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Program Release Form

Approved on December 08, 2021 EPAC

Link to Meeting Minutes

Date Prepared: 11/29/2021	**Project Title: [redacted] OCB Replacement Program Release**
Company: Eversource CT	**Facility Name: [redacted]**
Organization: Asset Management	**Project Number: CS00413**
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**
Program Level Project Number: CS00411	**O&M Expenses Part of the Original Operating Plan? N/A**
Total Request: $3.074M	**Estimated in service date(s): October 13, 2022**
	Facility Type (check all that apply)**:** ☐ PTF ☐ non-PTF ☒ Distribution

Executive Summary

This Program Release is requesting $3.074M to [redacted] The engineering work started under the CS00411 - CT OCB Replacement and Bus Rehabilitation Program Level initial funding work order CS00411A. The Program Level Project Authorization Form (PAF) had initial funding of $300K approved in PowerPlan on November 23, 2020, which was increased to $450K and approved in PowerPlan on May 27, 2021. This release will reallocate the $79K in charges spent to date to this Release project CS00413. To date, the project scope, detailed design, preliminary constructability walkdown and planning grade cost estimate have been completed and the project is expected to be in service in October 2022.

This Program Release is requesting dollar authorization in accordance with the program level criteria specified in Program Level PAF CS00411 - CT OCB Replacement and Bus Rehabilitation Program (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 are fully described herein for scope and unit cost comparison. [redacted] are included in this release compared with the program which increases the project costs relative to the program unitized costs.

Project Scope

The scope includes the following:



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

Table 1 - Equipment to be Replaced or Removed

Nomenclature Location	Age (Years)	Equip Type	Manufacturer	Model	Load Rating (A)	V Class	Short Cct Rating (kA)
[redacted]							

Nomenclature Location	Age (Years)	Equip Type	Manufacturer	Model	Load Rating	V Class	Short Cct Rating
[redacted]							

See Attachment B for the nomenclature diagram. A constructability review was performed on October15, 2021 (see Attachment C).

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	$0
4. Siting Approvals / Permits	$0	$0	$0
5. Engineering / Design	$22	$55	$34
6. Materials (Eversource purchased)	$168	$463	$295
7. Construction (incl matl's by contractors)	$572	$783	$211
8. Testing / Commissioning	$259	$316	$57
9. Project Mgmt Team	$8	$15	$7
10. Removals	$29	$74	$45
11. Other	$0	$0	$0
12. Risks	$158	$201	$43
SUBTOTAL DIRECTS W/ RISKS	**$1,218**	**$1,911**	**$692**
13. Indirects/Overhead	$585	$977	$392
14. AFUDC	$109	$81	($28)
PROJECT TOTAL – BASELINE BUDGET	**$1,912**	**$2,969**	**$1,056**
15. Contingency	$99	$105	$6
TOTAL CAPITAL REQUEST	**$2,012**	**$3,074**	**$1,062**
16. Reimbursables/Customer Contribution	$0	$0	$0
PROJECT TOTAL (LESS REIMBURSABLES)	**$2,012**	**$3,074**	**$1,062**
O&M	$0	$0	$0
Total Request	**$2,012**	**$3,074**	**$1,062**

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: $34K** – Engineering costs increased due to more design work for this release. An additional four (4) manual switches and two (2) sets of reactors are included in this release compared with the program. Scope revisions required revisions to some engineering tasks.

6. **Materials (by Eversource): $295K –** Costs increased due to more materials purchased for this release. An additional four (4) manual switches and two (2) sets of reactors are included in this release compared with the program.

7. **Construction (including materials supplied by contractors): $211K–** Costs increased due to more construction work for this release. An additional four (4) manual switches and two (2) sets of reactors are included in this release compared with the program.

8. **Testing / Commissioning: $57K –** Costs increased in this release compared with the program. Commissioning of added switches and reactors require additional testing.

9. **Project Management Team: $7K –** Costs increased due to additional work in assessing scope compared with the program.

10. **Removals: $45K -** Cost increased due to more removal work for this release. An additional four (4) manual switches and two (2) sets of reactors are included in this release compared with the program.

11. **Other: $0K –** No changes with respect to the program.

12. **Risk: $43K –** Cost increased due to more work for this release. An additional four (4) manual switches and two (2) sets of reactors are included in this release compared with the program.

13. **Indirects/Overhead: $392K –** Indirect charges are calculated using the direct costs which have increased.

14. **AFUDC: ($28K) –** AFUDC costs are reduced as time from the start of the project to the in service date (ISD) has been reduced by one year compared to the time period used as the basis for the unitized cost estimate.

15. **Contingency: $6K –** Contingency is more than the program in line with estimating recommendations as there is more equipment replacements in this release.

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	Total
1. ROW / Easements / Land Acquisition		$0	$0	$0	$0
2. Environmental Approvals / Permits		$0	$0	$0	$0
3. Outreach		$0	$1	$2	$3
4. Siting Approvals / Permits		$0	$0	$0	$0
5. Engineering / Design		$44	$9	$3	$55
6. Materials (Eversource purchased)		$0	$362	$101	$463
7. Construction (incl matl's by contractors)		$1	$66	$717	$783
8. Testing / Commissioning		$0	$0	$316	$316
9. Project Mgmt Team		$6	$4	$5	$15
10. Removals		$0	$0	$74	$74
11. Other		$0	$0	$0	$0
12. Risks		$0	$0	$201	$201
SUBTOTAL DIRECTS W/ RISKS	**$450**	**$50**	**$442**	**$1,419**	**$1,911**
13. Indirects/Overhead		$28	$120	$829	$977
14. AFUDC		$1	$9	$71	$81
PROJECT TOTAL – BASELINE BUDGET	**$450**	**$79**	**$571**	**$2,319**	**$2,969**
15. Contingency		$0	$33	$72	$105
		$0	$0	$0	$0
TOTAL CAPITAL REQUEST	**$450**	**$79**	**$604**	**$2,391**	**$3,074**
16. Reimbursables/Customer Contribution		$0	$0	$0	$0
		$0	$0	$0	$0
PROJECT TOTAL (LESS REIMBURSABLES)	**$450**	**$79**	**$604**	**$2,391**	**$3,074**
O&M	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL REQUEST	**$450**	**$79**	**$604**	**$2,391**	**$3,074**

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

Risk	Funded Amount
Control Breaker Cable Failures	$15K
Underground Conduit Damaged	$15K
Delays / outages related to breaker energization plans and equipment deliveries.	$90K
Design development	$20K
Severe Weather Delays	$36K
Existing foundations not suitable for re-use	$25K
Total	**$201K**

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Breakout Costs

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 to Go	2022	Total
ST Labor	$0	$11	$6	$38	$56
OT Labor	$0	$0	$0	$0	$0
Outside Services Labor	$0	$38	$73	$934	$1,045
Materials*	$0	$0	$362	$170	$532
Removals	$0	$0	$0	$74	$74
Other	$0	$1	$33	$275	$309
Indirects	$0	$28	$120	$829	$977
AFUDC	$0	$1	$9	$71	$81
TOTAL CAPITAL REQUEST - W/O REIMBURSABLES	**$450**	**$79**	**$604**	**$2,391**	**$3,074**

*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: N/A
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

Loss of load is not a concern with the 1X bank out of service because there are 2 other banks available to carry the load. Additionally, can be transferred to an adjacent station if needed.

There are no abutter concerns as the project is located entirely within the substation fence.

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 and equipment deliveries	Rescheduling and OT as required if outages cannot be performed during the scheduled times due to unforeseen circumstances and remain vigilant of deliveries' dates.
Design development	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 will be replaced if required.

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

Contingency

Contingency of $105K 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) Initial Approval in PowerPlan	November 2020
Program (CS00411) Revised Approval in PowerPlan	May 2021
Detailed Design Complete	October 2021
Release Approval at EPAC	December 2021
IFC Design Complete	January 2022

Construction Start	September 2022
In Service Date	October 2022
Release Close-Out	December 2022

See Attachment D for the P6 Schedule.

