EVERSOURCE

Operations Project Authorization Form

Approved on August 17, 2023 EPAC

Link to Meeting Minutes

Project Title: [redacted] **Emergent XFMR Replacement**	**Project Number: CS00675**
Date Prepared: 08/23/2023	**Company: Eversource CT**
Organization: System Planning	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformer**
Managing Organization: Transmission / Major Projects	**Schedule ID#: 80467464**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: Yes**
Estimated in service date: April 2024	**Emergency Related Request? Yes**
Eng./Constr. Resources Budgeted? Yes	**Facility Type (check all that apply):** ☐ **PTF** ☐ **non-PTF** ☒ **Distribution** ☐ **N/A (General Plant)**
Total Capital Request: $5,973K	**Authorization Type: Full Funding**

[1] Executive Summary

This project is seeking full funding approval of $5,973K for emergent transformer replacement at [redacted] located in [redacted], CT. The full funding request will support material procurement, construction, and test services to replace the [redacted] with a [redacted]

[redacted] has been recommended by Operations, Substation Technical Engineering and Distribution Engineering groups to address reliability concerns prior to the rebuild of the substation (CS00364 – 405209 - NWCT

Distribution Reliability Project). The new transformer will be installed in the same location as the existing. Engineering design and construction will continue to coordinate with CS00364.

Capital project CS00364/405209 received Solution Design Committee (SDC) approval on November 17, 2021, and partial funding approval of $2,088K ($682K – CS00364; $1,406K – 405209) in PowerPlan on January 26, 2022, and February 7, 2022. The 9A-5X replacement Engineering and Project Development began under project CS00364, charges incurred to date under CS00364 for the replacement will be journaled over from CS00364 to CS00675. To date $12,784 has been spent for the 9A-5X replacement to complete preliminary engineering, constructability walkdown, cost estimate, and development of this PAF.

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[2] Project Costs Summary

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2023 to Go	2024	2025	2026	2027	2028	Total Request
1. ROW / Easements / Land Acquisition									
2. Environmental Approvals / Permits									
3. Outreach			$10	$5					$15
4. Siting Approvals / Permits			$52	$24					$76
5. Engineering / Design		$5	$33	$1					$39
6. Materials (Eversource purchased)			$77	$12					$89
7. Construction (incl materials by contractors)			$2,325	$786					$3,111
8. Testing / Commissioning			$45	$266					$311
9. Project Mgmt. Team			$37	$69					$106
10. Removals				$84					$84
11. Other									
12. Risks			$388	$168					$556
SUBTOTAL DIRECTS W/ RISKS		$5	$2,966	$1,416					$4,387
13. Indirects/Overhead		$6	$294	$1,030					$1,329
14. AFUDC			$67	$80					$147
PROJECT TOTAL – BASELINE BUDGET		$11	$3,327	$2,526					$5,863
15. Contingency			$63	$48					$110
TOTAL CAPITAL REQUEST		$11	$3,389	$2,573					$5,973
16. Reimbursables/Customer Contribution									
PROJECT TOTAL (LESS REIMBURSABLES)		$11	$3,389	$2,573					$5,973
O&M									
TOTAL REQUEST		$11	$3,389	$2,573					$5,973

Please see Attachment A for the detailed cost estimate.

Detail other costs, project risk items and their allocations:

Risk	Allocation
1. Potential Underground Obstructions	$51,500
2. Severe Weather, Delays, OT	$150,000
3. [redacted]	$54,500
4. [redacted]	$300,000
Total	$556,000

Explain unique payment provisions, if applicable:

The transformer was ordered through Eversource/HICO Letter of Award (LOA) agreement. With this LOA, HICO does not require a PO or partial payment until delivery of the transformer. The expected delivery of the transformer to the substation is 9/29/2023; the project Team will work to get the PO completed prior to the delivery date.

Identify and detail any unique O&M impacts resulting from this project: N/A

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[3] Technical Justification

Project Need, Objective and Justification

Project Need:

This emergent project is being proposed to address reliability concerns of the existing [redacted] transformer at [redacted]. The [redacted] is a [redacted]

[redacted]

Project Objectives:

The objective is to replace the existing [redacted] transformer with a new 40MVA, 115/69-13.8kV transformer in the same location to improve reliability. Note this is a [redacted] under CS00364.

Justification:

The [redacted] is was planned to be replaced under project CS00364—405209 - NWCT Distribution Reliability, which was approved at the SDC meeting on November 17, 2021, along with partial funding. However, CS00364 is not expected to be completed until 2025, [redacted] The new transformer is expected to be delivered on-site by September 2023 where it will remain until the 115kV bus work is completed under project 405209. The [redacted] transformer replacement is being accelerated ahead of the station rebuild due to the [redacted]. It will then be moved approximately 60 feet to its new, permanent location after the 115kV bus work is completed as part of project 405209. Figure 1 shows the existing location of the [redacted] and the new location of the new [redacted] after the station rebuild is completed.



Project Scope

I. Eversource Scope of Work

The preliminary level substation engineering scope of work has been completed for the replacement of the existing 5X transformer at [redacted] The [redacted].

Because of the larger size and arrangement of the new transformer, it will not fit on the existing foundation. Therefore, the existing foundation will be replaced for this temporary installation. In addition, the existing low side bus support/station service structure will be relocated to provide the required clearance for the new transformer. Existing relaying will be used for the installation.

To provide the [redacted]

The work involved includes the following:

[redacted]

Please refer to Attachment C for the Constructability Review which was performed on July 14, 2023.

II. Assumptions:

Substation drawings accurately reflect what exists in the field.

III. Identification of Required Engineering Studies

1. Thermal Ratings, Sound Study, and foundation calculations

IV. Site Development:

NA

V. Above Grade Design Requirements – Evaluation of substation/switchyard expansion requirements.

1. Impacts to existing yard design:

a. Sketch/Draft General Arrangement Drawing – See the preliminary arrangement plan and section included in Attachment D.
b. Physical Impacts to substation equipment footprint – No
    i. This scope will not increase the overall footprint of the Falls Village 9A substation.
c. Impacts to design basis of existing grounding system – No
d. Impacts to Direct Lightning Stroke Protection – No, a lightning protection study is not required under this project
e. Identify Yard Lighting and or Physical Security modifications – No, yard lighting in the substation will not require a detailed lighting level study under this project .

2. Above Grade Electrical Modifications/Additions:

The above grade equipment modifications and/or additions are described below:



VI. Below Grade Design Requirements



VII. Site Development Requirements & Other Considerations:

1. Real Estate/Siting & Permitting Considerations (i.e. acquisitions, offset encroachment, ROW impacts):
    a. NA
2. Environmental –
    a. No underground oil containment for the new transformer is required.

3. Audible Noise level Changes/Considerations: a sound study is required to verify the projected noise levels do not exceed applicable regulations.
4. Identify Major Grading or drainage requirements: **NA**
5. Identify Changes to Site/Substation yard access road: **NA**
6. T-Line Considerations: **NA**

VIII. Control Enclosure Evaluation

1. Control Enclosure physical space evaluation – **NA**
2. Raceway System modifications (including BPS requirements) – **NA**
3. AC Station Service loading and evaluation of existing AC panel boards – **NA**
4. DC Battery/Charger Impacts and evaluation of existing DC panel boards –**NA**
5. HVAC addition/modifications – **NA**

IX. Construction, Outage and Energization Considerations

1. [redacted] Outage request has been approved under TOA 23-02189.

X. Protection & Controls Scope of Work-Existing R&CE

[redacted].

Substation Equipment

Station	Device Position / Nomenclature	Device Removals *include manufacturer*	Device Additions *include manufacturer*
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]			[redacted]

Background

This project, CS00675, derives from project CS00364 and 405209. CS00364 and 405209 are partially funded projects that also have SDC approval. CS00364 was created to [redacted] 405209 was created to [redacted]. The new [redacted] transformer installed as part of this project CS00675 will be relocated to its final position once the 115kV ring bus is installed. Currently, CS00364 and 405209 are in the Detail Design phase and are expected to be presented for full funding in September 2023. The new HICO 40MVA transformer is expected to arrive on-site in September 2023.

[redacted]

[4] Alternatives Considered

Alternative 1: Replace Existing [redacted] Transformer (This is the preferred solution):

[redacted]

As previously mentioned, [redacted]

The new transformer will be installed in the same location as the existing one. A new foundation will be installed to house the new transformer. The foundation will be removed once the transformer is relocated to its permanent position as part of the CS00364/405209 capital project. [redacted]

The new transformer is expected to be delivered to [redacted] in September 2023; where it will remain until needed as part of project CS00364. Due to the [redacted] and that it will be on-site earlier than needed for the capital project, it has been recommended by Asset Management and Distribution Engineering groups to replace the transformer ahead of the capital project.

It should be noted that the [redacted]

Planning grade cost estimate for Alternative 1: $5,973K

Alternative 2: Hold Off Replacing the [redacted] until Capital Projects CS00364 and 405209 are ready for Construction (this is not the preferred solution)

This alternative would wait to replace the [redacted] until the capital projects CS00364 and 405209 are ready for construction. As previously mentioned, this project (CS00675) derives from the capital project that will be taking place at [redacted]. The capital projects involve

changes to the fence, upgrades to the 69kV bus, replacement of the existing 9A-5X transformer, and new feeder position addition.

This is not the recommended solution because the transformer is [redacted] Since the new transformer will be on-site, it may be installed ahead of the rebuild project to address the failed transformer. As noted in Alternative 1, the new transformer will be on-site September 2023.

There will be no cost associated with this Alternative since it will defer the replacement until the capital project proceeds with construction; with an expected ISD of December 2025.

Alternative 3: Replace the Existing [redacted] with a Spare Transformer (this is not the preferred solution)

[redacted]; therefore, is not a viable option.

[5] Project Schedule

Milestone	Scheduled Completion Date
IFR Approval (CS00364/405209)	November 2020*
SDC Approval (for applicable projects)	November 2021**
Conversion of Tx development costs, 183 to 107 (applicable to projects that require SSF approval and/or ISO preferred alternative selection)	N/A
EPAC Partial Funding Approval (for applicable projects)	N/A
Preliminary Design Completion (or latest pre-full funding design phase)	August 2023
EPAC Full Funding Approval	August 2023
Siting Approval (for applicable projects)	October 2023
Start of Construction	November 2023/January 2024***
Project In-Service Date (ISD)	April 2024
Project Need Date (for applicable projects)	April 2024
ISO Related Milestones: (for applicable projects)	
• ISO Preferred Alternative Selected	N/A
• PAC Presentation	N/A
• TCA Submittal	N/A

*Please refer to document 405209-CS00364 NWCT D Reliability Falls Village 9A – IFR
**Please refer to document 405209 – CS00364 NWCT Distribution Reliability Project SSF
***Construction start date will depend on receiving new high-side bushings

Please refer to Attachment B for the P6 schedule.

