EVERSOURCE

Operations Project Authorization Form

Approved on October 12, 2023 EPAC

Link to Meeting Minutes

Project Title: [redacted] **Sound Mitigation**	**Project Number: CS00600**
Date Prepared: 10/02/2023	**Company: Eversource CT**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformer**
Managing Organization: Transmission / Major Projects	**Schedule ID#: 80285195**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: No**
Estimated in service date: January 2024	**Emergency Related Request? No**
Eng./Constr. Resources Budgeted? Yes	**Facility Type (check all that apply):** ☐ **PTF** ☐ **non-PTF** ☒ **Distribution** ☐ **N/A (General Plant)**
Total Capital Request: $500.4K	**Authorization Type: Full Funding**

[1] Executive Summary

This Project Authorization Form (PAF) is requesting full funding approval of $500.4K to purchase and install a sound wall system for the [redacted] 2X transformer located in [redacted], CT.

During a construction project at [redacted] in 2021, a noise complaint was received from an adjacent property owner on the south side of the substation. The southerly fence line of the substation abuts residential homes along [redacted] as depicted in Figure 1 below.

The source of the noise complaint was thought to be originating from the 13K-2X transformer, which is currently 53 years old, therefore an acoustical evaluation was performed after construction activities were completed in September of 2021 (Reference 4). This evaluation confirmed that the sound levels complied with state regulations of 51 dBA but were near the upper limits at the southern property line at 49 dBA. 46 dBA is the CT DEEP Nighttime Limit absent a 5 dBA exemption. This 46 dBA limit represents an objective design target that would need to be met if the station were constructed today or if the 2X transformer were replaced.

The noise complaint has since escalated to include local elected officials and local media.

During the summer of 2023, some vegetation was removed along the southern fence line of the substation. Changes to the site vegetation did not likely increase sound levels at the abutters' residences, although it did increase the substation visibility to the abutters along [redacted]. See the aerial view of the substation in Figure 1 below.

Figure 1 – [redacted] Aerial View



This project consists of the installation of a modular sound wall around three (3) sides of the 13K-2X transformer to reduce the sound levels at the southern property line.

This project had an Initial Funding Request (IFR) of $150K, approved in PowerPlan on June 7, 2022, for conducting a sound study and to develop and model sound reduction options. A Solution Selection Form (SSF) was presented to the Solution Design Committee (SDC) and approved at the May 25, 2023 meeting for the installation of the modular sound wall around three (3) sides of the [redacted] as described in the Scope Section of this PAF.

As of September 15, 2023, approximately $59K has been spent under the initial funding Work Order 80285195 to develop the CS00600 project scope, schedule and planning grade estimate.

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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	Total Request
1. ROW / Easements / Land Acquisition	$	$	$	$	$
2. Environmental Approvals / Permits	$	$	$11.5	$	$11.5
3. Outreach	$	$1.0	$14.2	$	$15.2
4. Siting Approvals / Permits	$	$0.4	$2.7	$	$3.1
5. Engineering / Design	$	$10.0	$1.3	$	$11.3
6. Materials (Eversource purchased)	$	$	$0.8	$	$0.8
7. Construction (incl materials by contractors)	$	$4.5	$76.9	$150.5	$231.9
8. Testing / Commissioning	$	$	$3.1	$8.4	$11.5
9. Project Mgmt. Team	$	$12.4	$24.1	$4.4	$40.9
10. Removals	$	$	$	$	$
11. Other	$	$	$	$	$
12. Risks	$	$	$7.4	$19.1	$26.5
SUBTOTAL DIRECTS W/ RISKS	**$150.0**	**$28.3**	**$142.0**	**$182.4**	**$352.7**
13. Indirects/Overhead	$	$29.1	$48.1	$29.5	$106.7
14. AFUDC	$	$1.9	$3.7	$23	$28.6
PROJECT TOTAL – BASELINE BUDGET	**$150.0**	**$59.3**	**$193.8**	**$234.9**	**$488.0**
15. Contingency	$	$	$10.8	$1.6	$12.4
TOTAL CAPITAL REQUEST	**$150.0**	**$59.3**	**$204.6**	**$236.5**	**$500.4**
16. Reimbursables/Customer Contribution	$	$	$	$	$
PROJECT TOTAL (LESS REIMBURSABLES)	**$150.0**	**$59.3**	**$204.6**	**$236.5**	**$500.4**
O&M	$	$	$	$	$
TOTAL REQUEST	**$150.0**	**$59.3**	**$204.6**	**$236.5**	**$500.4**

Detail other costs, project risk items and their allocations:

Risk	Allocation
1. Severe Weather Delays	$21K
2. Material shipping Delays	$5.5K
3.	$
4.	$
5.	$
Total	$26.5K

Explain unique payment provisions, if applicable:

There are no unique payment provisions for the sound wall (payment terms are Net 30 days).