Attachments

- Attachment A: CS00413 - [redacted] OCB Estimate C-21-668 R1
- Attachment B: CS00413 - [redacted] OCB Nomenclature Diagram
- Attachment C: CS00413 - B[redacted] SS Constructability Review Document
- Attachment D: CS00413 - [redacted] 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] OCB Replacement Program Release			**Project Number: CS00413**		
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?			Yes		
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		

Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] OCB Replacement Program Release	**Project Number: CS00413**
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] OCB Replace and Bus Rehab Program Release
Project Number: CS00413
WO & Task #: TBD
Estimate revision #: 1
Estimate Type - Station work

Estimate #: C-21-668A
Date of Estimate: 11/02/2021
Estimate done by: [redacted]
In Service date (ISD): TBD

Template Revision # 01.00d

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	$3,300	0.2%	0.1%	$0	$900	$2,400	$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	$55,400	2.9%	1.8%	$43,700	$9,000	$2,700	$0	$0	$0	$0	$0	$0	$0	$0
6	Materials (Eversource purchased)	$462,700	24.2%	15.1%	$0	$362,100	$100,600	$0	$0	$0	$0	$0	$0	$0	$0
7	Construction (Incl matls by contractors)	$783,400	41.0%	25.5%	$600	$66,200	$716,600	$0	$0	$0	$0	$0	$0	$0	$0
8	Testing / Commissioning	$315,900	16.5%	10.3%	$0	$0	$315,900	$0	$0	$0	$0	$0	$0	$0	$0
9	PMT Project Mgmt Team	$15,000	0.8%	0.5%	$5,800	$3,800	$5,400	$0	$0	$0	$0	$0	$0	$0	$0
10	Removals	$73,900	3.9%	2.4%	$0	$0	$73,900	$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	$201,000	10.5%	6.5%	$0	$0	$201,000	$0	$0	$0	$0	$0	$0	$0	$0
13	0	$0		0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Project Directs Total w/Risks	**$1,910,600**	100.0%	62.2%	**$50,100**	**$442,000**	**$1,418,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
13	Indirects/Overhead	$977,100		31.8%	$28,200	$120,000	$828,900	$0	$0	$0	$0	$0	$0	$0	$0
14	AFUDC	$81,000		2.6%	$1,000	$8,700	$71,300	$0	$0	$0	$0	$0	$0	$0	$0
15	0	$0		0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Project Total - Baseline Budget	**$2,968,700**		96.6%	**$79,300**	**$570,700**	**$2,318,700**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
15	Contingency	$105,300		3.4%	$0	$33,000	$72,300	$0	$0	$0	$0	$0	$0	$0	$0
	Project Total - Funding Approval Level	**$3,074,000**		100.0%	**$79,300**	**$603,700**	**$2,391,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
16	Reimbursables/Customer Contribution	$0			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	-	-			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Project Total (less reimbursables)	**$3,074,000**			**$79,300**	**$603,700**	**$2,391,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
	Cost per key qty (if appl)	-	$'s /												
	Amount of Escalation included above	$57,300			$0	$0	$57,300	$0	$0	$0	$0	$0	$0	$0	$0
6	Total materials - Eversource	$462,700			$0	$362,100	$100,600	$0	$0	$0	$0	$0	$0	$0	$0
	Total materials - Contractor	$69,204			$4	$0	$69,200	$0	$0	$0	$0	$0	$0	$0	$0
	Total materials	$531,904			$4	$362,100	$169,800	$0	$0	$0	$0	$0	$0	$0	$0

NOTE: Risk / Contingency is 11.1% of Project Total Costs (incl escal/Indirects/AFUDC but excl reimb.)

Estimate Range	**-25%**	**25%**
	$2,306,000	**$3,843,000**

All Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-21-668A
Date of Estimate: 11/02/2021

Project Number: CS00413
WO & Task #: TBD

		TOTAL w/ escal broken out
ROW / Easements / Land purchas	$	-
Environmental Approvals / Permit	$	-
Outreach	$	3,200
Siting Approvals / Permits	$	-
Engineering / Design	$	55,300
Materials / Eversource purchased	$	461,100
Construction (Incl matl's by cont	$	763,600
Testing / Commissioning	$	306,700
PMT Project Mgmt Team	$	14,900
Removals	$	71,800
Other	$	-
Risks	$	201,000
		$1,877,600
Indirects/Overhead	$	952,900
AFUDC	$	80,900
	$	-
		$2,911,400
	$	-
Contingency	$	105,300
		$3,016,700
	$	-
	$	-
		$3,016,700
	$	57,300
		-
Excel total		**$3,074,000**
Check total		$0

COMMENTS

Project Scope:

[redacted]

Indirect rates based on: 11 - CT - Station work

- Engineering to be outsourced with in-house review, construction and testing to be out-sourced with external resources. PM services will be outsourced. Construction Rep will be Internal.
- 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 previous vendor quotes.
- All new equipment will be installed within the confines of the existing fenced yard.
- Additional Risk/allowances only have been added for aggressive outage recall times .
- 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.

RISKS

Control Breaker Cables Failures	$	15,000
Underground Conduit Damaged	$	15,000
Delays / outages related to breaker energization plans and Equip	$	90,000
Design development Risks	$	20,000
Severe Weather Delays	$	16,000
Existing foundations not suitable for re-use	$	25,000