[6] Regulatory Approvals

An Exempt Modification is required to be submitted to the Connecticut Siting Council (CSC) for approval. The submission is expected to be approved by October 2023.

[7] Risk and Risk Mitigation Plans

Contingency:

A contingency amount of $110K has been included in the total project estimate to account for any unknowns.

Risk Mitigation:

Risk	Mitigation
1. Potential UG Obstructions	UG obstructions may be observed during civil excavations and will be addressed by hand excavations at that time. Risk allocation is also included in the estimate.
2. Severe Weather, Delays, OT	Construction delays caused by weather and storm duty are possible. Try to be flexible with construction schedules. Risk allocation is also included in the estimate.
3. [redacted]	[redacted]
4. [redacted]	[redacted] and if pursued may result in additional costs. Risk allocation is also included in the estimate.
5. [redacted]	[redacted]

[8] References

References
1. Distribution System Planning Guide
2. 405209 – CS00364 NWCT Distribution Reliability Project Partial Funding PAF; approved 11/17/2021
3. 405209 – CS00364 NWCT Distribution Reliability Project SSF; approved 11/17/2021
4. 405209-CS00364 NWCT D Reliability [redacted] Partial Funding PAF; approved 11/17/2021
5. Eversource SUB 014

[9] Attachments (One-Line Diagrams, Images, etc.)

Attachment	Included in Submittal?
A. CS00675 [redacted] RPLMT Estimate C-23-350 rev#01	*YES*
B. CS00675 [redacted] RPLMT Schedule	*YES*
C. CS00675 [redacted] RPLMT Constructability Review	*YES*
D. System and Station One-Lines	*YES*

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] **Emergent XFMR Replacement**		**Project Number: CS00675**	
Facility Type: ☐BPS ☐BES ☐PTF ☐PTF non-regional ☐non-PTF ☐CIP ☒Distribution ☐General Plant			
PLANNING			
Is a NX-9 required?		Yes	
Is an ISO-NE PAC presentation required?		No	
ISO-NE Presentation Date (if completed):		N/A	
Cost in ISO-NE Presentation ($M) (if completed):		N/A	
Is a PPA required?		Yes	
ISO-NE Approval Date (if completed):		TBD	
Is a TCA Application Required?		No	
TCA Submittal Date (if submitted):		N/A	
Cost in TCA Submittal ($M) (if submitted):		N/A	
Enter ISO-NE RSP / Asset Condition ID, if assigned:		LSP	
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?		Yes	
Has an outage schedule been approved?		No	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		Yes	
SUBSTATION ENGINEERING			
Does this impact Revenue Metering		No	
Is preliminary short circuit/ breaker duty analysis required?		No	
Are there any changes to the baseline audible noise?		TBD	
Is there an impact to the existing ground grid?		Yes	
Is a Transient Over Voltage (TOV) analysis required?		No	

Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] **Emergent XFMR Replacement**	**Project Number: CS00675**
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	
Has Siting reviewed this project?	Yes
Name of Siting contact:	[redacted]
Is a Siting filing required? *(If yes, list in regulatory approvals section)*	Yes
PERMITTING	
Is there any permitting required? *(If yes, list in regulatory approvals section)*	No
PROJECT SERVICES (OUTREACH) and ROW WORK COORDINATION	
Has Project Services reviewed this project?	Yes Choose an item
Name of Project Services contact:	[redacted]
What is the level of outreach expected?	Low
Is any part of this project in an Environmental Justice Community?	No
Has ROW Coordination reviewed this project?	No
Is this project coordinating with other existing scheduled work?	No
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 the Eversource Estimating Team
Name of the person who prepared the estimate:	[redacted]
Was the estimate reviewed by Eversource Estimating?	Yes - Full Review

ESTIMATE SUMMARY

Project Title: Transformer replacement - [redacted]
Project Mgr/Lead:
Project Number: CS00675
WO & Task #: 80467464
Estimate revision #: 00
Estimate Type - Station work

Estimate #: C-23-350
Date of Estimate 08/04/2023
Estimate done by: RLR
In Service date (ISD):04/30/2024

Template Revision # 01.92a

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-23-350
Date of Estimate:08/04/2023

Project Number: CS00675
WO & Task #: 80467464

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	TOTAL w/ escal broken out
1	ROW / Easements / Land purchases															-
2	Environmental Approvals / Permits															-
3	Outreach	$14 600	0.3%	0 2%	$100	$9 900	$4 600									14 400
4	Siting Approvals / Permits	$76,500	1.7%	1 3%	$200	$52,000	$24,300									75,300
5	Engineering / Design	$38 700	0.9%	0 6%	$5 000	$32 800	$900									38 500
6	Materials (Eversource purchased)	$88,800	2.0%	1 5%		$76,600	$12,200									2,473,757
7	Construction (incl materials by contractors)	$3,110,600	70.9%	52.1%		$2,324,500	$786,100									692,543
8	Testing / Commissioning	$311,000	7.1%	5 2%		$44,700	$266,300									298,400
9	PMT Project Mgmt Team	$106,200	2.4%	1 8%		$37,400	$68,800									102.900
10	Removals	$84,400	1.9%	1.4%			$84,400									82,000
11	Other (property taxes and BAR)															-
12	Risks	$556 000	12.7%	9 3%		$388 000	$168 000									556 000
125																
	Project Directs Total w/Risks	**$4,386,800**	100.0%	73.4%	**$5,300**	**$2,965,900**	**$1,415,600**									**$4,333,800**
13	Indirects/Overhead	$1,329,400		22 3%	$5,500	$293,800	$1,030,100									1,280,300
14	AFUDC	$147,000		2 5%		$67,000	$80,000									147.000
125																-
	Project Total - Baseline Budget	**$5,863,200**		98 2%	**$10,800**	**$3,326,700**	**$2,525,700**									**$5,761,100**
																-
15	Contingency	$110,200		1 8%		$62,500	$47,700									110,200
	Project Total - Funding Approval Level	**$5,973,400**		100 0%	**$10,800**	**$3,389,200**	**$2,573,400**									**$5,871,300**
16	Reimbursables/Customer Contribution															-
---																-
	Project Total (less reimbursables)	**$5,973,400**			**$10,800**	**$3,389,200**	**$2,573,400**									**$5,871,300**
	Cost per key qty (if appl)	5,973,400	$'s / EA Replace 115kV Transformer													
	Amount of Escalation included above	$102 200					$102 200									102 200
6	Total materials - Eversource	$88 800				$76 600	$12 200									
	Total materials - Contractor	$2,486,500				$2,230,600	$255,900									
	Total materials	$2,575 300				$2 307 200	$268 100									

NOTE: Risk / Contingency is 12.6% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	**-25%**	**25%**
	$4,480,000	**$7,467,000**

Escal total	**$5,973,500**
Check total	$100

COMMENTS:

Project Scope:

Key qty's and UOM (tie to inputs on est sheets)

1 EA Replace 115kV Transformer

67.27 Factor (total $/Eversource Mat'l $'s)

49.40 Factor (Total directs $/Total Eversource mat'l $'s)

[redacted]

Assumptions/Clarifications:

Indirect rates based on: 11 - CT - Station work

Engineering internal per project team
Electrical construction internal with rigging crew external per project team
Test excavations are not needed, per Constructability review 7/14/2023.
No drive path modifications required, per Constructability review 7/14/2023.
Transformer delivery will be addressed by HICO, police details not required, per Constructability review 7/14/2023.
Material stored within the existing substation fenced areas, per Constructability review 7/14/2023.
Construction trailers located on the ES 55 Easement 6, per Constructability review 7/14/2023.
Mobile XFMR installed at site during the 9A-SX replacement. No additional outage requirements were identified per Constructability review 7/14/2023.
Transformer Spill Containment for 9A-SX transformer relocated to the permanent foundation containing sec oil containment in 2025 as part of CS00364 project.
Project to utilize existing relays and controls, per Constructability review 7/14/2023.
Telecom equipment will utilize existing equipment, per Constructability review 7/14/2023.
Barnhart to remove existing 9A-SX transformer from the existing foundation and place it on the dunnage, then move new HICO 9A-SX XFMR from location #1 to the existing 9A-SX location #2.
Prior costs as of 8/1/2023 are $10,784.
ISD per PJ schedule 7/31/2023.
Risk item for procurement of High side Bushings from Siemens of $300K.

RISKS

Potential UG Obstructions	$ 51 500
Severe Weather Delays OT	$ 150 000
[redacted]	$ 54 500
	$ 300 000