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

There are no Operations and Maintenance (O&M) impacts resulting from the [redacted] Sound Wall Project. Required clearance will remain around the 2X transformer for regular maintenance activities and the sound wall is removable, if necessary, for any major maintenance or construction activities.

[3] TECHNICAL JUSTIFICATION

Project Need, Objective and Justification

Although the sound level of the [redacted] substation is within Connecticut Department of Energy and Environmental Protection (CT DEEP) nighttime limits, this sound reduction project is being developed to actively address concerns from the neighbors.

The project objective is to reduce the sound levels to 46 dBA (or below) at the [redacted] property line. 46 dBA is the CT DEEP Nighttime Limit absent a 5 dBA exemption. This represents an objective design target that would need to be met if the station were constructed today or if the 2X transformer were replaced. The selected solution will be constructed to avoid interference with the cooling and maintenance of the transformer and nearby equipment.

Since the initiation of this project, it was determined that the 13K-2X transformer is 53 years old and therefore a condition assessment (Reference 4) was performed to determine if there is a need for its replacement. The Condition Assessment indicates that despite the age of the transformer there are no immediate concerns indicating need for replacement at this time.

The 13K-2X transformer is within capacity ratings and is not in need of replacement for capacity reasons. The transformer will be reevaluated for replacement within the future capital plan for the [redacted] in 2026.

Due to the escalated customer complaints the sound level improvement is targeted to be completed by end of January 2024.

Project Scope

The scope of work for this project includes the purchase and installation of a 16-foot-tall sound barrier wall around the [redacted] transformer at [redacted]. The wall will be of two (2) types of construction; the 60 linear foot (L.F.) leg and the 20 L.F. legs are a rail-mounted, portable type on a Jersey Barrier base, and the 24 L.F. leg is made up of freestanding skid mounted panels. See Figures 2, 3, and 4 below and Attachments D and E.

Figure 2 – Sound Wall Dimensions

[redacted]

Figure 3 – K-Rail-mounted Portable Panels



Figure 4 – [redacted] Freestanding Panels



Minor regrading of the trap rock will be required to facilitate the installation of the sound wall. The panels are installed at grade so minor restoration will be required for the yard stone.

A Constructability Review (Attachment C) was conducted at the [redacted] on August 2, 2023, where it was determined that by selecting the two (2) different wall panel types, an outage would not be needed for the installation as long as qualified workers perform the work. The freestanding panels can slide under the existing 115kV bus. This installation will be performed by a qualified Constructor of Choice (COC).

Upon completion of the sound wall installation, a sound study will be performed to verify that the sound level reductions are achieved. This post construction evaluation will include measurement of equipment operating scenarios that could be encountered (e.g., transformers, capacitors, and reactors in/out of service). The expected range for the decibel level that is expected after the sound panels are installed is between 33 dBA and 45dBA contingent upon environmental effects (e.g. wind, temperature, and humidity).

Background

During the construction of the 1465 Line Series Reactor Project (404959) at [redacted] in 2021, a noise complaint from an adjacent property owner was received. Subjectively, the station noise level was thought to be generated by the [redacted] transformer. In addition, a study performed in September 2021 for the Series Reactor project confirmed that sound levels at the substation property line complied with state regulations, given that the site has a 5 dBA allowance above the regulations. The 5 dBA allowance is applicable because of the date of installation of the [redacted] transformer and applies until the [redacted] transformer is replaced. Even with the 5dBA allowance, the sound levels along the southern property line affecting the [redacted] residences are near the upper limit of the permitted sound levels. The permissible sound level along the southern property line is 51 dBA with the allowance and the actual sound level is 49 dBA (see Attachment G).

[4] ALTERNATIVES CONSIDERED

This project was presented and approved at the May 25, 2023 Solution Design Committee (SDC) meeting. The following alternatives were considered to resolve the customer complaint:

Alternative 1: Install a modular sound wall around of the [redacted] transformer (This is the preferred solution). The middle wall on the south side of the transformer faces the [redacted] residences. The eastern and western sides are included to minimize the edge effect of the transformer sound and add structural stability.