			Prior		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		TOTAL
CSTXX-CONSTRUCTION	R		Mhrs	DOLLARS		DOLLARS		DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	Mhrs	DOLLARS	DOLLARS
Electrical Construction	LT		0	$432		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$432
General Construction	LT		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	$14		$0		$212	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$226
Telecom - Field	LT		0	$30		$0		$1,908	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$1,938
Construction Reps (internal)	LT		0	$45		$0		$3,498	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$3,543
Support Switch/Tag	LT		0	$0		$0		$25,440	0	$0	0	$0	0	$0		$0		$0		$0		$0	0	$0	$25,440
Other (specify)	LT		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
Other (specify)	LT		0	$0		$0		$0	0	$0	0	$0	0	$0		$0		$0		$0		$0	0	$0	$0
LT Total			0	$520		$0		$31,058	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$31,578
Employee Expenses	AE	0%	0	$26		$0		$1,553		$0		$0		$0		$0		$0		$0		$0		$0	$1,579
Construction Purchased Material	AM	1%	0	$4		$662		$8,959		$0		$0		$0		$0		$0		$0		$0		$0	$8,625
Outside Construction Vendor	AQ		0	$0		$66,216		$566,944	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$662,160
Sales tax on Constr. Vendor		0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Vehicles (now in Indirects section)	AV	0.0%	0	$52		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$52
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
Construction Rep (Outside vendor)	AQ		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Rents and Leases	BR		0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
CSTXX Subtotal				$622		$66,878		$634,514		$0		$0		$0		$0		$0		$0		$0		$0	$701,964
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
CSTXX Total			0	$622		$66,878		$634,514	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$701,964
ENRXX-TG ENGINEERING/DESIGN																									$0
Project Services/Drafting	LT		0	$770		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$770
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
D- Street Engineering/Design	LT		0	$0		$636		$212	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$848
Civil Engineering/Design	LT		0	$1,405		$424		$212	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$2,041
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
Substation (D) Engineering/Design	LT		0	$6,776		$848		$106	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$6,730
Protection & Controls Engineering	LT		0	$0		$848		$212	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$1,060
Survey Engineering	LT		0	$770		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$770
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
Telecom Engineering	LT		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
Other - specify	LT		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
LT Total			0	$9,342		$2,756		$742	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$12,740
Employee Expenses	AE	0%	0	$462		$138		$37		$0		$0		$0		$0		$0		$0		$0		$0	$637
Contractor Engineering - T-Lines	AQ		0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Contractor Engineering - D-Street	AQ		0	$0		$1,812		$604	0	$0		$0		$0		$0		$0		$0		$0		$0	$2,416
Contractor Engineering - T-Grading	AQ		0	$33,696		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$33,696
Contractor Engineering - D-Grading	AQ		0	$0		$1,824		$608	0	$0		$0		$0		$0		$0		$0		$0		$0	$2,432
Contractor Engineering - P&C	AQ		0	$0		$2,448		$612	0	$0		$0		$0		$0		$0		$0		$0		$0	$3,060
Contractor Engineering - Survey	AQ		0	$277		$0		$0	0	$0	0	$0		$0		$0		$0		$0		$0		$0	$277
Contractor Engineering - SCADA / Automation	AQ		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
Contractor Engineering - Specify	AQ		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
Contractor Engineering - Specify	AQ		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
ENRXX Subtotal			0	$43,679		$8,978		$2,603		$0		$0		$0		$0		$0		$0		$0		$0	$55,259
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
ENRXX Total			0	$43,679		$8,978		$2,603	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$55,259
LNDXX-TG LAND																									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
Employee Expenses	AE	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
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Fees and Payments	BF		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
LNDXX Total			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
Eversource	AM		0			$347,857		$86,964		$0		$0		$0		$0		$0		$0		$0		$0	$434,821
Outside Services	AM		0			$0		$66,200		$0		$0		$0		$0		$0		$0		$0		$0	$66,200
	AM		0	$0																					$0
Freight		0%	0	$0																					$0
Sales Tax Eversource/outside services	5.9%	5.9%	0	$0		$13,800		$6,100		$0		$0		$0		$0		$0		$0		$0		$0	$19,700
Other		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
MATXX Subtotal				$0		$361,457		$161,264		$0		$0		$0		$0		$0		$0		$0		$0	$522,721
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
MATXX Total			0	$0		$361,457		$161,264		$0		$0		$0		$0		$0		$0		$0		$0	$522,721
PMXX-PROJECT MANAGER & SUPPORT																									$0
Project Management (PM)	LT		0	$879		$1,896		$2,544	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$4,919
Project Planning/Cost (CP)	LT		0	$272		$636		$848	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$1,756
Contracts/Purchasing (CP)	LT		0	$407		$424		$424	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$1,255
System Planning	LT		0	$0		$318		$318		$0		$0		$0		$0		$0		$0		$0		$0	$636
Environmental	LT		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		$44		$118	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$162
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	$272		$106		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$378
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			$424		$848		$0		$0		$0		$0		$0		$0		$0		$0	$1,272
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
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
LT Total				$1,829		$3,648		$5,100	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$10,577
Employee Expenses	AE	0%	0	$87		$182		$356	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$616
Project Support Vendor - PM	AQ		0	$4,073		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$4,073
Project Support Vendor - IP	AQ	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
Project Support Vendor - System Planning	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 - Notification	AQ	0.0%	0	$630		$2,240	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$3,070
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	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
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	$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	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	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	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	AQ	0.0%	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	$49		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$49
Property or CWIP tax large proj. allowance	BR		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
	BR		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Fees and Payments - Environmtal	BF		0			$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Fees and Payments - Siting	BF		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Fees and Payments - Other	BF		0	$0		$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
PMXX Subtotal				$6,822		$4,060		$7,896		$0		$0		$0		$0		$0		$0		$0		$0	$18,088
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
PMXX Total			0	$6,822		$4,060	94	$7,896	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$18,088
RMXX-TG REMOVAL																									$0
Engineering/Design	LT		0	$0		$0	0	$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Internal Construction	LT		0	$0		$0	240	$35,380	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$35,380
LT Total			0	$0		$0		$35,380	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$35,380
Employee Expenses	AE	19%	0	$0		$0		$5,307		$0		$0		$0		$0		$0		$0		$0		$0	$5,307
Outside Services	AQ	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Contractor Labor	AQ	0.0%	0	$0		$0	216	$31,104	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$31,104
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Rents and Leases	BR		0	$0		$0																			$0
RMXX Subtotal				$0		$0		$71,791		$0		$0		$0		$0		$0		$0		$0		$0	$71,791
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
RMXX Total			0	$0		$0	456	$71,791	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$71,791
TSTXX-TG TEST																									$0
Test / Field Engr. Labor (In House)	LT		0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Lead Commissioning Engr. (LCE) (internal)	LT		0	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0
Employee Expense	AE	10%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
Test / Field Engr. Labor (contractor)	AQ		0	$0		$0	1080	$156,400	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$156,400
Lead Commissioning Engr. (LCE) (contractor)	AQ		0	$0		$0	540	$112,320	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$112,320
Vehicles (now in Indirects section)	AV	0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
TSTXX Subtotal				$0		$0		$268,720		$0		$0		$0		$0		$0		$0		$0		$0	$268,720
Escalation			0	$0																					$0
		0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	$0
TSTXX Total			0	$0		$0	1620	$268,720	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$268,720
SUBTOTAL PROJECT DIRECT COST		-		$80,113		$441,973	6885	$1,184,487	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	7,195	$1,676,573
																									0
Risk																									$0
Risk				$0		$201,000				$0		$0		$0		$0		$0		$0		$0		$0	0	$201,000
				$ -		$ -	0	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	0	$0
				$ -		$ -	0	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -	0	$0
Risk Total				$0		$201,000				$0		$0		$0		$0		$0		$0		$0		$0	0	$201,000
TOTAL PROJECT DIRECT COST (w risk)		-		$80,113	802	$441,973	6885	$1,386,487	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	7,195	$1,877,573
INDIRECTS																									
Non-Productive Time Allocation (ZNP)		15.1%	0	$664		$664		$10,878		$0		$0		$0		$0		$0		$0		$0		$0		$12,206
Payroll Benefits Allocation (ZPB) Incl NPT		44.0%	0	$0		$0		$33,622		$0		$0		$0		$0		$0		$0		$0		$0		$33,622
Gen SVC CO Overhead (ZGS) Incl NPT		75.0%	0	$3,808		$6,026		$6,041		$0		$0		$0		$0		$0		$0		$0		$0		$15,495
E&S Allocations (ZEB,ZBL,ZBM)		60.0%	0	$18,643		$51,814		$638,796		$0		$0		$0		$0		$0		$0		$0		$0		$707,254
AG&E Allocations (ZAB)		1.4%	0	$643		$6,261		$33,373		$0		$0		$0		$0		$0		$0		$0		$0		$40,467
Stores Expense Allocation (ZST)		8.0%	0	$0		$17,829		$6,957		$0		$0		$0		$0		$0		$0		$0		$0		$24,786
Lobby Stock		0.0%	0	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0
MOEC (ZMA)		6.0%	0	$2,566		$16,082		$66,615		$0		$0		$0		$0		$0		$0		$0		$0		$87,196
Vehicles (ZVB)		38.0%	0	$79		$1,793		$20,238		$0		$0		$0		$0		$0		$0		$0		$0		$22,107
		0.0%	0	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0	0.00%	$0		$0
Indirects Subtotal				$26,181		$120,029		$804,732		$0		$0		$0		$0		$0		$0		$0		$0	0	$950,922
TOTAL PROJECT COST - Direct & Indirect (excl AFUDC)				$79,274		$562,002		$2,190,219		$0		$0		$0		$0		$0		$0		$0		$0		$2,850,496
AFUDC																									$0
AFUDC (ZX)				$955	4.81%	$8,664	4.81%	$71,258	4.81%	$0	4.81%	$0	4.81%	$0	4.81%	$0	4.81%	$0	4.81%	$0	4.81%	$0	4.81%	$0	0	$80,887
In Service Dollars				$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0
Cumulative ISS				-		-		-		-		-		-		-		-		-		-		-	0	$0
																									0	$0
AFUDC Subtotal				$955		$8,664		$71,258		$0		$0		$0		$0		$0		$0		$0		$0		$80,887
TOTAL PROJECT COST - Baseline Budget				$79,229		$570,666		$2,261,477		$0		$0		$0		$0		$0		$0		$0		$0		$2,911,382
Contingency		-																							$0
Contingency		-	$ -	$0		$32,996		$72,329		$0		$0		$0		$0		$0		$0		$0		$0		$105,327
Other		-	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$0
																									$0
Contingency SubTotal				$0		$32,996		$72,329		$0		$0		$0		$0		$0		$0		$0		$0		$105,327
TOTAL PROJECT COST - Approved Funding				$79,229		$603,664		$2,333,810		$0		$0		$0		$0		$0		$0		$0		$0		$3,016,709
Reimbursables / Customer Contribution		-																							$0
Reimbursables / Customer Contribution (enter as negative)		0.0%	$ -	$0		$0		$0		$0		$0		$0		$0		$0		$0		$0		$0	0	$0

[redacted]

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Constructability Review Form: **Substation**

Project Title: [redacted] OCB Replacement Release	☐	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00413	**Project Constructability Phase:**	
Date(s) of Constructability Review: **10/15/2021** 10/15/2021	☐ Conceptual Engineering Design ☒ Preliminary Engineering Design ☐ Detailed Engineering Design	

Project Scope Statement:

a) **Replacement OCBs:** [redacted]

b) **Replacement Reactors:** [redacted]

c) **Replacement Switches:** Group [redacted]

d) **Remove Grounding Switches:** [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**

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Constructability Review Form: **Substation**

** 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:

_____*10/15/2021*____ [redacted] _____*Name / Signature*

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	Civil Eng. needs to assess existing foundations for adequacy to support new breakers with added steel.	**Civil Engineering**
2	CRs to provide necessary review of existing control schemes to complete outage plans.	**Construction Reps/Managers**
3	Siting needs to address concerns for residential neighbor impacts.	**Siting**
4		
5		

	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.**	☐	1. Capacitor banks may need to be de-energized during construction of [redacted] for MAD clearance/failure. 2. [redacted] circuit may need to be de-energized during construction of [redacted] for MAD clearance.