UNESCALATED LINE ITEM DOLLARS

Project Number CS00675
Date of Estimate 08/04/2023
Estimate revision # 00

Escalation Rate — E Rate $ 57 — 1

CSTXX-CONSTRUCTION	R	Prior Mhrs	Prior DOLLARS	2023 Mhrs	2023 DOLLARS	2024 Mhrs	2024 DOLLARS	TOTAL Mhrs	TOTAL DOLLARS
Electrical Construction	LT				$59,952		$339,727		$399,679
General Construction	LT								
SCADA / Automation	LT						$2,184		$2,184
Other (specify)	LT								
Construction Reps (Internal)	LT				$6,925		$27,699		$34,624
Support Switch/Tag	LT				$3,782		$5,042		$8,824
Other (specify)	LT								
Other (specify)	LT								
Other (specify)	LT								
LT Total					$70,659		$374,652		$445,391
Employee Expenses	AE				$3,533		$18,732		$22,265
Constr. Purchased Matl (Eversource)	AM				$600		$3,397		$3,997
Constr. Purchased Matl (contracted)	AM				$88		$559		$659
Outside Construction Vendor	AQ				$19,896		$111,511		$131,307
Sales tax on Constr. Vendor									
Vehicles (now in Indirects section)	AV								
Inspection services (Outside Vendor)	AQ								
Construction Rep (Outside vendor)	AQ								
Rents and Leases	BR								
CSTXX Subtotal					$94,506		$508,930		$603,516
Escalation									
CSTXX Total					$94,506		$508,930		$603,516
ENRXX-TG ENGINEERING/DESIGN									
Project Services/Drafting	LT				$798		$798		$1,596
T-Line Engineering/Design	LT								
D-Street Engineering/Design	LT								
Civil Engineering/Design	LT				$4,990				$4,990
Substation (T) Engineering/Design	LT								
Substation (D) Engineering/Design	LT				$13,525				$13,525
Protection & Controls Engineering	LT		$4,954		$6,726				$11,680
Survey Engineering	LT								
SCADA / Automation Engineering	LT				$3,438				$3,438
Telecom Engineering	LT				$1,719				$1,719
Other - specify	LT								
Other - specify	LT								
LT Total			$4,954		$31,196		$798		$36,948
Employee Expenses	AE				$1,580		$40		$1,600
Contractor Engineering - T-Lines	AQ								
Contractor Engineering - D-Street	AQ								
Contractor Engineering - T -Station	AQ								
Contractor Engineering - D-Station	AQ								
Contractor Engineering - P&C	AQ								
Contractor Engineering - Survey	AQ								
Contractor Engineering - SCADA / Automation	AQ								
Contractor Engineering - Telecom	AQ								
Contractor Engineering - Specify	AQ								
Contractor Engineering - Specify	AQ								
Contractor Engineering - Specify	AQ								
Vehicles (now in Indirects section)	AV								
ENRXX Subtotal			$4,954		$32,756		$838		$38,548
Escalation									
ENRXX Total			$4,954		$32,756		$838		$38,548
LNDXX-TG LAND									
Real Estate	LT								
Employee Expenses	AE								
Purchase Land	AM								
Easements	AM								
Vehicles (now in Indirects section)	AV								
Fees and Payments	BF								
LNDXX Subtotal									
Escalation									
LNDXX Total									
MATXX-TG MATERIAL									
Eversource	AM				$73,099		$8,122		$81,221
Outside Services	AM				$2,146,821		$238,536		$2,385,357
	AM								
Freight									
Sales Tax (Eversource)	3.8%				$2,900		$300		$3,200
Sales Tax (outside services)	3.8%				$83,700		$9,300		$93,000
Other									
MATXX Subtotal					$2,306,520		$256,258		$2,562,778
Escalation									
MATXX Total					$2,306,520		$256,258		$2,562,778
PSMXX-PROJECT MANAGER & SUPPORT									
Project Management (PM)	LT								
Project Planning/Cost (IP)	LT				$814		$1,222		$2,036
Contracts/Purchasing (C/P)	LT				$663				$663
System Planning	LT								
Environmental	LT								
SCS - Traditional	LT		$57		$3,966		$1,783		$5,706
Legal	LT								
Estimating	LT				$2,440				$2,440
Siting - Petition	LT		$202		$5,200		$2,300		$7,702
Asset Management	LT								
Veg. Mgmt	LT								
Other -	LT								
Other -	LT								
Other -	LT								
LT Total			$259		$13,303		$5,305		$18,347
Employee Expenses	AE				$665		$264		$929
Project Support Vendor - PM	AQ				$32,000		$64,000		$96,000
Project Support Vendor - IP	AQ								
Project Support Vendor - C/P	AQ								
Project Support Vendor - System Planning	AQ								
Project Support Vendor - Environmental	AQ								
Project Support Vendor - SCS - Traditional	AQ				$5,950		$2,640		$8,590
Project Support Vendor - Legal	AQ								
Project Support Vendor - Estimating	AQ				$640				$640
Project Support Vendor - Siting - Petition	AQ				$48,800		$20,800		$67,600
Project Support Vendor - Asset Management	AQ								
Project Support Vendor - Veg. Mgmt.	AQ								
Project Support Vendor - Other	AQ								
Project Support Vendor - Other	AQ								
Project Support Vendor - Other	AQ								
Vehicles (now in Indirects section)	AV								
Property or CWIP tax large proj. a lowance	BR								
Builder All risk insurance excluding deductibles(if project is over $50m)	BR								
Fees and Payments - Environmental	BF								
Fees and Payments - Siting	BF								
Fees and Payments - Other	BF								
PSMXX Subtotal			$259		$99,358		$92,969		$192,606
Escalation									
PSMXX Total			$259		$99,358		$92,969		$192,606
REMXX-TG REMOVAL									
Engineering/Design	LT								
Internal Construction	LT						$71,282		$71,282
LT Total							$71,282		$71,282
Employee Expenses	AE						$10,692		$10,692
Outside Services	AQ								
Contractor Labor	AQ								
Vehicles (now in Indirects section)	AV								
Rents and Leases	BR								
REMXX Subtotal							$81,974		$81,974
Escalation									
REMXX Total							$81,974		$81,974
TSTXX-TG TEST									
Test / Field Engr. Labor (In House)	LT				$15,872		$89,984		$105,856
Test / Comm. Engr. Labor (In House)	LT								
Lead Commissioning Engr. (LCE) (Internal)	LT								
Employee Expense	AE				$1,587		$8,998		$10,585
Test / Field Engr. Labor (contractor)	AQ								
Test / Comm. Engr. Labor (contractor)	AQ								
Lead Commissioning Engr. (LCE) (contractor)	AQ				$27,280		$154,660		$181,940
Vehicles (now in Indirects section)	AV								
TSTXX Subtotal					$44,739		$253,642		$298,382
Escalation									
TSTXX Total					$44,739		$253,642		$298,382
SUBTOTAL PROJECT DIRECT COST		-	$6,213		$2,577,969		$1,194,691		$3,777,894
Risk									
Risk					$388,000		$168,000		$556,000
					$ -		$ -		
					$ -		$ -		
Risk Total					$388,000		$168,000		$556,000
TOTAL PROJECT DIRECT COST (w risk)		-	$6,213		$2,965,969		$1,362,691		$4,333,894
INDIRECTS									
Non-Productive Time Allocation (ZNP)	17.0%		$853		$22,375		$92,137		$115,065
Payroll Benefits Allocation (ZPB) Incl NPT	44.0%		$2,804		$60,806		$276,291		$339,897
Gen SVC CO Overhead (ZGS) Incl NPT	80.0%		$2,804		$12,452		$4,947		$20,203
E&S Allocations (ZES,ZEL,ZES)	36.0%		$1,681		$100,446		$105,339		$457,464
AS&E Allocations (ZAS)	1.3%		$74		$34,672		$24,042		$58,788
Stores Expense Allocation (ZST)	8.0%				$5,046		$650		$6,496
Lobby Stock									
MOEC (ZME)	6.0%		$362		$20,777		$75,847		$96,915
Vehicles (ZVE)	26.0%		$31		$36,660		$151,755		$188,474
Indirects Subtotal			$8,536		$293,782		$881,508		$1,280,306
TOTAL PROJECT COST - Direct & Indirect (excl AFUDC)			$10,749		$3,259,751		$2,343,659		$5,614,110
AFUDC									
AFUDC (ZX)			$35	7.00%	$60,993	7.00%	$60,008	1	$147,036
In Service Dollars / Land costs									
Cumulative ISS & Land Costs					-		-		
AFUDC Subtotal			$35		$60,993		$60,008		$147,036
TOTAL PROJECT COST - Baseline Budget			$10,784		$3,320,744		$2,423,667		$5,761,146
Contingency		-							
Contingency		-			$62,547		$47,669		$110,215
Other		-	$ -		$ -		$ -		
Contingency SubTotal					$62,547		$47,669		$110,215
TOTAL PROJECT COST - Approved Funding			$10,784		$3,383,291		$2,471,316		$5,871,361

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
1	[redacted]	Temporary Transformer Replacement Project - Emergent work(CS00675)	17-Apr-23 A	12-Jul-24		0	284		
2		PROJECT PLANNING & FUNDING	17-Apr-23 A	02-Feb-24		113	171		
3		T-Minus Milestones	28-Aug-23	02-Feb-24		0	157		
4		Civil T-Minus Milestone	07-Dec-23	02-Feb-24		0	56		
5	AT0804	ALL PERMITS RECEIVED		07-Dec-23		0	0	PM	
6	AT0813	SITING PETITION AND APPLICATION FILED		07-Dec-23		0	0	PM	
7	AT0805C	Civil IFC - Civil (BG) w/BOM		07-Dec-23		0	0	ENG.ST.SS.CIV	
8	AT0814	Construction Contracts / PSA in Place		07-Dec-23		0	0	PM	
9	AT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED - Civil		04-Jan-24		0	0	PM	
10	AT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)		18-Jan-24		0	0	PM	
11	AT00	T-00 CIVIL START OF CONSTRUCTION - WO# NON OUTAGE	02-Feb-24*			0	0	ENG.ST.SS.CIV	
12		Electrical T-Milestones-NON_OUTAGE	15-Sep-23	01-Nov-23		0	46		
13	GT0805E	Elect IFC - Electrical (AG) w/Final BOM		15-Sep-23		-10	0	ENG.ST.SS.ELI	
14	GT0805P	P&C IFC - P&C w/BOM		15-Sep-23		-10	0	ENG.ST.P&C.P	
15	GT0805	Final Engineering Issued for Construction W/BOM		15-Sep-23		-10	0	ENG.ST.SS.ELI	
16	GT0804	ALL PERMITS RECEIVED		15-Sep-23		-10	0	PM	
17	GT1301	COMMISSIONING PLAN COMPLETE		22-Sep-23	7	-52	0	PM	
18	GT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED- Electrical		15-Oct-23		-12	0	PM	
19	GT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)		17-Oct-23		0	0	PM	
20	GT0813	SITING PETITION AND APPLICATION FILED		24-Oct-23	10	-49	0	PM	
21	GT00	T-00 - Elec - START OF CONSTRUCTION - WO# NON-OUTAGE	01-Nov-23*			0	0	PM	
22		Electrical T-Milestones	22-Sep-23	28-Nov-23		-9	67		
23	BT1301	COMMISSIONING PLAN COMPLETE		22-Sep-23		-33	0	PM	
24	BT0805E	Elect IFC - Electrical (AG) w/Final BOM		24-Sep-23		0	0	ENG.ST.SS.ELI	
25	BT0805P	P&C IFC - P&C w/BOM		24-Sep-23		0	0	ENG.ST.P&C.P	
26	BT0805	Final Engineering Issued for Construction W/BOM		24-Sep-23		0	0	ENG.ST.SS.ELI	
27	BT0804	ALL PERMITS RECEIVED		24-Sep-23		0	0	PM	
28	BT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED- Electrical		22-Oct-23		0	0	PM	
29	BT0404	ALL FINAL RELAY PROTECTIVE SETTING ISSUED		23-Oct-23		-1	0	PM	
30	BT0813	SITING PETITION AND APPLICATION FILED		24-Oct-23		-30	0	PM	
31	BT1805	T-18.05 - NX9 Preliminary Ratings to LCC for New Equipment (transformers are considered 'NEW EQUIPMENT')		26-Oct-23	1	-102	0	PM	
32	BT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)		05-Nov-23		0	0	PM	
33	BT1201	SCADA Date (Tab) Sheets/Signal List Sent to LCC		10-Nov-23	3	-75	0	ENG.ST.P&C.P	
34	BT0301	T-03.01 NX9 THERMAL RATINGS TO LCC AND CONVEX		15-Nov-23		-17	0	PM	
35	BT00	T-00 - START OF CONSTRUCTION - WO# outage Elec	20-Nov-23*			0	0	PM	
36	BT1202	P/C DESCRIPTION / DRAFT OPERATING INSTRUCTIONS ISSUED		28-Nov-23	2	-93	0	ENG.ST.P&C.P	
37		Mobile Transformer - T-Milestones	28-Aug-23	02-Jan-24		0	126		
38	CT1801	CT-18.01ALL FIRM TOAAPPLICATIONS DUE TO LCC- TRANSFORMER		28-Aug-23		0	0	PM	
39	CT1301	COMMISSIONING PLAN COMPLETE		02-Oct-23		0	0	PM	
40	CT1805	T-18.05 - NX9 Preliminary Ratings to LCC for New Equipment (transformers are considered 'NEW EQUIPMENT') - Mobile		26-Oct-23	6	-59	0	PM	
41	CT0804	ALL PERMITS RECEIVED		06-Nov-23		0	0	PM	
42	CT0813	SITING PETITION AND APPLICATION FILED		06-Nov-23		0	0	PM	
43	CT0805C	Civil IFC - Civil (BG) w/BOM		06-Nov-23		0	0	ENG.ST.SS.CIV	
44	CT0805E	Elect IFC - Electrical (AG) w/Final BOM		06-Nov-23		0	0	ENG.ST.SS.ELI	
45	CT0805P	P&C IFC - P&C w/BOM		06-Nov-23		0	0	ENG.ST.P&C.P	
46	CT0805	Final Engineering Issued for Construction W/BOM		06-Nov-23		0	0	ENG.ST.SS.ELI	
47	CT1201	SCADA Date (Tab) Sheets/Signal List Sent to LCC		10-Nov-23		-32	0	ENG.ST.P&C.P	