Planning Grade Cost estimate: ***$500.4K*** *(Cost Estimate Range -25%, +25%: $375.3K- $625.5K). See Attachment A.*

Advantages:

- This solution is the most cost effective for achieving sound level reductions at the property line and will take the least amount of time to install.
- With the modular design, the wall can be removed or re-positioned as needed for the future transformer replacement. However, this solution will not eliminate the need for the eventual [redacted] transformer replacement.
- This solution will reduce the sound levels at the property line to the CT DEEP Nighttime Levels absent the 5 dBA exemption.
- This solution will also provide a visual buffer to the aging transformer partially mitigating the vegetation removal.

Alternative 2: Replacement of the [redacted] transformer. Replace the 33 MVA transformer with a 62.5 MVA transformer with a sound rating of 60 dBA or less with all cooling in service.
Note that [redacted] is the smallest rated and noisiest of the two transformers near the southern property line. (This is NOT the preferred solution)

This cost estimate is an order-of-magnitude estimate and is based on the scope and estimate for [redacted] which has Partial Funding and is in design at this time. The estimated cost for this replacement is $6.1M. This reference was chosen since it had the closest MVA rating of the recent transformer projects. The scope of the [redacted] replacement includes other equipment so it is higher than a transformer replacement at [redacted] This was further validated by the 3X transformer replacement at [redacted] This is also in progress and is estimated to cost $6.1M

Order of Magnitude Cost estimate: ***$6.1M***

<u>Advantages:</u>

- This solution will bring the sound level at the property line in compliance with CT DEEP Nighttime Limits absent the 5 dBA exemption.

Disadvantages:

- Funding of this replacement is an advancement of an eventual replacement of about 5-10 years. The main disadvantage is that there will be no sound level improvement for the two (2) years needed to design, procure, and install a new transformer.
- This solution would also have a negative impact on the community because replacement of the transformer will take two (2) years to achieve lower sound levels at the property line affecting the residents of [redacted]

[5] PROJECT SCHEDULE

Milestone	Scheduled Completion Date
IFR Approval	June 2022
SDC Approval (for applicable projects)	May 2023
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	October 2023
Siting Approval (for applicable projects)	December 2023
Start of Construction	January 2023
Project In-Service Date (ISD)	January 2024
Project Need Date (for applicable projects)	N/A
ISO Related Milestones: (for applicable projects)	
• ISO Preferred Alternative Selected	N/A
• PAC Presentation	N/A
• TCA Submittal	N/A

See Attachment B for the full project P6 schedule.

[6] Regulatory Approvals

An Exempt Modification Filing with the CT Siting Council will be required for this project. This approval could be received in as little as six (6) weeks although, the project schedule reflects ten (10) weeks for this process.

[7] Risk and Risk Mitigation Plans

Contingency:

A contingency of $12.4K has been included in the estimate for any project unknowns that may develop.

Risk Mitigation:

Risk	Mitigation
1. Severe Weather Delays	Unanticipated weather events may restrict the ability to perform construction activities. This risk cannot be avoided as this risk is associated with unpredictable weather events. To mitigate this risk, the project team is holding bi-weekly status meetings and will remain in contact with the vendors as construction kick-off dates are approached. Furthermore, additional risk funds have been allocated within the Cost Estimate.
2. Material Shipping Delays	Consult with vendor before placing purchase order and during manufacturing process. Risk allocation is also included in the estimate.

[8] REFERENCES

References
1. CS00600 [redacted] Sound Mitigation IFR, Approved 6-1-2022
2. CS00600 [redacted] Sound Mitigation SSF, Approved 5-25-2023
3. [redacted] 2X Condition Assessment
4. [redacted] Series Reactors Acoustic Evaluation

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

Attachment	Included in Submittal?
A. [redacted] Cost Estimate Rev 1	YES
B. [redacted] P6 Schedule	YES
C. [redacted] Constructability Review	YES
D. [redacted] One-Line	YES
E. 23701-33008p001-REV AF Additions	YES

Project Checklist - Transmission & Substation Capital Project			
Project Name: [redacted] Sound Mitigation		**Project Number: CS00600**	
Facility Type: ☐BPS ☐BES ☐PTF ☐PTF non-regional ☐non-PTF ☐CIP ☒Distribution ☐General Plant			
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 ($M) (if completed):		N/A	
Is a PPA required?		No	
ISO-NE Approval Date (if completed):		N/A	
Is a TCA Application Required?		No	
TCA Submittal Date (if submitted):		N/A	
Cost in TCA Submittal ($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?		NR	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		No	
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?		Yes	
Is there an impact to the existing ground grid?		No	
Is a Transient Over Voltage (TOV) analysis required?		NR	