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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	☒	Civil Analysis needed. Span existing foundations with steel.
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?**	☒	
6	**Any other known projects that could overlap or impact outage work?**	☐	Not at this time.
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)	☐	
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?	☒	

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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	☐	Further breaker control scheme investigation needed to complete and establish outage requirements.
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 reviewed by the LCE group once IFC drawings issued.
7	**Identify Required Oversite Needed - Estimated level of CR and LCE support needed**	☐	1 LCE review required. 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?**	☐	[redacted] cannot be done in summer. Possible schedule impacts due to storms or other system reliability issues.
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.)	☐	Engineering to provide conduit prints if control cables tests poorly.
14	**Any other items missing in scope or could be underfunded?**	☐	TBD
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	☐	Possible PCB or asbestos in old breakers. TBD
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)	☒	
7	Neighbor/Abutter impacts (noise, visual, sensitive abutters)	☐	Residential neighborhood. May be an issue.

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
E	**Engineering**		
1	**Scope of Work** Identify if high level scope sufficiently detailed? Any remote station impacts? Does title match the project deliverable/intent?	☐	High level scope sufficiently detailed. No. -
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	☒	
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?	☐	- No. - N/A - N/A - 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
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?	☒	
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?	☐	[redacted] gets removed/eliminated.
17	Any design alterations or considerations to Eliminate SCLL Conditions, Reduce Recall Time, Reduce Outage durations, Special Conditions	☒	
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.	☒	

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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	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

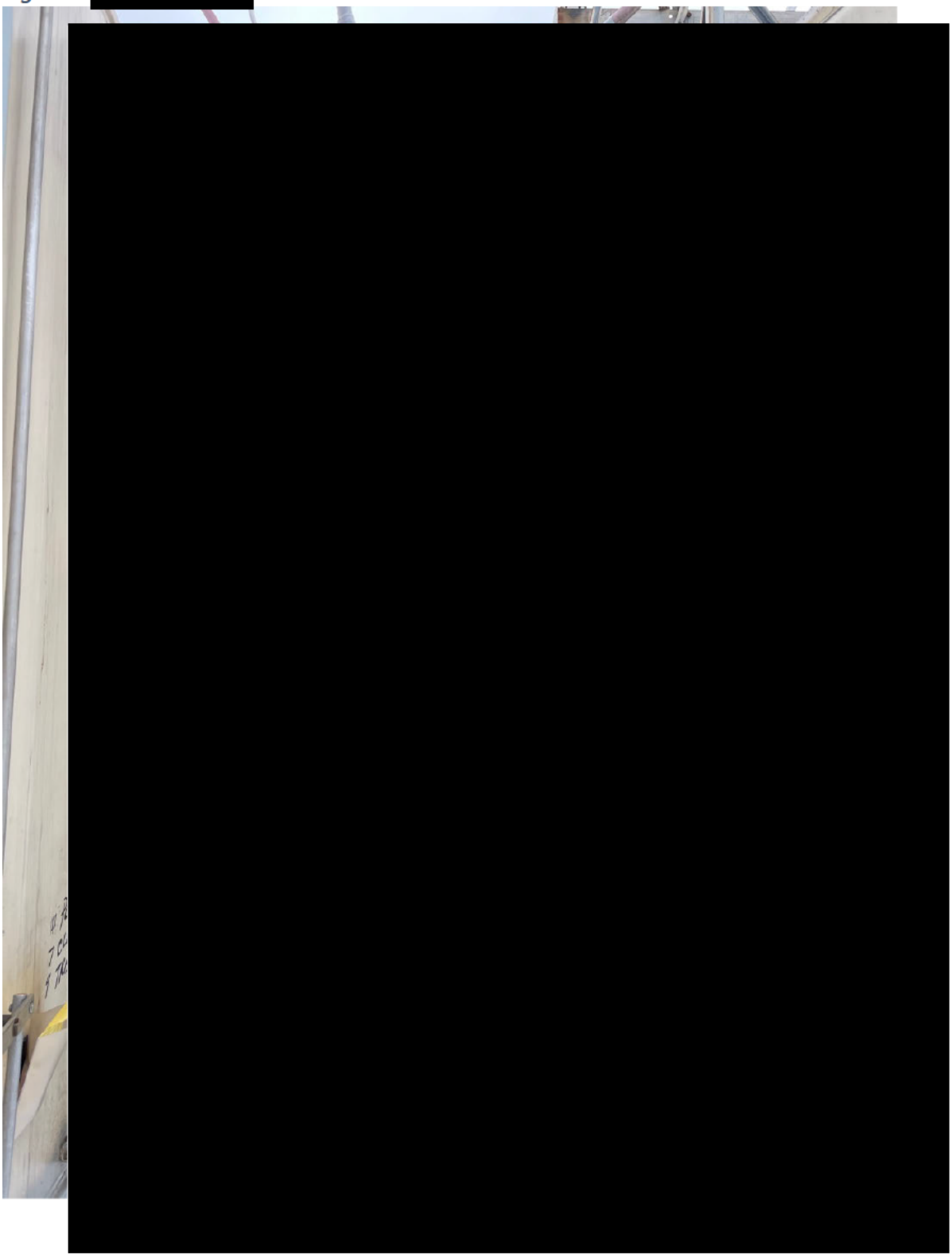
(Ex. Equipment control cabinet, Breakers, MODs, CCVTs, PTs, Transformers)

NOTE: Photos included here are a mix from the March and October Walkdowns

Figure 1 [redacted] ***Nameplate***



Figure 2 [redacted] *Cabinet Interior*



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Constructability Review Form: **Substation**

[redacted]



Figure 4 [redacted]



Figure 5 [redacted]



Figure 6 [redacted]



Figure 7 [redacted] *Cabinet Interior*

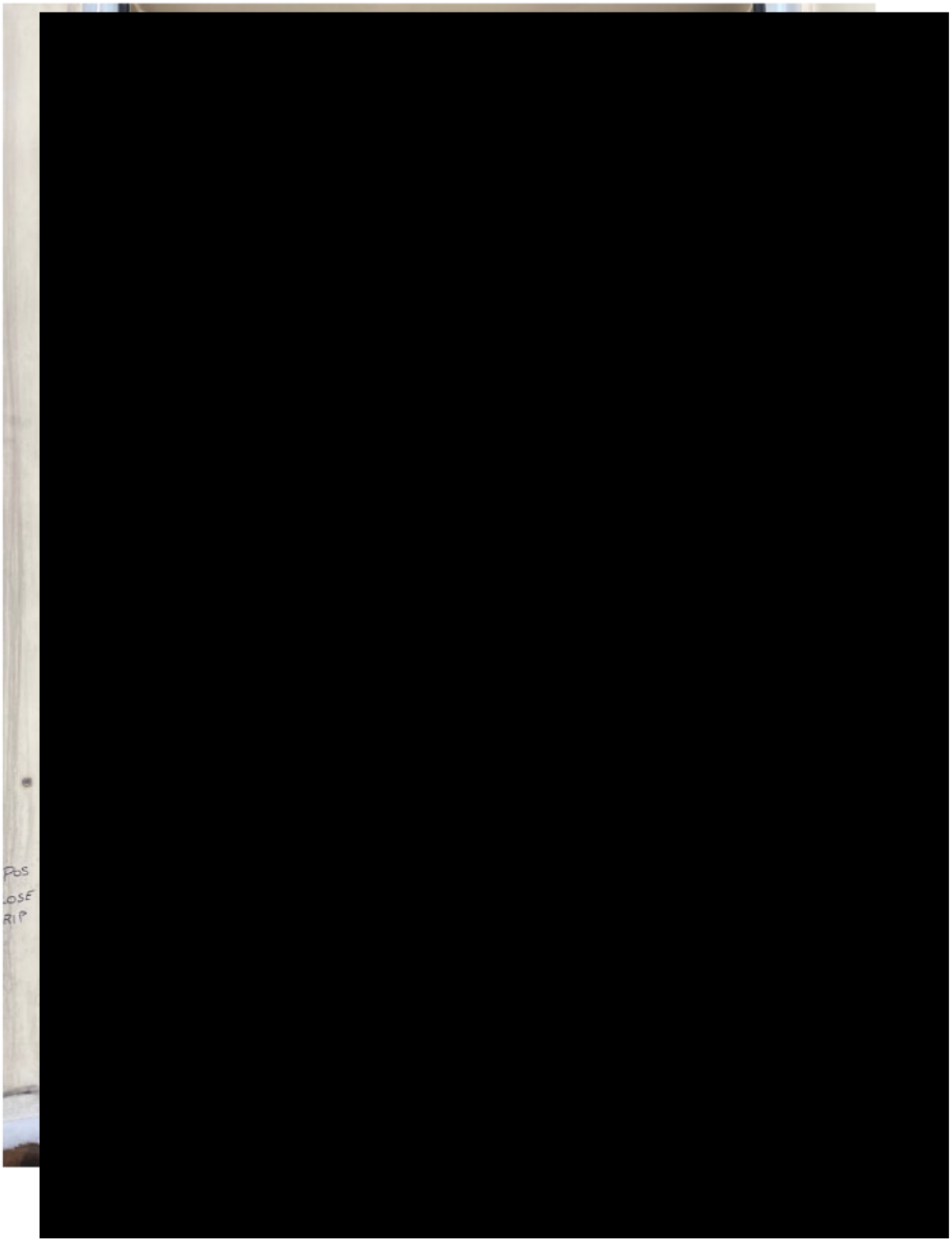

Figure 8 [redacted]