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
48	CT1202	P/C DESCRIPTION / DRAFT OPERATING INSTRUCTIONS ISSUED		28-Nov-23	8	-50	0	ENG.ST.P&C.P	
49	CT0404	ALL FINAL RELAY PROTECTIVE SETTING ISSUED		04-Dec-23		0	0	PM	
50	CT0301	T-03.01 NX9 THERMAL RATINGS TO LCC AND CONVEX - Mobile		11-Dec-23		0	0	PM	
51	CT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)		18-Dec-23		0	0	PM	
52	CT0401	ALL MATERIAL RECEIVED (Transformer)		20-Dec-23		-16	0	PM	
53	CT00	T-00 - Transformer - START OF CONSTRUCTION - WO#	02-Jan-24*			0	0	PM	
54	**P&C T-Minus Milestones**		02-Oct-23	02-Jan-24		0	91		
55	JT1301	COMMISSIONING PLAN COMPLETE		02-Oct-23		0	0	PM	
56	JT0805P	P&C IFC - P&C w/BOM		06-Nov-23		0	0	ENG.ST.P&C.P	
57	JT1201	SCADA Date (Tab) Sheets/Signal List Sent to LCC		10-Nov-23		-32	0	ENG.ST.P&C.P	
58	JT1202	P/C DESCRIPTION / DRAFT OPERATING INSTRUCTIONS ISSUED		28-Nov-23	9	-50	0	ENG.ST.P&C.P	
59	JT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED- Electrical		04-Dec-23		0	0	PM	
60	JT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)		18-Dec-23		0	0	PM	
61	JT00	T-00 - P&C - START OF CONSTRUCTION - WO#	02-Jan-24*			0	0	PM	
62	**Project Funding**		07-Aug-23	05-Oct-23		142	43		
63	**Full Funding**		07-Aug-23	05-Oct-23		142	43		
64	**PAF - FF**		07-Aug-23	07-Aug-23		-29	1		
65	PAFF2100	Incorporate Internal Review Comments & Submit Full Funding PAF to EPAC for Review	07-Aug-23	07-Aug-23		-29	1	ENG.AM.ENG	[redacted]
66	**EPAC - FF**		17-Aug-23	24-Aug-23		-37	5		
67	PAFF2105	EPAC Full Funding Meeting		17-Aug-23*	7	-37	0	PM	
68	PAFF2200	Incorporate EPAC Full Funding PAF Review Comments	18-Aug-23	24-Aug-23	7	-37	5	ENG.AM.ENG	[redacted]
69	FF1000	EPAC Full Funding Approval		24-Aug-23	7	-37	0	PM	
70	**Power Plan - FF**		25-Aug-23	07-Sep-23		-8	9		
71	FF1100	EPAC Funding Powerplan Approval	25-Aug-23	07-Sep-23		-8	9	IP	Eversource Project Approval Committee
72	**Full Funding Schedule Baseline Acknowledgement - FF**		08-Sep-23	05-Oct-23		142	20		
73	FFB_01	Scheduler Issues FF Schedule to PM/AM for EPAC Mtg & Snaps FF Baseline	08-Sep-23	14-Sep-23		142	5	TEPS	[redacted]
74	FFB_03	Scheduler Issues FF Baseline for Reviews/Acknowledgement by Key Parties	15-Sep-23	21-Sep-23		142	5	TEPS	
75	FFB_04A	Review and Acknowledgement of FF Baseline - PM	22-Sep-23	28-Sep-23		142	5	VEND.PM	
76	FFB_04B	Review and Acknowledgement of FF Baseline - SS Eng	22-Sep-23	28-Sep-23		142	5	ENG.ST.SS.EL	
77	FFB_04C	Review and Acknowledgement of FF Baseline - Civ Eng	22-Sep-23	28-Sep-23		142	5	ENG.ST.SS.CI	
78	FFB_04D	Review and Acknowledgement of FF Baseline - P&C Eng	22-Sep-23	28-Sep-23		142	5	ENG.ST.P&C.P	
79	FFB_04G	Review and Acknowledgement of FF Baseline - Telecomm	22-Sep-23	28-Sep-23		142	5	ENG.ST.SUBTE	
80	FFB_04H	Review and Acknowledgement of FF Baseline - LTRC	22-Sep-23	28-Sep-23		142	5	ENG.ST.SS.EL	
81	FFB_04I	Review and Acknowledgement of FF Baseline - Permitting	22-Sep-23	28-Sep-23		142	5	PERMITTING	
82	FFB_04L	Review and Acknowledgement of FF Baseline - Con Rep	22-Sep-23	28-Sep-23		142	5	CONS	
83	FFB_04M	Review and Acknowledgement of FF Baseline - Mtls Coord	22-Sep-23	28-Sep-23		142	5	PURC	
84	FFB_10	FF Baseline Acknowledgement Rec'd <Comments Addressed / FF Baseline Set / Schedule Issued>	29-Sep-23	05-Oct-23		142	5	TEPS	
85	**Civil Conceptual & Preliminary Engineering Design**		17-Apr-23 A	11-Aug-23		-13	14		
86	**Civil Preliminary Design**		17-Apr-23 A	11-Aug-23		-13	14		
87	DE2020	ES Engineering Develop & Review Civil Substation Preliminary Design	17-Apr-23 A	11-Aug-23		-13	14	ENG.ST.SS.CI	[redacted]
88	**Electrical Conceptual & Preliminary Engineering Design**		17-Apr-23 A	11-Aug-23		-72	14		
89	**Electrical Preliminary Design**		17-Apr-23 A	11-Aug-23		-72	14		
90	DE2040	ES Engineering Develop & Review Electrical Substation Preliminary Design	17-Apr-23 A	11-Aug-23	1	-72	14	ENG.ST.SS.EL	[redacted]
91	**Project Management**		16-Sep-23	29-Sep-23		197	10		
92	**Compliance Authorization Notification**		18-Sep-23	29-Sep-23		11	10		
93	A1170	Prepare CAN (Construction Authorization Notice)	18-Sep-23	29-Sep-23		11	10	PM	[redacted]
94	**Outage Permits / TOAs Request**		16-Sep-23	20-Sep-23		296	5		
95	A1280	Construction Rep SUBMIT OUTAGE REQUESTS for MOBILE CIRCUIT BREAKERS	16-Sep-23	20-Sep-23		296	5	CONS	[redacted]