Project Checklist - Transmission & Substation Capital Project		
Project Name: [redacted] Sound Mitigation		**Project Number: CS00600**
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?	High	
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	

Project name	[redacted] Sound Mitigation	Estimate grade	**Planning**
Project no	**CS00600**	Ext est grade	**NA**
Project manager	[redacted]	Region	**CT**
Project estimator	[redacted]	Business unit	**Distribution**

Project Totals

Description	**Total**	**% Directs**	**% Total**	**Actuals**	**2023**	**2024**
ROW / Easements / Land purchases	-	0.0%	0.0%	-	-	-
Environmental Approvals / Permits	11,500	3.3%	2.3%	-	11,500	-
Outreach	15,200	4.3%	3.0%	1,000	14,200	-
Siting Approvals / Permits	3,100	0.9%	0.6%	400	2,700	-
Engineering / Design	11,300	3.2%	2.3%	10,000	1,300	-
Materials (Eversource purchased)	800	0.2%	0.2%	-	800	-
Construction (inc contractor sourced material)	231,900	65.7%	46.3%	4,500	76,900	150,500
Testing / Commissioning	11,500	3.3%	2.3%	-	3,100	8,400
PMT Project Mgmt Team	40,900	11.6%	8.2%	12,400	24,100	4,400
Removals	-	0.0%	0.0%	-	-	-
Other	-	0.0%	0.0%	-	-	-
Risks	26,500	7.5%	5.3%	-	7,400	19,100
Project Directs (including risks)	**352,700**	**100.0%**	**70.5%**	**28,300**	**142,000**	**182,400**
Indirects/Overhead	106,700		21.3%	29,100	48,100	29,500
AFUDC	28,600		5.7%	1,900	3,700	23,000
Project Total - Baseline Budget	**488,000**		**97.5%**	**59,300**	**193,800**	**234,900**
Contingency	12,400		2.5%	-	10,800	1,600
Project Total - Approval Level	**500,400**		**100.0%**	**59,300**	**204,600**	**236,500**
Reimbursables/Customer Contribution	-		0.0%	-	-	-
Project Total (less reimbursables)	**500,400**		**100.0%**	**59,300**	**204,600**	**236,500**

Metrics

	1	ea
	500,400	$/ea

Escalation (included above) **2,900**

Miscellaneous

Risk / Contingency 8.43% Project Total Costs (including escalation, overhead, AFUDC; excluding reimbursables)

Estimate Range

Low	-25%	375,300
Expected		500,400
High	+25%	625,500

Project scope

[redacted] Sound Mitigation
Install sound wall:
(80'LF) 16' Dual K Rail Mounted Portable STC 32 Sound Barrier
(3) 16' SK8 Freestanding Panel
Concrete Weight Blocks
Grounding of sound wall structure to current Eversource standard

Clarifications

Engineering Is internal.
Construction is external.
No outages required for construction per PM.
Charter Oak Utility Contractors Inc. to provide a qualified Electrician for minimum approach distance oversight of work per proposal.
Sound wall quote includes freight per Beherns & Associates, Inc proposal 8/25/2023.
P6 ISD date amended to 1/13/2024 per PM email 9/19/2023.
Prior charges included of $59,382 as of 9/19/2023.