Figure 9 [redacted]



Figure 10 [redacted]



Figure 11 [redacted]



Figure 12 [redacted]



Figure 13 [redacted]



Figure 14 [redacted]

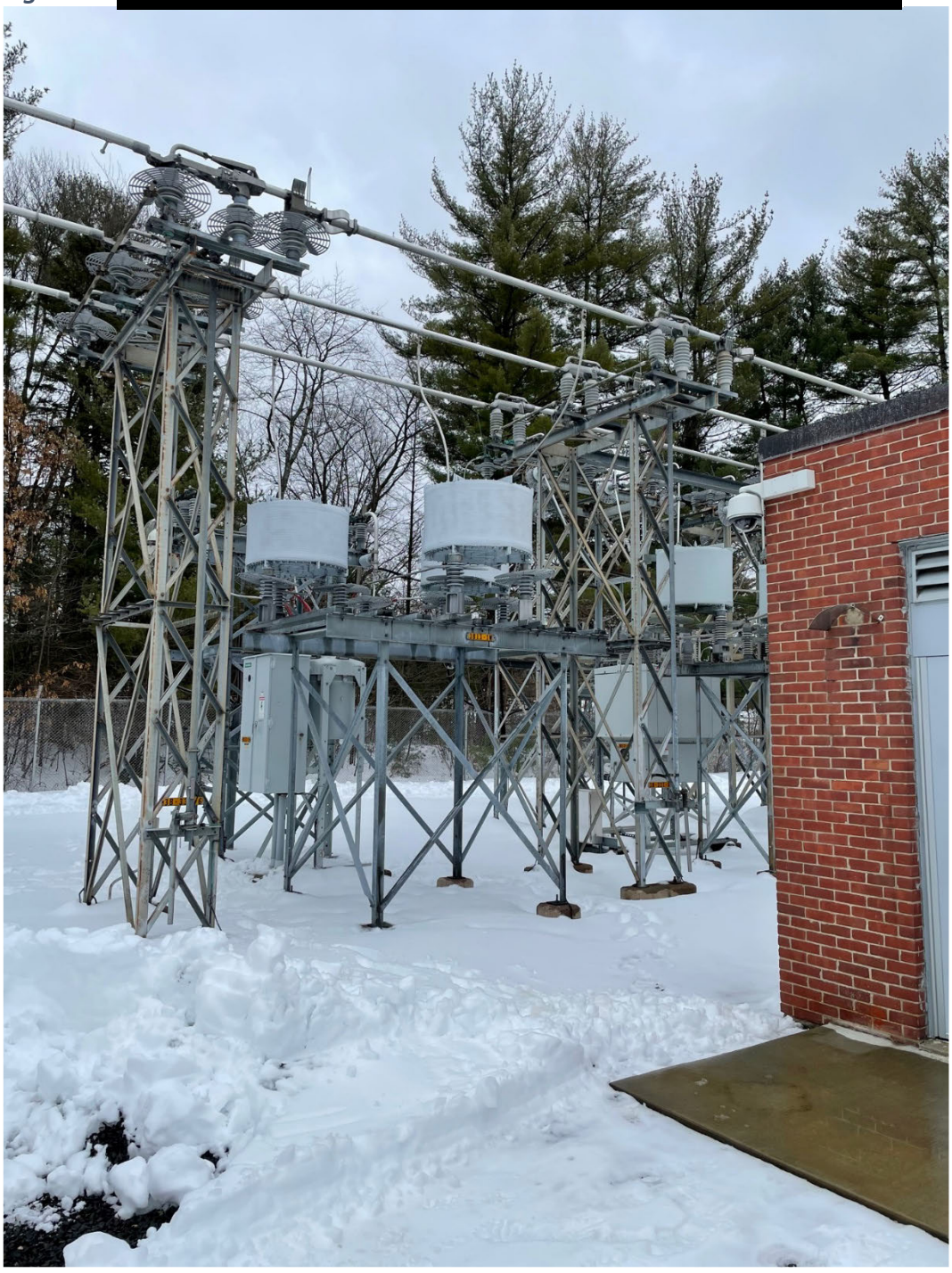

Figure 15 [redacted]



Figure 16 [redacted]



Figure 17 [redacted]



Figure 18 [redacted]



Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
[redacted]	OCB Replacement Program Release (3) (RLC)	472	11/03/2020 08 A	12/22/2022 16			
[redacted]	OCB Replacement Program Release (3) (RLC)	0					
	INITIALIZATION AND SCOPE DEVELOPEMENT	395	02/05/2021 08 A	09/01/2022 08			
	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	DE1310
	Civil Engineering Preliminary Design	20	07/27/2021 08 A	08/31/2021 16 A			
DE2010	Vendor Engineer Develop Civil Substation Preliminary Design	10	07/27/2021 08 A	08/13/2021 16 A		TMP1220	DE2020
DE2020	ES Engineering Review Civil Substation Preliminary Design	10	08/16/2021 08 A	08/31/2021 16 A		DE2010	DSSE-500, CE1200, CE1510, AT2605, DE1350
	Electrical Engineering Preliminary Design	24	07/27/2021 08 A	08/31/2021 16 A			
DE2030	Vendor Engineer Develop Electrical Substation Preliminary Design	10	07/27/2021 08 A	08/13/2021 08 A		TMP1220	DE2040
DE2040	ES Engineering Review Electrical Substation Preliminary Design	10	08/16/2021 08 A	08/31/2021 16 A		DE2030	DSSE-1150, DSSE-520, EE1200, CE1510, BT2605,
	P&C Engineering Preliminary Design	15	07/27/2021 08 A	08/31/2021 16 A			
DE2090	Vendor Engineer Develop P&C Preliminary Design	10	07/27/2021 08 A	08/13/2021 16 A		TMP1220	DE2100
DE2100	ES Engineering Review P&C Preliminary Design	10	08/16/2021 08 A	08/31/2021 16 A		DE2090	DSSE-1210, PC1100, NX9A-NC01, CE1510, BT260
	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-1210, DSSE-520, DSSE-500, DSSE-1150, TI
	EPAC Full Funding	189	02/05/2021 08 A	12/10/2021 16			
DE1324	Release Constructability Form Review Complete	4	02/05/2021 08 A	02/05/2021 16 A		DE1322	DE1350, DE1350
DE1322	Conduct Planning Constructability Walk Down	1	03/05/2021 08 A	03/11/2021 16 A		DE1321	DE1324, DE1300
DE1330	N/R - Review Siting & Permitting (If Required)	5	03/15/2021 08 A	03/15/2021 16 A		DE1310, CE1210, PC1110, EE1210	PAFF1310
DE1340	Preliminary ISD Date Locked Down	15	03/16/2021 08 A	03/16/2021 16 A		DE1310	DE1350
DE1310	Develop Electrical Substation Concept Scope	5	03/18/2021 08 A	03/19/2021 16 A		PE1100	DE1321, DE1330, DE1340, DE1350, AT3001, DE135
DE1321	Schedule Planning Constructability Walk Down	5	03/22/2021 08 A	03/26/2021 16 A		DE1310, CE1210, PC1110, EE1210	DE1322
DE1341	Develop P6 Schedule for Release EPAC Submittal	5	08/02/2021 08 A	08/03/2021 16 A		DE1352	PAFF1310
DE1300	Conduct Initial Risk Management & SCLL Review (Project Initiator & PM)	3	08/16/2021 08 A	08/16/2021 16 A		DE1322	DE1350, DE1350
DE1350	Develop Planning Grade Estimate (-25%+25%)	10	09/01/2021 08 A	09/03/2021 16 A		DE1310, DE1324, DE1340, DE1300, DE20	DE1351