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
96		**ENVIRONMENTAL APPROVALS & PERMITS**	05-Sep-23	15-Sep-23		-8	9		
97		**Environmental Services / Affairs**	05-Sep-23	15-Sep-23		-8	9		[redacted]
98	A3710	Outreach Activities - FirstLight	05-Sep-23*	15-Sep-23		-8	9	VEND.PM	
99	A3720	Outreach Activities - Town	05-Sep-23*	15-Sep-23		-8	9	VEND.PM	
100		**SITING APPROVALS / PERMITS / PROJECT SERVICES**	04-Aug-23 A	24-Oct-23		-5	60		
101		**State Approvals and Permits**	04-Aug-23 A	24-Oct-23		-49	86		
102		**Siting Council / Board**	04-Aug-23 A	24-Oct-23		-49	86		
103	A3630	CSC (CT Siting Council) EMERGENCY EXEMPT FORM developed and internal approval obtained	04-Aug-23 A	09-Sep-23	10	-49	30	PM	
104	A3640	CSC (CT Siting Council) Approved	10-Sep-23	24-Oct-23	10	-49	45	PM	
105		**Compliance Matrices - Regulatory Commitments**	04-Aug-23 A	21-Aug-23		39	30		
106	A1230	Prepared Compliance Matrices - Regulatory	04-Aug-23 A	21-Aug-23		39	30	PM	
107		**Compliance Matrices - Non Regulatory Commitments**	04-Aug-23 A	21-Aug-23		39	30		
108	A1220	Prepared Compliance Matrices - Non-Regulatory (Commitments)	04-Aug-23 A	21-Aug-23		39	30	PM	
109		**ENGINEERING DETAILED / IFC DESIGN**	14-Aug-23	28-Nov-23		106	74		
110		**Civil Engineering**	14-Aug-23	15-Sep-23		-13	24		
111		**Civil Engineering IFC Design**	14-Aug-23	15-Sep-23		-13	24		
112	CE1310	ES Engineering Develop Develop & Review Civil Substation IFC	14-Aug-23	15-Sep-23		-13	24	ENG.ST.SS.CI\	
113		**Electrical Engineering**	14-Aug-23	15-Nov-23		114	66		
114		**Electrical Engineering IFC Design**	14-Aug-23	15-Sep-23		-34	24		
115	EE1310	ES Engineering Develop & Review Electrical Substation IFC	14-Aug-23	15-Sep-23		-34	24	ENG.ST.SS.EL	
116		**Electrical Engineering NX-9**	14-Aug-23	15-Nov-23		114	66		
117		**Distribution Thermal Ratings NX-9 - Mobile Transformer**	14-Aug-23	15-Nov-23		114	66		
118		**Thermal Ratings - Substation - Preliminary Thermal Data**	14-Aug-23	26-Oct-23		-72	52		
119	NX9A-NC69	PE Updates 1-Line Nomenclature Dwgs & Complete PE Checklist M7-EN-3006.2 - e-mail link to project team & CONVEX	14-Aug-23	18-Aug-23	1	-72	5	ENG.ST.SS.EL	
120	NX9A-NC159	LTRC Reviews and Makes "GO / NO-GO" Decision for 1-Line Nomenclature	21-Aug-23	25-Aug-23	1	-72	5	ENG.ST.SS.EL	
121	NX9A-NC169	LTRC Submits 1-Line Nomenclature to TRC	28-Aug-23	01-Sep-23	1	-72	5	ENG.ST.SS.EL	
122	NX9A-NC59	LTRC Reviews and Makes "GO / NO-GO" Decision for Thermal Ratings	05-Sep-23	11-Sep-23	1	-72	5	ENG.ST.SS.EL	
123	NX9A-NC99	LTRC Requests P&C Checklist	12-Sep-23	18-Sep-23	1	-72	5	ENG.ST.SS.EL	
124	NX9A-NC79	P&C Develops and Provides LTRC with P&C Checklist (M7-EN-3006.1)	19-Sep-23	25-Sep-23	1	-72	5	ENG.ST.P&C.P	
125	NX9A-NC139	LTRC Reviews and Sends Thermal Rating Data for TRC Review	26-Sep-23	02-Oct-23	1	-72	5	ENG.ST.SS.EL	
126	NX9A-NC129	TRC Reviews and Approves Thermal Rating Data	03-Oct-23	10-Oct-23	1	-72	5	ENG.AM.ENG	
127	NX9A-NC119	LTRC Sends Thermal Rating Data for Approval & Submit to NURS	11-Oct-23	17-Oct-23	1	-72	5	ENG.ST.SS.EL	
128	NX9A-NC109	Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOE	18-Oct-23	18-Oct-23	1	-72	1	TEPS	
129	NX9A-NC89	TRC Review and Submit NX-9 Data to LCC + ISO-NE for S/S Thermal Rating - Mobile	19-Oct-23	25-Oct-23	1	-72	5	ENG.AM.ENG	
130	NX9A-NC149	Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-18, EquipDOE, Revs DOE per M7-EN-3006 - Mobile	26-Oct-23	26-Oct-23	1	-72	1	TEPS	
131		**Thermal Ratings - Substation - Verify Thermal Data**	18-Sep-23	15-Nov-23		-13	42		
132	NX9A-NC31	PE to Verify Thermal Data Review PE Chectlist (M7-EN-3006.2)	18-Sep-23	22-Sep-23		-13	5	ENG.ST.SS.EL	
133	NX9A-NC33	LTRC Reviews and Makes "GO / NO-GO" Decision	25-Sep-23	29-Sep-23		-13	5	ENG.ST.SS.EL	
134	NX9A-NC35	LTRC Requests P&C Checklist	02-Oct-23	06-Oct-23		-13	5	ENG.ST.SS.EL	
135	NX9A-NC37	P&C Develops and Provides LTRC with P&C Checklist (M7-EN-3006.1)	10-Oct-23	16-Oct-23		-13	5	ENG.ST.P&C.P	
136	NX9A-NC39	LTRC Reviews and Sends Thermal Rating Data for TRC Review	17-Oct-23	23-Oct-23		-13	5	ENG.ST.SS.EL	
137	NX9A-NC41	TRC Reviews and Approves Thermal Rating Data	24-Oct-23	30-Oct-23		-13	5	ENG.AM.ENG	
138	NX9A-NC43	LTRC Sends Thermal Rating Data for Approval & Submit to NURS	31-Oct-23	06-Nov-23		-13	5	ENG.ST.SS.EL	
139	NX9A-NC45	Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOE	07-Nov-23	07-Nov-23		-13	1	TEPS	
140	NX9A-NC47	TRC Review and Submit NX-9 Data to LCC + ISO-NE for S/S Thermal Rating - Mobile	08-Nov-23	14-Nov-23		-13	5	ENG.AM.ENG	
141	NX9A-NC49	Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-3, EquipDOE, Revs DOE per M7-EN-3006 - Mobile	15-Nov-23	15-Nov-23		-13	1	TEPS	
142		**Thermal Ratings - Non NX-9 Thermal Ratings**	14-Aug-23	11-Sep-23		160	20		

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
143	NX9A-EM44	P&C Develops and Provides LTRC with P&C Checklist & Thermal Ratings Data	14-Aug-23	18-Aug-23		160	5	ENG.ST.P&C.P	[redacted]
144	NX9A-EM54	LTRC Prepares and Sends Thermal Rating Data for TRC Review	21-Aug-23	25-Aug-23		160	5	ENG.ST.SS.EL	
145	NX9A-EM64	TRC Reviews and Approves Thermal Rating Data	28-Aug-23	01-Sep-23		160	5	ENG.ST.SS.EL	
146	NX9A-EM74	LTRC Files Capability Sheets	05-Sep-23	11-Sep-23		160	5	ENG.ST.SS.EL	
147	**Distribution Thermal Ratings NX-9 - Circuit Switcher**		14-Aug-23	15-Nov-23		114	66		
148	**Thermal Ratings - Substation - Preliminary Thermal Data**		14-Aug-23	26-Oct-23		-72	52		
149	NX9B-NC69	PE Updates 1-Line Nomenclature Dwgs & Complete PE Checklist M7-EN-3006.2 - e-mail link to project team & CONVEX	14-Aug-23	18-Aug-23	4	-72	5	ENG.ST.SS.EL	
150	NX9B-NC159	LTRC Reviews and Makes "GO / NO-GO" Decision for 1-Line Nomenclature	21-Aug-23	25-Aug-23	4	-72	5	ENG.ST.SS.EL	
151	NX9B-NC169	LTRC Submits 1-Line Nomenclature to TRC	28-Aug-23	01-Sep-23	4	-72	5	ENG.ST.SS.EL	
152	NX9B-NC59	LTRC Reviews and Makes "GO / NO-GO" Decision for Thermal Ratings	05-Sep-23	11-Sep-23	4	-72	5	ENG.ST.SS.EL	
153	NX9B-NC99	LTRC Requests P&C Checklist	12-Sep-23	18-Sep-23	4	-72	5	ENG.ST.SS.EL	
154	NX9B-NC79	P&C Develops and Provides LTRC with P&C Checklist (M7-EN-3006.1)	19-Sep-23	25-Sep-23	4	-72	5	ENG.ST.P&C.P	
155	NX9B-NC139	LTRC Reviews and Sends Thermal Rating Data for TRC Review	26-Sep-23	02-Oct-23	4	-72	5	ENG.ST.SS.EL	
156	NX9B-NC129	TRC Reviews and Approves Thermal Rating Data	03-Oct-23	10-Oct-23	4	-72	5	ENG.AM.ENG	
157	NX9B-NC119	LTRC Sends Thermal Rating Data for Approval & Submit to NURS	11-Oct-23	17-Oct-23	4	-72	5	ENG.ST.SS.EL	
158	NX9B-NC109	Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOE	18-Oct-23	18-Oct-23	4	-72	1	TEPS	
159	NX9B-NC89	TRC Review and Submit NX-9 Data to LCC + ISO-NE for S/S Thermal Rating - CS	19-Oct-23	25-Oct-23	4	-72	5	ENG.AM.ENG	
160	NX9B-NC149	Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-18, EquipDOE, Revs DOE per M7-EN-3006 - CS	26-Oct-23	26-Oct-23	4	-72	1	TEPS	
161	**Thermal Ratings - Substation - Verify Thermal Data**		18-Sep-23	15-Nov-23		-13	42		
162	NX9B-NC31	PE to Verify Thermal Data Review PE Chectlist (M7-EN-3006.2)	18-Sep-23	22-Sep-23		-13	5	ENG.ST.SS.EL	
163	NX9B-NC33	LTRC Reviews and Makes "GO / NO-GO" Decision	25-Sep-23	29-Sep-23		-13	5	ENG.ST.SS.EL	
164	NX9B-NC35	LTRC Requests P&C Checklist	02-Oct-23	06-Oct-23		-13	5	ENG.ST.SS.EL	
165	NX9B-NC37	P&C Develops and Provides LTRC with P&C Checklist (M7-EN-3006.1)	10-Oct-23	16-Oct-23		-13	5	ENG.ST.P&C.P	
166	NX9B-NC39	LTRC Reviews and Sends Thermal Rating Data for TRC Review	17-Oct-23	23-Oct-23		-13	5	ENG.ST.SS.EL	
167	NX9B-NC41	TRC Reviews and Approves Thermal Rating Data	24-Oct-23	30-Oct-23		-13	5	ENG.AM.ENG	
168	NX9B-NC43	LTRC Sends Thermal Rating Data for Approval & Submit to NURS	31-Oct-23	06-Nov-23		-13	5	ENG.ST.SS.EL	
169	NX9B-NC45	Scheduler @ NURS email "Submitted for PP Review" - Updates NURS with DOE	07-Nov-23	07-Nov-23		-13	1	TEPS	
170	NX9B-NC47	TRC Review and Submit NX-9 Data to LCC + ISO-NE for S/S Thermal Rating - CS	08-Nov-23	14-Nov-23		-13	5	ENG.AM.ENG	
171	NX9B-NC49	Scheduler @ NURS email "Submitted for DOE Monitoring" - Updates T-3, EquipDOE, Revs DOE per M7-EN-3006 - CS	15-Nov-23	15-Nov-23		-13	1	TEPS	
172	**Thermal Ratings - Non NX-9 Thermal Ratings**		14-Aug-23	11-Sep-23		160	20		
173	NX9B-EM44	P&C Develops and Provides LTRC with P&C Checklist & Thermal Ratings Data	14-Aug-23	18-Aug-23		160	5	ENG.ST.P&C.P	
174	NX9B-EM54	LTRC Prepares and Sends Thermal Rating Data for TRC Review	21-Aug-23	25-Aug-23		160	5	ENG.ST.SS.EL	
175	NX9B-EM64	TRC Reviews and Approves Thermal Rating Data	28-Aug-23	01-Sep-23		160	5	ENG.ST.SS.EL	
176	NX9B-EM74	LTRC Files Capability Sheets	05-Sep-23	11-Sep-23		160	5	ENG.ST.SS.EL	
177	**P&C Engineering**		14-Aug-23	28-Nov-23		106	74		
178	**P&C Relay Settings Development**		18-Sep-23	23-Oct-23		-64	25		
179	DSSE-440	Relay Settings - Prepare and Issue Relay Settings IFC- (Is standard Relay logic Needed?)	18-Sep-23*	23-Oct-23	2	-64	25	ENG.ST.P&C.P	
180	**P&C SCADA**		16-Oct-23	10-Nov-23		-53	20		
181	DSSE-990	P&C INITIATE SCADA Data Sheets	16-Oct-23*	10-Nov-23	3	-53	20	ENG.ST.P&C.P	
182	**P&C Engineering IFC Design**		14-Aug-23	28-Nov-23		106	74		
183	PC1330	ES Engineering Reviews and Issues P&C IFC	14-Aug-23	15-Sep-23	2	-64	24	ENG.ST.P&C.P	
184	DSSE-480	P&C INITIATE CASCADE FORMS (Apenndix A) for Construction	18-Sep-23	16-Oct-23		136	20	ENG.ST.P&C.P	
185	DSSE-450	Operating Instructions - Prepare and Issue Draft Distribution OI to Engineering	24-Oct-23	20-Nov-23	2	-64	20	ENG.ST.P&C.P	
186	DSSE-470	Operating Instructions - P&C Review Draft Distribution OI	21-Nov-23	28-Nov-23	2	-64	5	ENG.ST.P&C.P	
187	DSSE-930	Operating Instructions - P&C Review Draft Convex OI	21-Nov-23	28-Nov-23	5	-64	5	ENG.ST.P&C.P	
188	**Lead Commissioning Engineer**		25-Aug-23	22-Sep-23		-37	20		
189	**LCE Commissioning Plan**		25-Aug-23	22-Sep-23		-37	20		
190	LCE400	Develop Test and Commissioning Plan	25-Aug-23	22-Sep-23	7	-37	20	TEST	