Risks

Severe Weather/Delays $21,000
Material Shipping Delays $5,500

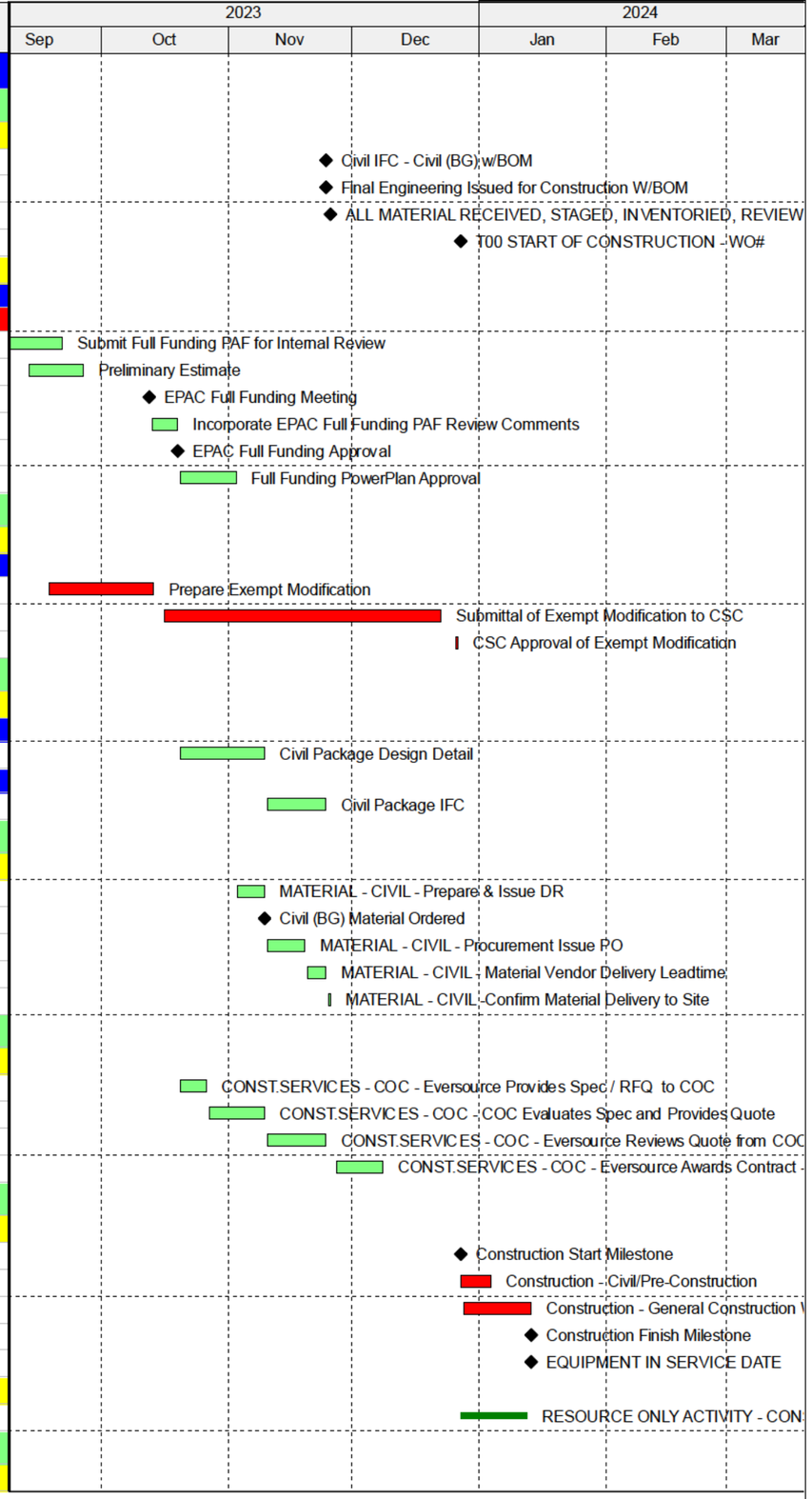
Project name [redacted] **Sound Mitigation**
Project no **CS00600**
Project manager
Project estimator [redacted]

Return to TOC

PAF (dollars in thousands)

Line item Category	Prior Authorized	Actuals to Date	2023 to Go	2024	Total
1. ROW / Easements / Land purchases		-	-	-	-
2. Environmental Approvals / Permits		-	12	-	12
3. Outreach		1	14	-	15
4. Siting Approvals / Permits		-	3	-	3
5. Engineering / Design		10	1	-	11
6. Materials (Eversource purchased)		-	1	-	1
7. Construction (incl matl's by contractors)		5	77	151	232
8. Testing / Commissioning		-	3	8	12
9. PMT Project Mgmt Team		12	24	4	41
10. Removals		-	-	-	-
11. Other		-	-	-	-
12. Risks		-	7	19	27
Project Directs Total w/Risks	**-**	**28**	**142**	**182**	**354**
13. Indirects/Overhead		29	48	30	107
14. AFUDC		2	4	23	29
Project Total - Baseline Budget	**-**	**59**	**194**	**235**	**490**
15. Contingency		-	11	2	12
Project Total - Approval Level	**-**	**59**	**205**	**237**	**502**
16. Reimbursables/Customer Contribution		-	-	-	-
Project Total (less reimbursables)	**-**	**59**	**205**	**237**	**502**
Total O&M					**-**
TOTAL REQUEST	**-**	**59**	**205**	**237**	**502**