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
DE1351	Estimating Request Initiated	1	09/02/2021 08 A	09/03/2021 16 A	[redacted]	DE1350, DE1350	DE1352
DE1352	Review Planning Grade Estimate (-25%+25%)	10	10/04/2021 08 A	11/15/2021 16*		DE1351, DE1350	DE1341, PAFF1310
PAFF1310	Submit Full Funding PAF for Internal Review	5	11/02/2021 08 A	11/02/2021 16 A		DE1352, DE1330, DE1341	PAFF1311
PAFF1311	Incorporate Internal Review Comments & Submit Full Funding PAF to EPAC for Revie	5	11/08/2021 08 A	11/15/2021 16*		PAFF1310	PAFF1312
PAFF1312	Present Full Funding PAF at EPAC Meeting	0		11/24/2021 16*		PAFF1311	PAFF1313
PAFF1313	Incorporate EPAC Full Funding PAF Review Comments	5	11/26/2021 08	12/02/2021 16		PAFF1312	PAFF1314
PAFF1314	EPAC Full Funding Approval - Release	6	12/03/2021 08	12/10/2021 16		PAFF1313	FFR1315
FFR1315	Full Funding PowerPlan Approval	0		12/10/2021 16		PAFF1314	A3390, A3420, A3430, A3460, A3500, A3540, DSSE-
T-Minus Milestones Civil		469	03/19/2021 16 A	08/22/2022 08			
AT3001	A-T-30.01 Engr Project Scoping Document Issued (Scope Lockdown) ** Re	0		03/19/2021 16 A		DE1310	AT00
AT0814	Construction Contracts / PSA in Place	0		08/09/2021 08 A		A3420, A3460	AT00
AT2605	Preliminary Design / Engineering Completed - Civil	0		08/31/2021 16 A		DE2020	AT00
AT1811	Detailed Design / Engineering Completed - Civil	0		10/21/2021 16 A		CE1210	AT00
AT0805C	Civil IFC - Civil (BG) w/BOM	0		01/28/2022 16		CE1320	AT00
AT0401	Final Civil Material Delivered to Site	0		02/04/2022 16		DSSE-560	AT00
AT0203	Go / No-Go [CAN] Construction Authorization Notice Form Complete	0		05/16/2022 16		A1170	AT00
AT00	A-T-00 Start Construction Civil	0	08/22/2022 08*			AT0805C, AT0401, AT1811, AT2605, AT300	A1120
T-Minus Milestones Electrical		331	03/09/2021 16 A	09/01/2022 08			
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
BT1202	N/R - P/C Description / Draft OI Issued To LCC	0		03/29/2021 08 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		07/26/2021 16 A		NX9A-NC23	BT00
BT0814	Construction Contracts / PSA In Place (Internal Resources)	0		08/09/2021 08 A		A3420, A3460	BT00
BT0404	All Final Relay Protective Settings Issued	0		08/23/2021 08 A		PC1400	BT00
BT2605	Preliminary Design / Engineering Completed	0		08/31/2021 16 A		DE2100, DE2040	BT00, A3550
BT1811	Detailed Design / Engineering Completed	0		10/21/2021 16 A		PC1110, EE1210	BT00
BT0805P	IFC - P&C w/BOM	0		01/28/2022 16		PC1330	BT00
BT0805E	IFC - Electrical (AG) w/BOM	0		01/28/2022 16		EE1310	BT00
BT1201	SCADA Data (Tab) Sheets Sent to LCC	0		01/28/2022 16		CSD1000, CSD1030	BT00
BT2404	Determine / Assign Commissioning Engineer	0		02/03/2022 16		LCE200	BT00
BT0203	Go / No-Go [CAN] Construction Authorization Notice Form Complete	0		05/16/2022 16		B1170	BT00
BT0401	Final Material Receipt Review Completed *ES Purchased*	0		07/09/2022 16		DSSE-1190, DSSE-550, DSSE-1130, DSS	BT00
BT1301	Commissioning Plan Complete	0		07/15/2022 16		LCE400	BT00
BT0409	T-04 ALL FIRM TOA APPLICATIONS DUE TO LCC	0		07/22/2022 16		A1250	BT00
BT00	T-00 Start of Construction (Work Description, INCLUDE the WO#)	0	09/01/2022 08*			BT0203, BT0301, BT0805P, BT1811, BT12(	A1130, CSM
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

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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		418	11/03/2020 08 A	10/18/2022 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		44	09/01/2021 08 A	10/21/2021 16 A			
CE1200	Vendor Engineer Develop Civil Substation Detail Design	26	09/01/2021 08 A	10/07/2021 16 A	[redacted]	DE2020, TMP1250	OPERM1000, CE1210
CE1210	ES Engineering Review Civil Substation Detail Design	9	10/08/2021 08 A	10/21/2021 16 A		CE1200	CE1300, DE1321, DE1330, AT1811, DSSE-500
Civil Engineering IFC Design		55	11/15/2021 08 A	01/28/2022 16			
CE1300	Vendor Engineer Develop Civil Substation IFC	20	11/15/2021 08 A	01/13/2022 16		CE1210	CE1310
CE1310	ES Engineering Review Civil Substation IFC	10	01/14/2022 08	01/28/2022 16		CE1300	CE1320
CE1320	ES Engineering Issue Civil Substation IFC	1	01/28/2022 08	01/28/2022 16		CE1310	AT0805C
Electrical Engineering		5	01/24/2022 08	01/28/2022 16			
CSD1000	PE Initiate CASCADE Forms (Appendix A) for Construction Package - Phase 1	5	01/24/2022 08	01/28/2022 16		EE1310	BT1201
Electrical Engineering Detail Design		36	09/01/2021 08 A	10/21/2021 16 A			
EE1200	Vendor Engineer Develop Electrical Substation Detail Design	26	09/01/2021 08 A	10/07/2021 16 A		DE2040, TMP1250	OPERM1000, EE1210, A3510
EE1210	ES Engineering Review Electrical Substation Detail Design	9	10/08/2021 08 A	10/21/2021 16 A		EE1200	EE1300, DE1321, DE1330, BT1811, A1250, DSSE-5
Electrical Engineering IFC Design		55	11/15/2021 08 A	01/28/2022 16			
EE1300	Vendor Engineer Develop Electrical Substation IFC	18	11/15/2021 08 A	01/13/2022 16		EE1210	EE1310
EE1310	ES Engineering Review Electrical Substation IFC	10	01/14/2022 08	01/28/2022 16		EE1300	CSD1000, BT0805E, DSSE-520, DSSE-1150, DSSE
Substation - Preliminary Thermal Data		40	07/26/2021 08 A	07/28/2021 16 A			
NX9A-NC19	N/R - Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOI	1	07/26/2021 08 A	07/26/2021 16 A		NX9A-NC17	NX9A-NC21
NX9A-NC23	N/R - Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-3, Equipl	1	07/26/2021 08 A	07/26/2021 16 A		NX9A-NC21	BT0301
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	5	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-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-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	10/14/2022 08	10/14/2022 16			
NX9500	Scheduler - Send Email for 48Hrs Notification before DOE.	1	10/14/2022 08	10/14/2022 16		ISD	
Substation - NX-9 Post NX9-DOE/ISD		109	07/28/2021 08 A	10/18/2022 16			
NX9FINAL6	N/R (per M.L. 7/28/21) Receive + Issue Final Affirmed NX-9 Data to NURS	5	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	10/14/2022 08	10/18/2022 16		ISD	NX9FINAL60
P&C Engineering		5	01/24/2022 08	01/28/2022 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	01/24/2022 08	01/28/2022 16	[redacted]	PC1330	BT1201
P&C Engineering Detail Design		35	09/01/2021 08 A	10/21/2021 16 A			
PC1100	Vendor Engineer Develop P&C Detail Design	26	09/01/2021 08 A	10/07/2021 16 A		DE2100, TMP1250, PAPF1514	OPERM1000, PC1110, A3510
PC1110	ES Engineering Review P&C Detail Design	9	10/08/2021 08 A	10/21/2021 16 A		PC1100	PC1320, A7550, DE1321, DE1330, BT1811, LCE100
P&C Design Package		101	08/30/2021 08 A	01/28/2022 16			
OPERM101	N/R - Outage Permit / TOA Request - Review/ Approve (18 weeks)	20	08/30/2021 08 A	08/30/2021 16 A		OPERM1000	A1170, B1170
OPERM100	N/R - Submit Outage Permit / TOA Request - (18 weeks)	10	08/30/2021 08 A	08/30/2021 16 A		PC1100, EE1200, CE1200	OPERM1010
PC1320	Vendor Engineer Develop P&C IFC	18	11/15/2021 08 A	01/13/2022 16		PC1110	PC1330
PC1330	ES Engineering Review P&C IFC	10	01/14/2022 08	01/28/2022 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		144	12/13/2021 08	07/09/2022 16			
Material - Electrical		35	01/31/2022 08	03/21/2022 16			
DSSE-520	MATERIAL - Electrical - Prepare & Issue DR	5	01/31/2022 08	02/04/2022 16		DE2040, FPR1515, FFR1315, EE1210, EE	DSSE-530, DSSE-1020
DSSE-530	Electrical (AG) Material Ordered	0		02/04/2022 16		DSSE-520	DSSE-1020
DSSE-1020	MATERIAL - ELectrical - Procurement Issue PO	10	02/07/2022 08	02/18/2022 16	Purchasing Department	DSSE-530, DSSE-520	DSSE-1030
DSSE-1030	MATERIAL - ELectrical - Material Vendor Delivery Leadtime	30	02/19/2022 08	03/20/2022 16	Material Coordinator Generic	DSSE-1020	DSSE-550
DSSE-550	MATERIAL - Electrical - Confirm Material Delivery to Site	1	03/21/2022 08	03/21/2022 16	Material Coordinator Generic	DSSE-1030	BT0401
Material - Civil		37	12/13/2021 08	02/04/2022 16			
DSSE-500	MATERIAL - CIVIL - Prepare & Issue DR	5	12/13/2021 08	12/17/2021 16	[redacted]	DE2020, FPR1515, FFR1315, CE1210	DSSE-540, DSSE-1040
DSSE-540	Civil (BG) Material Ordered	0		12/17/2021 16		DSSE-500	DSSE-1040
DSSE-1040	MATERIAL - CIVIL - Procurement Issue PO	10	12/20/2021 08	01/04/2022 16	Purchasing Department	DSSE-540, DSSE-500	DSSE-1050
DSSE-1050	MATERIAL - CIVIL - Material Vendor Delivery Leadtime	30	01/05/2022 08	02/03/2022 16	Material Coordinator Generic	DSSE-1040	DSSE-560
DSSE-560	MATERIAL - CIVIL - Confirm Material Delivery to Site	1	02/04/2022 08	02/04/2022 16	Material Coordinator Generic	DSSE-1050	AT0401
Material - Breakers		92	01/31/2022 08	06/09/2022 16			
DSSE-1150	MATERIAL - BREAKER - Prepare & Issue DR (breakers)	5	01/31/2022 08	02/04/2022 16	[redacted]	DE2040, FPR1515, FFR1315, EE1210, EE	DSSE-1180, DSSE-1160
DSSE-1180	Breaker (AG) Material Ordered	0		02/04/2022 16		DSSE-1150	DSSE-1160
DSSE-1160	MATERIAL - BREAKER - Procurement Issue PO	10	02/07/2022 08	02/18/2022 16	Purchasing Department	DSSE-1150, DSSE-1180	DSSE-1140
DSSE-1140	MATERIAL - BREAKER - Material Vendor Delivery Leadtime	110	02/19/2022 08	06/08/2022 16	Material Coordinator Generic	DSSE-1160	DSSE-1130
DSSE-1130	MATERIAL - BREAKER - Confirm Material Delivery to Site	1	06/09/2022 08	06/09/2022 16	Material Coordinator Generic	DSSE-1140	BT0401
Material - Reactors		98	01/31/2022 08	06/19/2022 16			
DSSE-1250	MATERIAL - Reactors - Prepare & Issue DR (breakers)	5	01/31/2022 08	02/04/2022 16	[redacted]	DE2040, FPR1515, FFR1315, EE1210, EE	DSSE-1270, DSSE-1260
DSSE-1270	Reactors (AG) Material Ordered	0		02/04/2022 16		DSSE-1250	DSSE-1260
DSSE-1260	MATERIAL - Reactors - Procurement Issue PO	10	02/07/2022 08	02/18/2022 16	Purchasing Department	DSSE-1250, DSSE-1270	DSSE-1240
DSSE-1240	MATERIAL - Reactors - Material Vendor Delivery Leadtime	120	02/19/2022 08	06/18/2022 16	Material Coordinator Generic	DSSE-1260	DSSE-1230
DSSE-1230	MATERIAL - Reactors - Confirm Material Delivery to Site	1	06/19/2022 08	06/19/2022 16	Material Coordinator Generic	DSSE-1240	BT0401
Material - Manual Switch		112	01/31/2022 08	07/09/2022 16			
DSSE-1210	MATERIAL - Manual Switch - Prepare & Issue DR	5	01/31/2022 08	02/04/2022 16	[redacted]	DE2100, FPR1515, FFR1315, EE1210, EE	DSSE-1220
DSSE-1220	MATERIAL - Manual Switch - Procurement Issue PO	10	02/07/2022 08	02/18/2022 16	Purchasing Department	DSSE-1210	DSSE-1200
DSSE-1200	MATERIAL - Manual Switch - Material Vendor Delivery Leadtime	140	02/19/2022 08	07/08/2022 16	Material Coordinator Generic	DSSE-1220	DSSE-1190