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
191		**PROCUREMENT LONG LEAD MATERIAL**	03-Jul-23 A	31-Dec-23		135	96		
192		**Civil Long Lead Material**	08-Sep-23	23-Oct-23		50	31		
193		**MATERIAL - CONDUIT**	08-Sep-23	23-Oct-23		50	31		
194	DSSE-2050	MATERIAL - CONDUIT- Prepare & Issue DR	08-Sep-23	14-Sep-23		49	5	ENG.ST.P&C.P	[redacted]
195	DSSE-2060	MATERIAL - CONDUIT - Procurement Issue PO	15-Sep-23	24-Sep-23		73	10	PURC	
196	DSSE-2080	MATERIAL - CONDUIT - Material Vendor Delivery Leadtime	25-Sep-23	22-Oct-23		73	28	VEND.PM	
197	DSSE-2070	MATERIAL - CONDUIT - Confirm Material Delivery to Site	23-Oct-23	23-Oct-23		73	1	VEND.PM	
198		**MATERIAL - CRIBBING FOR TEMP FOUNDATION**	08-Sep-23	23-Oct-23		50	31		
199	DSSE-2210	MATERIAL - CRIBBING FOR TEMP FOUNDATION - Prepare & Issue DR	08-Sep-23	14-Sep-23		49	5	ENG.ST.P&C.P	
200	DSSE-2220	MATERIAL - CRIBBING FOR TEMP FOUNDATION - Procurement Issue PO	15-Sep-23	24-Sep-23		73	10	PURC	
201	DSSE-2240	MATERIAL - CRIBBING FOR TEMP FOUNDATION - Material Vendor Delivery Leadtime	25-Sep-23	22-Oct-23		73	28	VEND.PM	
202	DSSE-2230	MATERIAL - CRIBBING FOR TEMP FOUNDATION - Confirm Material Delivery to Site	23-Oct-23	23-Oct-23		73	1	VEND.PM	
203		**Electrical Long Lead Material**	03-Jul-23 A	31-Dec-23		135	96		
204		**MATERIAL - 556 ACSR CONDUCTOR**	08-Sep-23	15-Oct-23		56	25		
205	DSSE-2450	MATERIAL - 556 ACSR CONDUCTOR - Prepare & Issue DR	08-Sep-23	14-Sep-23		55	5	ENG.ST.P&C.P	
206	DSSE-2460	MATERIAL - 556 ACSR CONDUCTOR - Procurement Issue PO	15-Sep-23	24-Sep-23		81	10	PURC	
207	DSSE-2480	MATERIAL - 556 ACSR CONDUCTOR - Material Vendor Delivery Leadtime	25-Sep-23	14-Oct-23		81	20	VEND.PM	
208	DSSE-2470	MATERIAL - 556 ACSR CONDUCTOR - Confirm Material Delivery to Site	15-Oct-23	15-Oct-23		81	1	VEND.PM	
209		**MATERIAL - 2 HOLE PADS FOR 556 ACSR**	08-Sep-23	15-Oct-23		56	25		
210	DSSE-2170	MATERIAL - 2 HOLE PADS - Prepare & Issue DR	08-Sep-23	14-Sep-23		55	5	ENG.ST.P&C.P	
211	DSSE-2180	MATERIAL - 2 HOLE PADS - Procurement Issue PO	15-Sep-23	24-Sep-23		81	10	PURC	
212	DSSE-2200	MATERIAL - 2 HOLE PADS - Material Vendor Delivery Leadtime	25-Sep-23	14-Oct-23		81	20	VEND.PM	
213	DSSE-2190	MATERIAL - 2 HOLE PADS - Confirm Material Delivery to Site	15-Oct-23	15-Oct-23		81	1	VEND.PM	
214		**MATERIAL - 150 kVA PADMOUNT 3PH XFMR**	08-Sep-23	30-Sep-23		65	16		
215	DSSE-2290	MATERIAL - 3PH PAD - Prepare & Issue DR	08-Sep-23	14-Sep-23		66	5	ENG.ST.P&C.P	
216	DSSE-2300	MATERIAL - 3PH PAD - Procurement Issue PO	15-Sep-23	24-Sep-23		96	10	PURC	
217	DSSE-2320	MATERIAL - 3PH PAD - Material Vendor Delivery Leadtime	25-Sep-23	29-Sep-23		96	5	VEND.PM	
218	DSSE-2310	MATERIAL - 3PH PAD - Confirm Material Delivery to Site	30-Sep-23	30-Sep-23		96	1	VEND.PM	
219		**MATERIAL - 120' 15kV 1/0 CABLE**	08-Sep-23	30-Sep-23		65	16		
220	DSSE-2370	MATERIAL - 15kV 1/0 CABLE - Prepare & Issue DR	08-Sep-23	14-Sep-23		66	5	ENG.ST.P&C.P	
221	DSSE-2380	MATERIAL - 15kV 1/0 CABLE - Procurement Issue PO	15-Sep-23	24-Sep-23		96	10	PURC	
222	DSSE-2400	MATERIAL - 15kV 1/0 CABLE - Material Vendor Delivery Leadtime	25-Sep-23	29-Sep-23		96	5	VEND.PM	
223	DSSE-2390	MATERIAL - 15kV 1/0 CABLE - Confirm Material Delivery to Site	30-Sep-23	30-Sep-23		96	1	VEND.PM	
224		**MATERIAL - 15kV TERMINATORS**	08-Sep-23	30-Sep-23		65	16		
225	DSSE-2250	MATERIAL - 15kV TERMINATORS - Prepare & Issue DR	08-Sep-23	14-Sep-23		66	5	ENG.ST.P&C.P	
226	DSSE-2260	MATERIAL - 15kV TERMINATORS - Procurement Issue PO	15-Sep-23	24-Sep-23		96	10	PURC	
227	DSSE-2280	MATERIAL - 15kV TERMINATORS - Material Vendor Delivery Leadtime	25-Sep-23	29-Sep-23		96	5	VEND.PM	
228	DSSE-2270	MATERIAL - 15kV TERMINATORS - Confirm Material Delivery to Site	30-Sep-23	30-Sep-23		96	1	VEND.PM	
229		**MATERIAL - 2 HOLE PADS FOR 1/0 CABLE**	08-Sep-23	30-Sep-23		65	16		
230	DSSE-2410	MATERIAL - 2 HOLE CABLE PADS - Prepare & Issue DR	08-Sep-23	14-Sep-23		66	5	ENG.ST.P&C.P	
231	DSSE-2420	MATERIAL - 2 HOLE CABLE PADS - Procurement Issue PO	15-Sep-23	24-Sep-23		96	10	PURC	
232	DSSE-2440	MATERIAL - 2 HOLE CABLE PADS - Material Vendor Delivery Leadtime	25-Sep-23	29-Sep-23		96	5	VEND.PM	
233	DSSE-2430	MATERIAL - 2 HOLE CABLE PADS - Confirm Material Delivery to Site	30-Sep-23	30-Sep-23		96	1	VEND.PM	
234		**MATERIAL - 76MX MOBILE TRANSFORMER**	03-Jul-23 A	27-Aug-23		320	70		
235	DSSE-2520	MATERIAL - 76MX TRANSFORMER - Material Vendor Delivery Leadtime	03-Jul-23 A	11-Aug-23		145	5	VEND.PM	
236	DSSE-2510	MATERIAL - 76MX TRANSFORMER - Confirm Material Delivery to Site	12-Aug-23	12-Aug-23		145	1	VEND.PM	
237	DSSE-2530	MATERIAL - 76MX TRANSFORMER - Procurement Issue PO	18-Aug-23	27-Aug-23		320	10	PURC	
238		**MATERIAL - 9A-5X TRANSFORMER**	03-Jul-23 A	29-Sep-23		97	64		