Activity ID	Activity Name	Original Duration	Start	Finish	Remaining Duration	Variance - BL1 Duration	Critical
[redacted] Sound Mitigation (Wall Replacement)		151	11-Aug-23 A	19-Mar-24	135	0	
PROJECT PLANNING & FUNDING		81	30-Aug-23 A	27-Dec-23	78	0	
T-Minus Milestones		21	24-Nov-23	27-Dec-23	21	0	
AT0805C	Civil IFC - Civil (BG) w/BOM	0		24-Nov-23	0	0	☐
AT0805	Final Engineering Issued for Construction W/BOM	0		24-Nov-23	0	0	☐
AT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED	0		25-Nov-23	0	0	☐
AT00	T00 START OF CONSTRUCTION - WO#	0	27-Dec-23*		0	0	☑
Project Funding		45	30-Aug-23 A	02-Nov-23	42	0	
Full Funding		45	30-Aug-23 A	02-Nov-23	42	0	
EPAC - FF		45	30-Aug-23 A	02-Nov-23	42	0	
PAFF2000	Submit Full Funding PAF for Internal Review	13	30-Aug-23 A	21-Sep-23	13	-3	☐
PAFF2010	Preliminary Estimate	10	13-Sep-23*	26-Sep-23	10	0	☐
PAFF2110	EPAC Full Funding Meeting	0		12-Oct-23*	0	0	☑
PAFF2200	Incorporate EPAC Full Funding PAF Review Comments	5	13-Oct-23	19-Oct-23	5	0	☐
FF1000	EPAC Full Funding Approval	0		19-Oct-23	0	0	☐
FF1010	Full Funding PowerPlan Approval	10	20-Oct-23	02-Nov-23	10	0	☐
SITING APPROVALS / PERMITS / PROJECT SERVICES		94	11-Aug-23 A	26-Dec-23	69	0	
State Approvals and Permits		94	11-Aug-23 A	26-Dec-23	69	0	
Siting Council / Board		94	11-Aug-23 A	26-Dec-23	69	0	
A3580	Prepare Exempt Modification	39	11-Aug-23 A	13-Oct-23	19	-5	☑
A3590	Submittal of Exempt Modification to CSC	49	16-Oct-23	22-Dec-23	49	0	☑
A3620	CSC Approval of Exempt Modification	1	26-Dec-23	26-Dec-23	1	0	☑
ENGINEERING DETAILED / IFC DESIGN		25	20-Oct-23	24-Nov-23	25	0	
Civil Engineering		25	20-Oct-23	24-Nov-23	25	0	
Civil Engineering Detailed Design		15	20-Oct-23	09-Nov-23	15	0	
DSSE-110	Civil Package Design Detail	15	20-Oct-23	09-Nov-23	15	0	☐
Civil Engineering IFC Design		10	10-Nov-23	24-Nov-23	10	0	
DSSE-120	Civil Package IFC	10	10-Nov-23	24-Nov-23	10	0	☐
PROCUREMENT MATERIAL - BALANCE OF MATERIAL		15	03-Nov-23	25-Nov-23	15	0	
Civil Balance of Material		15	03-Nov-23	25-Nov-23	15	0	
DSSE-500	MATERIAL - CIVIL - Prepare & Issue DR	5	03-Nov-23	09-Nov-23	5	0	☐
DSSE-600	Civil (BG) Material Ordered	0		09-Nov-23	0	0	☐
DSSE-1040	MATERIAL - CIVIL - Procurement Issue PO	10	10-Nov-23	19-Nov-23	10	0	☐
DSSE-1050	MATERIAL - CIVIL - Material Vendor Delivery Leadtime	5	20-Nov-23	24-Nov-23	5	0	☐
DSSE-560	MATERIAL - CIVIL -Confirm Material Delivery to Site	1	25-Nov-23	25-Nov-23	1	0	☐
PROCUREMENT OF SERVICE CONTRACTS		35	20-Oct-23	08-Dec-23	35	0	
Constructor of Choice - Direct Award or Bid		35	20-Oct-23	08-Dec-23	35	0	
A3390	CONST.SERVICES - COC - Eversource Provides Spec / RFQ to COC	5	20-Oct-23	26-Oct-23	5	0	☐
A3400	CONST.SERVICES - COC - COC Evaluates Spec and Provides Quote	10	27-Oct-23	09-Nov-23	10	0	☐
A3410	CONST.SERVICES - COC - Eversource Reviews Quote from COC	10	10-Nov-23	24-Nov-23	10	0	☐
A3420	CONST.SERVICES - COC - Eversource Awards Contract - PO Issued	10	27-Nov-23	08-Dec-23	10	0	☐
CONSTRUCTION		12	27-Dec-23	13-Jan-24	12	0	
Outages		12	27-Dec-23	13-Jan-24	12	0	
CSM	Construction Start Milestone	0	27-Dec-23		0	0	☑
A1120	Construction - Civil/Pre-Construction	5	27-Dec-23	03-Jan-24	5	0	☑
TOA-Const	Construction - General Construction Work	15	28-Dec-23	13-Jan-24	15	0	☑
CFM	Construction Finish Milestone	0		13-Jan-24	0	0	☑
ISD	EQUIPMENT IN SERVICE DATE	0		13-Jan-24*	0	0	☑
Construction Support LOEs		12	27-Dec-23	12-Jan-24	12	0	
ConRep-S	RESOURCE ONLY ACTIVITY - CONSTRUCTION - CONSTRUCTION R	12	27-Dec-23	12-Jan-24	12	0	☐
PROJECT CLOSE OUT		45	16-Jan-24	19-Mar-24	45	0	
Civil Close Out		45	16-Jan-24	19-Mar-24	45	0	