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
DSSE-1190	MATERIAL - Manual Switch - Confirm Material Delivery to Site	1	07/09/2022 08	07/09/2022 16	Material Coordinator Generic	DSSE-1200	BT0401
Construction		400	03/31/2021 08 A	10/27/2022 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			
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, FFR1315	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, FFR1315	A1170, BT0814, AT0814, B1170
BID Process Group		65	01/31/2022 08	05/02/2022 16			
A3430	CONST.SERVICES - BID - Eversource provide Spec / RFP	15	01/31/2022 08*	02/18/2022 16	Purchasing Department	A3550, FFR1315, EE1310	A3440
A3440	CONST.SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	15	02/22/2022 08	03/14/2022 16	CT/WMA.Construction Contr	A3430	A3450
A3450	CONST.SERVICES - BID - Eversource reviews contractor proposals	15	03/15/2022 08	04/04/2022 16	Purchasing Department, Sea	A3440	A3460
A3460	CONST.SERVICES - BID - Contract is Awarded - PO Issued	20	04/05/2022 08	05/02/2022 16	Purchasing Department	A3450, FFR1315	A1170, BT0814, AT0814, B1170
Construction - Civil		5	08/22/2022 08	08/26/2022 16			
A1120	Construction - Civil	5	08/22/2022 08	08/26/2022 16	Const Rep Field Sup - Civil	AT00	A1130, CV1000
Construction - Electrical		14	09/01/2022 08	09/14/2022 16			
A1130	Construction - Electrical	14	09/01/2022 08	09/14/2022 16	Const Rep T Generic - SS	A1120, BT00	CFM
Construction - Const. Rep Tasks		72	07/18/2022 08	10/27/2022 16			
A1250	Construction Rep SUBMIT OUTAGE REQUESTS for NON-transformer equipment (4	5	07/18/2022 08*	07/22/2022 16	Construction Rep Generic	EE1210	BT0409
A1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD) - Group 1	10	10/14/2022 08	10/27/2022 16	Const Rep T Generic - SS	CFM	A1030
Construction Resource Tracking		29	09/01/2022 08	10/13/2022 16			
ConRep-S	CONSTRUCTION REP	29	09/01/2022 08	10/13/2022 16	Construction Rep Generic	CSM	CFM
CONSTelec	CONSTRUCTION - ELECTRICIAN	29	09/01/2022 08	10/13/2022 16	Distribution - S/S Electrician	CSM	CFM
Construction Outages		29	09/01/2022 08	10/13/2022 16			
CSM	Construction Start Milestone	0	09/01/2022 08			BT00	ConRep-S, CONSTelec, TOA-Const1
TOA-Const1	OUTAGE / General Construction Work (OCB: 1)	10	09/01/2022 08	09/12/2022 16	Construction Resources	CSM	SWOUP1B1, SWINP1B1, TOA-Const2
SWOUP1B1	Construction - Switch Out (OCB: 1)	1	09/01/2022 08	09/01/2022 16	Distribution Switching Crew	TOA-Const1	
SWINP1B1	Construction - Switch In (OCB: 1)	1	09/12/2022 08	09/12/2022 16	Distribution Switching Crew	TOA-Const1	
TOA-Const2	OUTAGE / General Construction Work (OCB:2)	10	09/15/2022 08	09/26/2022 16	Construction Resources	TOA-Const1	SWINP1B2, SWOUP1B2, SWINP1B3, SWOUP1B
SWOUP1B2	Construction - Switch Out (OCB:2)	1	09/15/2022 08	09/15/2022 16	Distribution Switching Crew	TOA-Const2	CFM
SWINP1B2	Construction - Switch In (OCB:2)	1	09/26/2022 08	09/26/2022 16	Distribution Switching Crew	TOA-Const2	CFM
TOA-Const3	OUTAGE / General Construction Work (OCB: 3)	10	10/03/2022 08	10/13/2022 16	Construction Resources	TOA-Const2	SWINP1B3, SWOUP1B3, CFM
SWOUP1B3	Construction - Switch Out (OCB: 3)	1	10/03/2022 08	10/03/2022 16	Distribution Switching Crew	TOA-Const2, TOA-Const3	CFM
SWINP1B3	Construction - Switch In (OCB: 3)	1	10/13/2022 08	10/13/2022 16	Distribution Switching Crew	TOA-Const2, TOA-Const3	CFM
CFM	Construction Finish Milestone	0		10/13/2022 16		A1130, CONSTelec, ConRep-S, SWOUP1E	DSSE-1100, A1020, A1260, A1030, ISD, A1040, A111
ISD	EQUIPMENT IN SERVICE DATE (requires FOOB constraint)	0		10/13/2022 16*		CFM, LCE700	NX9FINAL50, LCE800, NX9500
Test And Commission		365	03/31/2021 08 A	09/28/2022 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]	TART	A3510, A3470
LCE Planning		138	01/31/2022 08	08/15/2022 16			
LCE100	PM to Request Lead Commissioning Engineer GO/NO-GO	2	01/31/2022 08	02/01/2022 16	[redacted]	A7551, PC1110, PC1330	LCE200
LCE200	Assign Lead Commissioning Engineer	2	02/02/2022 08*	02/03/2022 16		LCE100	LCE310, BT2404
LCE400	Develop Test and Commissioning Plan	21	06/16/2022 08	07/15/2022 16	CT/WMA Test Contractor-GE	LCE310, LCE320	LCE500, BT1301
LCE500	LCE Review and Approve Vendor's Test and Commissioning Plan	21	07/18/2022 08	08/15/2022 16	CT - Lead Commissioning Er	LCE400	LCE620, LCE610
TEST SERVICES - CONTRACTOR OF CHOICE		40	03/31/2021 08 A	03/31/2021 16 A			