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
239	DSSE-2560	MATERIAL - 76MX TRANSFORMER - Procurement Issue PO to HICO	18-Aug-23	27-Aug-23		129	10	PURC	[redacted]
240	DSSE-2550	MATERIAL - 76MX TRANSFORMER - Material Vendor Delivery Leadtime	03-Jul-23 A	28-Sep-23		97	5	VEND.PM	
241	DSSE-2540	MATERIAL - 76MX TRANSFORMER - Confirm Material Delivery to Site	29-Sep-23	29-Sep-23		97	1	VEND.PM	
242	**MATERIAL - HICO BUSHINGS**		03-Jul-23 A	31-Dec-23		4	77		
243	DSSE-2580	MATERIAL -HICO BUSHINGS - Material Vendor Delivery Leadtime	03-Jul-23 A	30-Dec-23		4	5	VEND.PM	
244	DSSE-2570	MATERIAL - HICO BUSHINGS - Confirm Material Delivery to Site	31-Dec-23	31-Dec-23		4	1	VEND.PM	
245	**PROCUREMENT MATERIAL - BALANCE OF MATERIAL**		25-Aug-23	15-Oct-23		56	34		
246	**Civil Balance of Material**		25-Aug-23	06-Oct-23		60	30		
247	DSSE-500	MATERIAL - CIVIL - Prepare & Issue DR	25-Aug-23	31-Aug-23		62	5	ENG.ST.SS.CI\	
248	DSSE-600	Civil (BG) Material Ordered	25-Aug-23	31-Aug-23		85	5	ENG.ST.SS.CI\	
249	DSSE-1040	MATERIAL - CIVIL - Procurement Issue PO	01-Sep-23	15-Sep-23		62	10	PURC	
250	DSSE-1050	MATERIAL - CIVIL - Material Vendor Delivery Leadtime	16-Sep-23	05-Oct-23		90	20	VEND.PM	
251	DSSE-560	MATERIAL - CIVIL - Confirm Material Delivery to Site	06-Oct-23	06-Oct-23		60	1	VEND.PM	
252	**Electrical Balance of Material**		25-Aug-23	13-Oct-23		-7	34		
253	DSSE-520	MATERIAL - Electrical - Prepare & Issue DR	25-Aug-23	31-Aug-23		-8	5	ENG.ST.SS.EL	
254	DSSE-1020	MATERIAL - ELectrical - Procurement Issue PO	01-Sep-23	15-Sep-23		-8	10	PURC	
255	DSSE-590	Electrical (AG) Material Ordered	18-Sep-23	22-Sep-23		-8	5	ENG.ST.SS.EL	
256	DSSE-1030	MATERIAL - ELectrical - Material Vendor Delivery Leadtime	23-Sep-23	12-Oct-23		-10	20	VEND.PM	
257	DSSE-550	MATERIAL - Electrical Confirm Material Delivery to Site	13-Oct-23	13-Oct-23		-7	1	VEND.PM	
258	**P&C Balance of Material**		08-Sep-23	15-Oct-23		-7	25		
259	DSSE-510	MATERIAL - P&C - Prepare & Issue DR	08-Sep-23	14-Sep-23		-8	5	ENG.ST.P&C.P	
260	DSSE-980	MATERIAL - P&C - Procurement Issue PO	15-Sep-23	24-Sep-23		-12	10	PURC	
261	DSSE-1000	MATERIAL - P&C - Material Vendor Delivery Leadtime	25-Sep-23	14-Oct-23		-12	20	VEND.PM	
262	DSSE-1010	MATERIAL - P&C - Confirm Material Delivery to Site	15-Oct-23	15-Oct-23		-12	1	VEND.PM	
263	**PROCUREMENT OF SERVICE CONTRACTS**		18-Sep-23	06-Nov-23		172	35		
264	**Constructor of Choice - Direct Award or Bid**		18-Sep-23	06-Nov-23		172	35		
265	**CONSTRUCTION SERVICES - CONTRACTOR OF CHOICE**		18-Sep-23	06-Nov-23		172	35		
266	A3390	CONST.SERVICES - COC - Eversource Provides Spec / RFQ to COC	18-Sep-23	22-Sep-23		172	5	PURC	
267	A3400	CONST.SERVICES - COC - COC Evaluates Spec and Provides Quote	25-Sep-23	06-Oct-23		172	10		
268	A3410	CONST.SERVICES - COC - Eversource Reviews Quote from COC	10-Oct-23	23-Oct-23		172	10		
269	A3420	CONST.SERVICES - COC - Eversource Awards Contract - PO Issued	24-Oct-23	06-Nov-23		172	10	PURC	
270	**CONSTRUCTION**		01-Nov-23	30-Apr-24		0	125		
271	CSM	Construction Start Milestone	01-Nov-23			162	0	PM	
272	CFM	Construction Finish Milestone		30-Apr-24		0	0	PM	
273	ISD	EQUIPMENT IN SERVICE DATE (requires FOOB constraint) *see Notebook*		30-Apr-24*		0	0	PM	
274	**Outages**		20-Nov-23	30-Apr-24		0	112		
275	TOA-Const	OUTAGE / General Construction Work - 23-02189 remove 5X from service	20-Nov-23*	18-Dec-23		0	29	CONS	
276	TOA-Test	OUTAGE / Test Transformer	14-Dec-23	18-Dec-23		134	5	TEST	
277	**Thermal Ratings - Substation - NX-9 Pre NX9-DOE**		30-Apr-24	30-Apr-24		0	1		
278	NX9500	Scheduler - Send Email for 48Hrs Notification before DOE.	30-Apr-24	30-Apr-24		0	1	TEPS	
279	**Construction Support LOEs**		01-Nov-23	30-Apr-24		0	182		
280	ConRep-S	RESOURCE ONLY ACTIVITY - CONSTRUCTION - CONSTRUCTION REP	01-Nov-23	30-Apr-24		0	182	CONS	
281	CONSTelec	RESOURCE ONLY ACTIVITY - CONSTRUCTION - ELECTRICIAN	01-Nov-23	30-Apr-24		0	182	CONS	
282	**Site Development**		02-Feb-24	30-Apr-24		0	89		
283	A3580	Construction - Civil	02-Feb-24	30-Apr-24		0	89	CONS	
284	**Substation Construction**		02-Feb-24	30-Apr-24		0	89		

#	Activity ID	Activity Name	Start	Finish	Float Path	Total Float	Original Duration	DEPT	Resources
285	A3600	Construction - Electrical - TO HOLD DATES	02-Feb-24	30-Apr-24		0	89	CONS	[redacted]
286	**P&C Construction**		01-Apr-24	20-Apr-24		10	20		
287	A1140	Construction - P&C Implement Relay Settings	01-Apr-24*	20-Apr-24		10	20	CONS	
288	**TEST & COMMISSIONING**		26-Dec-23	30-Apr-24		0	88		
289	**Testing Activities**		26-Dec-23	30-Apr-24		0	88		
290	LCE320	Mobilize Testing Prior to Construction	26-Dec-23*	27-Dec-23		0	2	TEST	
291	LCE620	Execute Test and Commissioning Plan	28-Dec-23	09-Feb-24		56	30	TEST	
292	LCE610	Oversight of Testing (LOE, from start of mobilization up to execution of the test plan)	26-Dec-23	30-Apr-24		0	88	ENG.ST.SUBTE	
293	**PROJECT CLOSE OUT**		01-May-24	12-Jul-24		0	51		
294	**Civil Close Out**		01-May-24	05-Jul-24		5	46		
295	DSSE-900	Prepare Civil Field Mark Ups (Tie after Last Civil Construction Activity)	01-May-24	02-May-24		8	2	ENG.ST.SS.CIV	
296	A1110	Restore / Remediate Site	01-May-24	14-May-24		41	10	CONS	
297	DSSE-860	Eversource Engineering Verifies Civil Mark Up As-Built Drawing Package	08-May-24	21-May-24		5	10	ENG.ST.SS.CIV	
298	DSSE-970	Eversource Engineering Updates Civil As-Built Drawing Package	22-May-24	24-May-24		5	3	ENG.ST.SS.CIV	
299	DSSE-870	ES Create Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	28-May-24	06-Jun-24		5	8	ENG.ST.SS.CIV	
300	DSSE-880	PM to Document Civil As-Built Drawings Complete	07-Jun-24	07-Jun-24		24	1	PM	
301	DSSE-1120	Complete TD-176 CIVIL Design Prep & Issue As-Built Dwgs	07-Jun-24	05-Jul-24		5	20	ENG.ST.SS.CIV	
302	**Electrical Close Out**		08-May-24	12-Jul-24		0	46		
303	LCE700	Test Group Prepare Electrical Field Mark Ups; LCE Ensures Prints Ready for Pick-up (Tie after ISD)	08-May-24	09-May-24		0	2	ENG.ST.SUBTE	
304	DSSE-1130	Eversource Engineering Obtains Hard Copy As-Builts from the Field	10-May-24	14-May-24		0	3	ENG.ST.SS.ELI	
305	DSSE-820	Eversource Engineering Verifies Quality of Electrical Mark Up As-Built Drawing Package	15-May-24	29-May-24		0	10	ENG.ST.SS.ELI	
306	DSSE-940	Eversource Engineering Updates Electrical As-Built Drawing Package	30-May-24	03-Jun-24		0	3	ENG.ST.SS.ELI	
307	DSSE-830	ES Create Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	04-Jun-24	13-Jun-24		0	8	ENG.ST.SS.ELI	
308	DSSE-840	PM to Document Electrical As-Built Drawings Complete	14-Jun-24	14-Jun-24		19	1	VEND.PM	
309	DSSE-1110	Complete TD-176 ELECTRICAL Design Prep & Issue As-Built Dwgs	14-Jun-24	12-Jul-24		0	20	ENG.ST.SS.ELI	
310	**Thermal Ratings - Substation - NX-9 Post NX9-DOE/ISD**		02-Jul-24	12-Jul-24		0	8		
311	NX9FINAL50	Review + Affirm Accuracy of NX-9 for ISO Submission (Tie after Equip DOE or CFM/ISD)	02-Jul-24	05-Jul-24		0	3	VEND.PM	
312	NX9FINAL60	[If Required] Receive + Issue Final Affirmed NX-9 Data to NURS	08-Jul-24	12-Jul-24		0	5	ENG.AM.ENG	
313	**P&C Close Out**		10-May-24	16-May-24		11	5		
314	DSSE-950	P&C Submits SDS As-Builts	10-May-24	16-May-24		11	5	ENG.ST.P&C.P	
315	DSSE-960	P&C Submits Relay Setting As-Builts	10-May-24	16-May-24		11	5	ENG.ST.P&C.P	
316	**LCE Closeout**		01-May-24	07-May-24		0	5		
317	LCE900	LCE Review Test Data and Issue Commissioning Report (tie to As-Built submit Print activity)	01-May-24	07-May-24		0	5	ENG.ST.SUBTE	
318	**Work Order / Financial Close Out**		01-May-24	24-Jun-24		13	38		
319	A1020	Cost Analyst Prepares FINAL Units of Property	01-May-24	12-Jun-24		21	30	COST	
320	A1030	Asset Management Complete Asset Update(s) in CASCADE	13-May-24	24-Jun-24		13	30	ENG.AM.COMP	
321	**Project Management Close Out**		01-May-24	12-Jul-24		0	51		
322	DSSE-1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	01-May-24	07-May-24		2	5	CONS	
323	A1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD)	01-May-24	10-May-24		20	10	CONS	
324	A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	01-May-24	12-Jun-24		21	30	PM	
325	A1270	Prepare TD-707 Document	01-May-24	12-Jun-24		21	30	CONS	
326	FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)		12-Jul-24		0	0	PM	

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Constructability Review Form: **M6-PM-2012 - Eversource**

Substation Constructability Review

Project Title: [redacted] Transformer Replacement Project	☐	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00675	**Project Constructability Phase:**	
Date(s) of Constructability Review: **07/14/2023** Click to enter a date	☐ Conceptual Engineering Design ☒ Preliminary Engineering Design ☐ Detailed Engineering Design	

Project Scope Statement:
Replace the existing 69kV-13.2kV transformer [redacted] at the [redacted], CT with a new Eversource standard 40MVA 115/69kV-13.2kV transformer.