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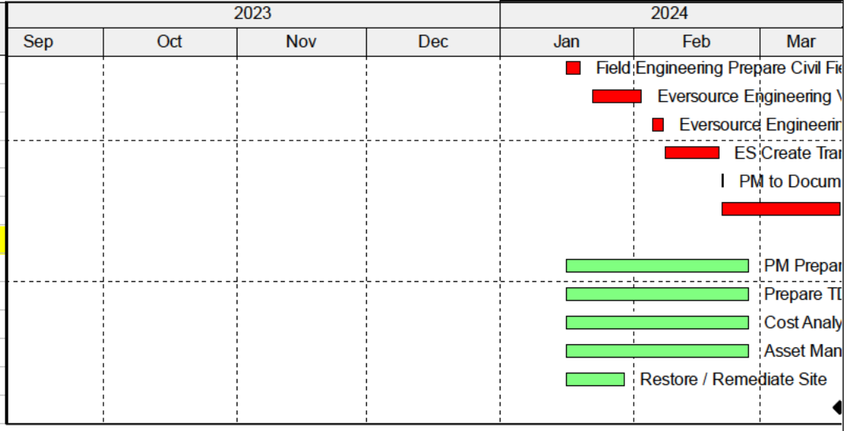
Activity ID	Activity Name	Original Duration	Start	Finish	Remaining Duration	Variance - BL1 Duration	Critical
DSSE-900	Field Engineering Prepare Civil Field Mark Ups (Tie after Last Civil Constr	4	16-Jan-24	19-Jan-24	4	0	☑
DSSE-860	Eversource Engineering Verifies Civil Mark Up As-Built Drawing Package	10	22-Jan-24	02-Feb-24	10	0	☑
DSSE-970	Eversource Engineering Updates Civil As-Built Drawing Package	3	05-Feb-24	07-Feb-24	3	0	☑
DSSE-870	ES Create Transmittal, Approve Final As-Built Package, and EDC Files ar	8	08-Feb-24	20-Feb-24	8	0	☑
DSSE-880	PM to Document Civil As-Built Drawings Complete	1	21-Feb-24	21-Feb-24	1	0	☐
DSSE-1120	Complete TD-176 CIVIL Design Prep & Issue As-Built Dwgs	20	21-Feb-24	19-Mar-24	20	0	☑
Project Management Close Out		45	16-Jan-24	19-Mar-24	45	0	
A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30	16-Jan-24	27-Feb-24	30	0	☐
A1270	Prepare TD-707 Document	30	16-Jan-24	27-Feb-24	30	0	☐
A1020	Cost Analyst Prepares FINAL Units of Property	30	16-Jan-24	27-Feb-24	30	0	☐
A1030	Asset Management Complete Asset Update(s) in CASCADE	30	16-Jan-24	27-Feb-24	30	0	☐
A1110	Restore / Remediate Site	10	16-Jan-24	29-Jan-24	10	0	☐
FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0		19-Mar-24	0	0	☑



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filters: WBS - RB - <100%, WBS Summary (excluded).