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
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, FFR1315	LCE310, LCE320
TEST SERVICES - BID PROCESS		65	03/14/2022 08	06/13/2022 16			
A3510	TEST SERVICES - BID - Eversource provide spec / RFP	15	03/14/2022 08*	04/01/2022 16	Purchasing Department	A1010, PC1100, EE1200, EE1310	A3520
A3520	TEST SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	15	04/04/2022 08	04/22/2022 16	CT/WMA Test Contractor-GE	A3510	A3530
A3530	TEST SERVICES - BID - Eversource reviews contractor proposals	15	04/25/2022 08	05/13/2022 16	[redacted]	A3520	A3540
A3540	TEST SERVICES - BID - Eversource awards contract - PO Issued	20	05/16/2022 08	06/13/2022 16	Purchasing Department	A3530, FFR1315	LCE310, LCE320
Test Activities		75	06/14/2022 08	09/28/2022 16			
LCE310	Mobilize Commissioning Engineer Prior to Construction	2	06/14/2022 08	06/15/2022 16	CT - Lead Commissioning Er	LCE200, A3540, A3500	LCE400
LCE320	Mobilize Testing Vendor Prior to Construction	2	06/14/2022 08	06/15/2022 16	CT/WMA Test Contractor-GE	A3540, A3500	LCE400
LCE620	Execute Test and Commissioning Plan	30	08/16/2022 08	09/27/2022 16	Engineering Contractor	LCE500	LCE700
LCE610	LCE Oversee Execution of Test and Commissioning Plan	30	08/16/2022 08	09/27/2022 16	CT - Lead Commissioning Er	LCE500	CFM
LCE700	LCE Ensure Test Group Prepare Electrical Field Mark Ups	1	09/28/2022 08	09/28/2022 16	CT - Lead Commissioning Er	LCE620	ISD
Project Close-Out		80	08/29/2022 08	12/22/2022 16			
Project Close-Out		80	08/29/2022 08	12/22/2022 16			
CV1000	FE Prepares Civil Field Mark Ups (Tie after Last Civil Construction Activity)	7	08/29/2022 08	09/07/2022 16		A1120	CV1100
CV1500	FE Files Civil Design Drawings at Station	5	10/14/2022 08	10/20/2022 16		PM1000	FINISH
EV1000	FE Prepare Electrical Field Mark Ups	7	10/31/2022 08	11/08/2022 16	Tester Not Assigned	LCE900	EV1100, PC1340
EV1500	FE Files Substation Design Drawings at Station	5	12/16/2022 08	12/22/2022 16		PM1100	FINISH
PC1500	FE Files P&C Design Drawings at Station	5	12/16/2022 08	12/22/2022 16		PM1100	FINISH
Civil As-Builts		25	09/08/2022 08	10/13/2022 16			
CV1100	Eversource Engineering Prepares & Sends Civil Field Mark Up Packge to Vendor	5	09/08/2022 08	09/14/2022 16	[redacted]	CV1000	CV1200
CV1200	Vendor Engineering Verifies Civil Mark Ups and Updates As-Built Drawing Package. Su	7	09/15/2022 08	09/23/2022 16		CV1100	CV1300
CV1300	Eversource Engineering Verifies Quality of Submitted Civil Drawings	7	09/26/2022 08	10/04/2022 16		CV1200	CV1400
CV1400	ES Create Civil Transmittal, Approve Final As-Built Package, and EDC Files and Issue	5	10/05/2022 08	10/12/2022 16		CV1300	PM1000
PM1000	PM to Document Civil As-Built Drawings Complete	1	10/13/2022 08	10/13/2022 16		CV1400	CV1500
Electrical As-Builts		25	11/09/2022 08	12/15/2022 16			
EV1100	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	11/09/2022 08	11/16/2022 16		EV1000	EV1200
EV1200	Vendor Engineering Verifies Electrical Mark Ups and Updates As-Built Drawing Packag	7	11/17/2022 08	11/28/2022 16		EV1100	EV1300
EV1300	Eversource Engineering Verifies Quality of Submitted Electrical Drawings	7	11/29/2022 08	12/07/2022 16		EV1200	EV1400
EV1400	Electrical Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawi	5	12/08/2022 08	12/14/2022 16		EV1300	PM1100
PM1100	PM to Document Electrical As-Built Drawings Complete (Electrical & P&C)	1	12/15/2022 08	12/15/2022 16		EV1400, PC1310	EV1500, PC1500
P&C As-Builts		24	11/09/2022 08	12/14/2022 16			
PC1340	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	11/09/2022 08	11/16/2022 16		EV1000	PC1200
PC1200	Vendor Engineering Verifies P&C Mark Ups and Updates As-Built Drawing Package. S	7	11/17/2022 08	11/28/2022 16		PC1340	PC1300
PC1300	Eversource Engineering Verifies Quality of Submitted P&C Drawings	7	11/29/2022 08	12/07/2022 16		PC1200	PC1310
PC1310	P&C Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings	5	12/08/2022 08	12/14/2022 16		PC1300	PM1100
Test Close-Out		11	10/14/2022 08	10/28/2022 16			
LCE800	LCE Ensures Marked up Prints Ready for Pick-up	1	10/14/2022 08	10/14/2022 16	CT - Lead Commissioning Er	ISD	LCE900
LCE900	LCE Review Test Data and Issue Commissioning Report	10	10/17/2022 08	10/28/2022 16	CT - Lead Commissioning Er	LCE800	EV1000
Site Restoration Close-Out		10	10/14/2022 08	10/27/2022 16			
A1110	Restore / Remediate Site	10	10/14/2022 08	10/27/2022 16	CT/WMA.Construction Contr	CFM	FINISH
Material, Equipment, Cost And Asset Management Close-Out		35	10/14/2022 08	12/05/2022 16			
A1020	Cost Analyst Prepares FINAL Units of Property	21	10/14/2022 08	11/14/2022 16	CT- Cost Analyst Generic	CFM	FINISH

TASK filter: All Activities

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Activity ID	Activity Name	Original Duration	Start	Finish	Resources	Predecessors	Successors
A1030	Asset Management Complete Asset Update(s) in CASCADE	25	10/28/2022 08	12/05/2022 16	[redacted]	CFM, A1260	FINISH
Project Management Close-Out		48	10/14/2022 08	12/22/2022 16			
A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30	10/14/2022 08	11/28/2022 16		CFM	FINISH
DSSE-1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	5	10/14/2022 08	10/20/2022 16	Construction Rep Generic	CFM	
FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0		12/22/2022 16		A1040, A1020, A1110, A1030, EV1500, CV1	
Overhead / Indirects		10	05/03/2022 08	05/16/2022 16			
Project Management		10	05/03/2022 08	05/16/2022 16			
A1170	Prepare Civil CAN (Construction Authorization Notice)	10	05/03/2022 08	05/16/2022 16	[redacted]	A3420, A3460, OPERM1010	AT0203
B1170	Prepare Electrical CAN (Construction Authorization Notice)	10	05/03/2022 08	05/16/2022 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

This program is requesting program approval of the [redacted] in CT now through 2024. 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

This program is required to [redacted]

Project Objectives

[redacted]

Program Scope

[redacted]g. 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:

[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
[redacted]

Regulatory Approvals

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
[redacted]	$5K	[redacted]
	$5K	
	$25K	
	$6.4K	
	$6.4K	
	$5K	

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