in unit cost evaluation above.

Future Financial Impacts:

Provide below the estimated future costs that will result from the project: N/A
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

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

What functional area(s) will these future costs be funded in?_____N/A_____
A representative from the respective functional area is required to be included as a project approver.

If this is other than a Reliability Project, please complete the section below;

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

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

What functional area(s) will these benefits be reflected in?_____N/A_____
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

Is there an ARO associated with this project? If yes, please provide details: No

Are there other environmental cleanup costs associated with this project? If yes, please provide details: No

Technical Justification:

Project Need Statement

[redacted]

Project Objectives

[redacted]

Program Scope

[redacted] When the planning grade estimates are complete for a release, the release's project authorization form will be presented for full funding. A preliminary summary of the equipment for each release is shown in Table 1. Marked up nomenclature drawings identifying the release equipment is provided in the Attachment 1.

Table 1 Release Equipment Summary:

Substation	Release Number	OCB	Hook Stick	Reactor	Manual Sw	Surge arrestors	move Grd Switch
[redacted]							

Background / Justification

[redacted]

Business Process and / or Technical Improvements:

The equipment improvements to the substation yards will look to minimize future exposure to prolonged customer outages during emergency and routine switching operations and reduced environmental risk. This program will increase system reliability by replacing the obsolete equipment.

The environmental benefit will be realized by replacing aging oil filled equipment, which presents an environmental concern.

Alternatives Considered with Cost Estimates

Alternative 1. Replace OCBs and bus equipment (chosen alternative).

[redacted] See Attachment A for the alternative 1 Cost Estimate.

Alternative 2. Replace OCB PCB bushings and leave breakers in place

[redacted] The cost for this alternative could be as high as $40 to $50K per breaker. No true conceptual cost estimate for this alternative was done as this alternative does not address the PURA initiative nor the aging bus equipment and was not chosen.

Alternative 3. Replace OCB PCB bushings and leave breakers in place

[redacted] No cost estimate has been provided for this alternative.

Alternative 4. Do Nothing

[redacted] No true conceptual cost estimate for this alternative was done as this alternative does not address the PURA initiative nor the aging bus equipment and was not chosen.

Project Schedule

Program Schedule Milestone/Phase Name	Estimated Completion Date
Begin Program Execution	Q1 2021
Preliminary scope developed	Q2 2021
Program Level PAF and first Project Releases presented to EPAC	Q2 2021
Complete Program	Q4 2024

Release Schedule Milestone/Phase Name			
Substation	Release Number	Full Funding EPAC Mtg Target	Scheduled Construction Target
[redacted]			

Not applicable

Risks and Risk Mitigation Plans

The risks associated with the work identified in the release to replace equipment will be identified and evaluated in the individual release documentation.

	Risk	Funded Amount	Assessment and Mitigation
1.	Breaker control cables are found to be damaged.	$5K	Perform continuity checks on control cables and install new control breaker cables if required.
2.	Underground conduit damaged.	$5K	Check for conduit damage and replace Underground Conduit if required.
3.	Delays / outages related to breaker energization plans.	$25K	Reschedule and provide overtime as required.
4.	Design development Risks.	$6.4K	Add Allowances for Re-Design
5.	Severe Weather, Delays, OT.	$6.4K	Reschedule and provide overtime as required.
6.	Existing foundations not suitable for re-use.	$5K	Replace foundations as required

Contingency

Contingency is included in the estimates to cover possible cost deviations for unknown conditions that may arise during the project. See Individual Program releases.

References

CL&P 2014 Operating Initiatives - Docket No.14-05-06 PURA-03 Dated 06/20/2014

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

Attachment A: Unitized Cost Estimate Backup Details
Attachment B: OCB Releases Nomenclature Diagrams

Cost Estimate Backup Details

Attachment A: Unitized Cost Estimate Backup Details