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

Substation Constructability Review

Project Title: [redacted] Sound Wall Installation	☒	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00600	**Project Constructability Phase:**	
Date(s) of Constructability Review: **08/02/2023** Click to enter a date	☐ Conceptual Engineering Design ☒ Preliminary Engineering Design ☐ Detailed Engineering Design	
Project Scope Statement: **Install modular acoustical sound panels around the 13K-2X transformer to help mitigate sound levels.**		

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

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

** Internal Eversource Substation Operations must be included in 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:

[redacted] _____

Name / Signature *Date*

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

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		
2		
3		
4		
5		

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

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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
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?	X	
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..	X	
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	X	
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?	X	
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?	X	

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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
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.)	X	
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	X	
9	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	X	
10	BPS Separation Requirements - Is this BPS Substation? Y/N (part of PAF) - Changes to pre-existing BPS standards?	X	
11	IEC 61850 Substation Automation and Communication Requirements - Any Impacts/Retrofit needed?	X	
12	Any Upgrades to ES Standards - Is retrofit needed to bring up to ES standards? Can that be done?	X	
B	**Construction**		
1	**Any safety hazards specific to the facility? i.e., Low Bus, Deterioration, etc.**	☐	Low Bus. Qualified workers necessary for work inside the MAD.
2	**Prior known Site-Specific Conditions** -Common or Obvious station Issues -Missing scope items that could impact costs?	☐	1. Clearance near low 115KV bus sections. 2. Sloping grade conditions.
3	**Identify/Consider Required Depts for Construction?** -Who is constructor: Internal vs External Resources -S/S Ops, GO, Test, Field Engineering, etc.	X	

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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
	-Specialty Contractors Required? -Required Oversite Needed - Estimated level of CR and LCE support 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?	X	
5	Unique Equipment Considerations: Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser	X	

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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
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	X	
7	**Equipment Testing & Acceptance** -Grounding plans / Resources? Will we need grounds hung? -Hi-pot testing and where will the equipment be set up?	☐	Plans of grounding the new wall are being developed with engineering.
8	Need for mobile generator and where connected (if needed)	X	
9	Need for mobile battery and where connected (if needed)	X	
10	OT work required or Notable Permit Conditions (special hours)?	X	
11	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	X	

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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
C	**Environmental**		
1	Soil Pre-Characterization or Grab Sampling Completed/Planned	X	
2	**Desktop investigation and EAD Review** -Required Permits -Stormwater Considerations -Dewatering requirements -Wetland and buffer review	X	
3	Risk or presence of PCB's/Asbestos/Lead/SF6	X	
4	Transformer Spill Containment Recommended?	X	
5	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	X	
6	Environmental oversight considerations? (Inspection type/Interval)	X	
7	Environmental mitigations - Any matting or seasonal needs? Review D&M Plan with CR.	X	
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?	☐	The project will require an exempt mod acknowledgement (approval) from the CT Siting Council.
2	Other siting considerations?	☐	None
3	**Neighbor/Abutter impacts:** - Any noise, visual impacts, or sensitive abutters - Any changes to lighting or additional lighting needed?	☐	The abutting property owner located at 15 Pleasant St. has complained about the constant buzzing noise at the substation and has contacted PURA, State Legislature representatives, and Stonington municipal officials. The property owner has requested Eversource mitigate this sound issue multiple times.
4	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	X	
5	Installation within Eversource Rights - Is Rights and Restrictions Review required?	X	

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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
6	Expanding Footprint / New Buildings / Fence line or future Expansion Plans?	X	
7	Proposed Equipment on same property? - Any Encroachments	X	
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	X	
2	Space on existing panels for new equipment? (front & rear of panel fronts)	X	
3	Panel fronts conform to drawings	X	
4	Access to bring new panels into control enclosure	X	
5	Nameplate list and location of nameplates	X	
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	X	
7	Temporary protection, relays, control cable needed? How long will they be required?	X	
8	Will relay setting changes be needed? Any additional outage requirements for changes?	X	
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	X	
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.	X	
3	Review current or proposed Telecom equipment power connections and validate with P&C any need for system 1 and system 2 separation.	X	
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	X	
5	Review and list any remote station impacts/updates	X	
6	Confirm whether correct interface equipment is available (i.e.) for fiber termination or multiplexor termination	X	

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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
7	Confirm whether existing communications cabinets are enough to support additional telecommunications equipment installed	X	
8	Review space for any required additional communications cabinets which may be required to support additional telecommunications equipment installed	X	
9	Review third party Telecommunications at substation and confirm whether additional capacity or Ground Potential Rise protection is required	X	

Photos

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