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		☐	☐	Civil Engineering	
☐	☒	S/S Technical / LCE		☐	☒	Telecom	
☐	☐	S/S Operations**		☐	☐	Environmental	
☐	☐	Field Engineering		☐	☐	Real Estate	
☐	☐	Line Engineering		☐	☐	ROW T&D Rights & Survey	
☐	☐	Vegetation Management		☐	☐	Survey Engineering	
☐	☐	Siting		☐	☐	Cost Estimating	
☐	☐	Safety		☐	☐	Project Services (Outreach)	
☐	☐	SCADA		☐	☐	Material Procurement	

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

** Internal Eversource Substation Operations must be included in the 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:

Name/Signature [redacted] Date 7/14/2023

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Substation Constructability Review

Documents available for use prior to Constructability Review					
[X]	Document	[X]	Document	[X]	Document
☐	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	☒	Proposed Schedule	☐	Construction Sequence/Timeline
☐	Previous Notes / Comments / Observations	☒	Major Material / Equipment List	☐	Replace / Reuse of equipment

Action Items and Resolutions:

Item No.	Const. Review Action Item/Concern	Design Resolution/Mitigation:
1	[redacted]	Construction start will be determined by the availability of mobile XFMR [redacted]
2	Determine the best location of 3-phase pad mounted station service XFMR.	Review SS conduit routing drawings and GPR survey data for underground obstructions.
3	Construction start date needs to be determined.	[redacted] will determine whether this project (CS00675) can be executed in the Fall 2023, or Spring 2024. [redacted] capital projects CS00364/405209 construction start is planned for 3/1/24.
4		
5		

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
A	**Engineering & Asset Management**		

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Constructability Review Form: **M6-PM-2012 - Eversource**

Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
1	**Scope of Work** - Is scope adequately developed and sufficiently detailed for intended deliverable? - Any complimentary projects or other adjacent obsolete equipment for inclusion? - Any overlapping projects that could impact work/outages? - Consider Physical Installation, P&C Scope, Civil Scope, Engineering studies, Design standard adherence - Any remote station impacts? - Engineering Estimates for Design and Technical Support? (EE and EOC) Total Project	☐	[redacted] will determine whether this project (CS00675) can be executed in the Fall 2023, or Spring 2024. [redacted] capital projects CS00364/405209 construction start is planned for 3/1/24.
2	**Materials Identified/Ordered** -Any concerns with BOM/Major Materials? Review BOM lead times and project need dates -Specialty Major Materials: Identify Specialty Equipment & Materials potentials - temporary/replacement - long lead items? -Any Materials needed to facilitate construction access?	☐	Project needs to obtain full funding in order to be able to order any materials. There is a material lead time concern. Station service transformer.
3	**Control House** - Review Unmapped equipment interferences, Control/Battery Enclosure Layout, HVAC System (if equipment added), space for new or modified equipment, AC / DC station breaker availability and service loading, Panel Space, Expansion, one-line and/or riser type panelboard drawings, other..	☐	N/A
4	**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	☐	N/A

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
5	**Wall, Fence, Gate, and Foundation Considerations** -Any permanent / temporary alterations or relocations required? -Pre-Project Sound Measurements Needed? Sound Walls? -Take measurements for Foundation quantities, dimensions and concrete volumes -CIP Review/Ballistic needs. Any Physical Security Requirement Consideration? -Assess condition of existing yard equipment foundations and viability for reuse (if proposed) -Review station expansion areas (if needed) for structures, old foundations, etc. -Any Steel Structural Plan Considerations? -Any impacts to construction plan?	☐	Pre-project and post-project sound measurements are needed. Measurements for the new XFMR foundation were taken, re-use of existing foundation will be determined by civil engineering.
6	**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?	☐	Soil boring, soil resistivity and GPR investigations were conducted as part of CS00364/405209.
7	**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.)	☐	Test excavations are not needed.
8	**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	☐	Existing XFMR foundation will have to be modified. Existing station service XFMR and its steel structure will have to be removed and new pad mounted SSVT installed. Ground grid will be adjusted to mimic the existing ground grid. Soil resistivity was conducted under CS00364/405209.

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
9	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	☐	No nomenclature changes other than ratings of XFMR.
10	BPS Separation Requirements - Is this BPS Substation? Y/N (part of PAF) - Changes to pre-existing BPS standards?	☐	N/A. [redacted].
11	IEC 61850 Substation Automation and Communication Requirements - Any Impacts/Retrofit needed?	☐	N/A
12	Any Upgrades to ES Standards - Is retrofit needed to bring up to ES standards? Can that be done?	☐	N/A
B	**Construction**		
1	**Any safety hazards specific to the facility? i.e., Low Bus, Deterioration, etc.**	☐	N/A
2	**Prior known Site Specific Conditions** -Common or Obvious station Issues -Missing scope items that could impact costs?	☐	N/A None identified.
3	**Identify/Consider Required Depts for Construction?** -Who is constructor: Internal vs External Resources -S/S Ops, GO, Test, Field Engineering, etc. -Specialty Contractors Required? -Required Oversite Needed - Estimated level of CR and LCE support needed	☐	Civil Construction – Internal Electrical Construction – Internal Test – Internal LCE – N/A

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
4	**Site Plan, Access, and Temporary Construction Facilities:** -Confirm maintenance access for proposed new or replaced equipment -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) - Identification of Unique Requirements, i.e. (access bridges, station service, etc.) -Site Development Plan (grading and drainage) with Cut/Fill -Existing Rock Conditions? Potential Impacts (rock quantity)? -Any police details needed for deliveries, restricted hours, and/or need for extended hour approvals -Any Sanitary Civil Requirements? (Septic tanks, etc.) -Review turning radius for delivery trucks (if critical) -Any Substation Access and site/yard access Limitations? -Office Trailer Needs: Facilities, Utilities, Restroom, Container, Dumpster Space -Weather impacts to Site (Snow Placement) -Identify Material Laydown and Security -Where will new vs removed equipment go? -Construction permit for trailers outside substation fence?	☐	Maintenance access confirmed. Footprint for new equipment verified, required modifications identified – station service will need to be removed and new SSVT installed. No drive path modifications required. Site development plan not required. Existing rock conditions – N/A. Police details not required, XFMR delivery will be addressed by HICO. Sanitary requirements – portable toilets required during the construction. Material will be stored within the existing substation fenced areas. Construction trailers will be located on the ES SS Easement 6.
5	Unique Equipment Considerations: Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser		N/A

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
6	**Outage & Energization Plan and Construction Sequence:** *Review electrical working clearances for equipment during construction, Detailed look at protection zone changes, Locked sequence or random outages, Outage durations minimized.* ***Considerations:*** -Approach Distances – Outage Requirements to maintain electrical clearances throughout proposed installation -Distribution Clearances -Clearance Holder Assignments -Drawings vs Field Conditions -Outage boundaries and interconnections -Phased approach needs for additional mobilizations -Verify outage sequence supports the planned construction sequence and timeline. (Lead Commissioning Engineer "LCE", Substation Operations, and Outage Planner input) -Any design alterations or considerations to Eliminate SCLL Conditions, Reduce Recall Time, Reduce Outage durations, Special Conditions -Additional outage requirements: Railroad Catenaries, Fiber outage, SCADA outage, Relay permissions -Seasonal or weather conditions impacts	☐	MAD's were reviewed. Outage boundaries were reviewed. Internal construction will request outages. Mobile XFMR will be installed at site during the 9A-5X replacement. No additional outage requirements were identified.
7	**Equipment Testing & Acceptance** -Grounding plans / Resources? Will we need grounds hung? -Hi-pot testing and where will the equipment be set up?	☐	ES operations and test will follow ES procedures. Grounds will be hung.
8	Need for mobile generator and where connected (if needed)	☐	N/A
9	Need for mobile battery and where connected (if needed)	☐	N/A
10	OT work required or Notable Permit Conditions (special hours)?	☐	Regular OT not required, OT during outages might be required. No special permit conditions.
11	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☐	N/A

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
C	**Environmental**		
1	Soil Pre-Characterization or Grab Sampling Completed/Planned	☐	Soil boring was completed as part of CS00364/405209.
2	**Desktop investigation and EAD Review** -Required Permits -Stormwater Considerations -Dewatering requirements -Wetland and buffer review	☐	N/A
3	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	N/A
4	Transformer Spill Containment Recommended?	☐	No since 9A-5X XFMR will be relocated to the permanent foundation containing sec oil containment in 2025 as part of CS00364 project.
5	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☐	N/A
6	Environmental oversight considerations? (Inspection type/Interval)	☐	N/A
7	Environmental mitigations - Any matting or seasonal needs? Review D&M Plan with CR.	☐	N/A
D	**Siting, Project Services, and ROW T&D Rights & Survey**		
1	**Any regulatory concerns or approvals needed?** - Any concerns noted that could be mitigated by scope/design alterations? - Likely to require visual screening? What considerations (feasibility or location)? -Zoning Relief and Permits required?	☐	N/A. Reviewed under CS00364/405209.
2	Other siting considerations?	☐	Exempt Mod application will be required.
3	**Neighbor/Abutter impacts:** - Any noise, visual impacts, or sensitive abutters - Any changes to lighting or additional lighting needed?	☐	Reviewed under CS00364/405209. No Concerns.
4	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☐	Reviewed under CS00364/405209. No concerns.

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
5	Installation within Eversource Rights - Is Rights and Restrictions Review required?	☐	No. Rights review was performed under CS00364/405209.
6	Expanding Footprint / New Buildings / Fence line or future Expansion Plans?	☐	N/A
7	Proposed Equipment on same property? - Any Encroachments	☐	Proposed equipment is on the same property.
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☐	N/A
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☐	N/A. [redacted].
3	Panel fronts conform to drawings	☐	Yes
4	Access to bring new panels into control enclosure	☐	N/A
5	Nameplate list and location of nameplates	☐	N/A
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	☐	N/A
7	Temporary protection, relays, control cable needed? How long will they be required?	☐	N/A. [redacted]
8	Will relay setting changes be needed? Any additional outage requirements for changes?	☐	[redacted] to accommodate new 40MVA HICO XFMR.
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	☐	N/A. Project will utilize existing equipment.
2	Review path to get telecom circuits into the station and paths within the control house. Determine whether new underground duct or overhead tray work is needed.	☐	N/A
3	Review current or proposed Telecom equipment power connections and validate with P&C any need for system 1 and system 2 separation.	☐	N/A
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	☐	N/A
5	Review and list any remote station impacts/updates	☐	N/A

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
6	Confirm whether correct interface equipment is available (i.e.) for fiber termination or multiplexor termination	☐	N/A Project will utilize existing equipment.
7	Confirm whether existing communications cabinets are enough to support additional telecommunications equipment installed	☐	N/A Project will utilize existing equipment.
8	Review space for any required additional communications cabinets which may be required to support additional telecommunications equipment installed	☐	N/A Project will utilize existing equipment.
9	Review third party Telecommunications at substation and confirm whether additional capacity or Ground Potential Rise protection is required	☐	N/A Project will utilize existing equipment.

Photos

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

Site photos are located in the below SharePoint folder:

0 CS00675 Constructability Walkdown Photos



