EVERSOURCE

Operations Project Authorization Form

Approved on February 27, 2025 EPAC

Link to Meeting Minutes

Project Title: [redacted]	**Project Number: CS00709**
Date Prepared: 02/14/2025	**Company: Eversource CT**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformer**
Managing Organization: Project Mgt and Construction	**Schedule ID#: 82886875**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: No**
Estimated in service date: August 2025	**Emergency Related Request? Yes**
Eng./Constr. Resources Budgeted? Yes	**Facility Type (check all that apply):** ☐ **PTF** ☐ **non-PTF** ☐ **local PTF** ☒ **Distribution** ☐ **N/A (General Plant)**
EJ Community: No	**Authorization Type: Full Funding**
Total Capital Request: $10.164M	

[1] Executive Summary

This Project Authorization Form (PAF) is requesting full funding authorization in the amount of $10.164M for the emergent [redacted]. The project is driven by a [redacted] that occurred on May 1, 2024.

[redacted]

Due to the emergent nature of this project, Work Order (WO) 82236894 was created under the CT Distribution Substation Annual project number DSEQ24 (Reference 1) to install the mobile transformer and begin replacement work. A Partial Funding PAF was approved in PowerPlan for $2.495M on August 26, 2024 (Reference 2) and a new WO 82886875 was opened under this project CS00709. All funds have been transferred from the Substation Annual WO 82236894 to WO 82886875. The spend to date is approximately $1.436M on WO 82886875 and the Annual WO 82236894 has been cancelled in Power Plan. The partial funding was used for Project

Management, Asset Management, and Engineering to develop a conceptual, preliminary design with constructability review and planning grade estimate, detailed engineering scope and design documents, and development of alternatives for the replacement of the 12C-2X transformer. The transformer has been removed from site.

[redacted]

The project scope for Alternative #1 which was approved by the Solutions Design Committee (SDC) on November 7, 2024 (Reference 3) is [redacted]

Conversion Partial Funding PAF (Reference 5) was presented and approved at the CT Project Authorization Committee (CPAC) on September 13, 2024.

[redacted] This will be completed under the D-line project CD02504.

[redacted] under the D-line project CD02504.

[redacted]

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[2] Project Costs Summary

Note: Dollar values are in thousands and rounded to nearest thousand

Line item Category	Prior Authorized	Actuals to Date	2025 to Go	2026	Total Request
1. ROW / Easements / Land Acquisition	-	-	-	-	-
2. Environmental Approvals / Permits	-	$15	$5	-	$20
3. Outreach	$1	-	$13	-	$13
4. Siting Approvals / Permits	$3	$1	$ 68	-	$69
5. Engineering / Design	$154	$40	$396	-	$435
6. Materials (Eversource purchased)	$100	$83	$3,233	-	$3,315
7. Construction (incl materials by contractors)	$273	$276	$993	-	$1,269
8. Testing / Commissioning	$92	$93	$ 566	-	$ 659
9. Project Mgmt Team	$110	$ 69	$302	$1	$372
10. Removals	$268	$119	$141	-	$260
11. Other (CWIP & Taxes)	-	-	$132	-	$132
12. Risks	-	-	$650	-	$650
SUBTOTAL DIRECTS W/ RISKS	$1,001	**$694**	**6,498**	**$1**	**$7,194**
13. Indirects/Overhead	$1,238	$708	$1,660	$2	$2,370
14. AFUDC	$256	$ 34	$217	-	$251
PROJECT TOTAL – BASELINE BUDGET	$2,495	**1,436**	**8,375**	**$3**	**$9,814**
15. Contingency		-	$350	-	$350
TOTAL CAPITAL REQUEST	**$2,495**	**$1,436**	**$8,725**	**$3**	**$10,164**
16. Reimbursables/Customer Contribution		-	-	-	-
PROJECT TOTAL (LESS REIMBURSABLES)	**$2,495**	**$1,436**	**$8,725**	**$3**	**$10,164**
O&M					-
TOTAL REQUEST	**$ 2,495**	**$1,436**	**$8,725**	**$3**	**$10,164**

Detail other costs, project risk items and their allocations:
Other ($132K): For Taxes and Construction Work in Progress.

Risk	Allocation
1. Construction – Labor Cost Impact	$ 300K
2. Construction – Weather Delays Impact	$ 350K
Total	$650K

Explain unique payment provisions, if applicable:

An Eversource spare 115/23kV transformer, [redacted]. A new spare transformer will be ordered and delivered to [redacted] which has an in service date (ISD) of 2026. The [redacted] (CS00365) project schedule will not be affected as there is adequate time to receive the new transformer.

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

There are no Operations and Maintenance impacts resulting from the [redacted] project.

[3] Technical Justification

Project Need, Objective and Justification

The project need is to replace the [redacted], and is driven by a [redacted] that occurred on May 1, 2024.

[redacted] In May 2024, a [redacted] There was [redacted]

There is a Transmission & Distribution (T&D) project at [redacted] with a planned in-service date of December 2029. This future project had initial funding (Rev. 2) approved on November 5, 2024 (Reference 4) and is in the conceptual design stage; however, the project team for this [redacted] to ensure that equipment configurations will accommodate both projects. The new location of the [redacted] has already been evaluated to support the future [redacted].

The objective of this project is to [redacted] and is being coordinated with a current Distribution Line (D-Line) project. CD02504-Partial Funding PAF (Reference 5) was presented and approved at the CT Project Authorization Committee (CPAC) on September 13, 2024.

The [redacted]

Project Scope

The project scope is [redacted]

The existing [redacted]

Because of the size and arrangement of the new transformer, it will not fit on the existing foundation and the existing foundation will be replaced. In addition, the existing [redacted] The fence line, which was expanded to accommodate the mobile units, will be moved back into its original location when construction is completed.

No oil containment is required for the new transformer since there is not a significant increase in the volume of oil (less than 10,000 gallons in the new transformer) and the existence of other mitigation efforts in the substation such as a berm along fence line to protect nearby wetlands.

The [redacted] A Constructability Review was performed on January 15, 2025, to confirm sufficient space and power was adequate for the new equipment. (Attachment C).

Due to the coordination with the [redacted] project (405533 & CS00714), the following project scope items have been modified since the SDC meeting:

[redacted]

- A Phase-rolling structure will be added as described below in the Equipment Additions.

This project involves coordination with Eversource D-Line Engineering and is outlined in the phases listed below.

Temporary Work Completed:

- Installation for the [redacted].
  - This will remain in place until D-Line project CD02504 [redacted]

February 2025 Prep Work: (pushed from October 2024 due to coordination with the 405533 & CS00714-[redacted] project)

- [redacted]

Phase 1 (to begin in March 2025):

Distribution Substation Work (CS00709)

Equipment Removals:

- [redacted]

Equipment Additions:

- [redacted]

- [redacted]

ISD – August 2025

D-Line Work (CD02504)

- [redacted]
  - ISD – August 2025

Phase 2 (future work):

D- Line Work (CD02504)

- [redacted]
  - ISD – December 2025

Phase 3 (future work to be done under separate future projects):

Distribution Substation Work

- [redacted]
  - ISD – December 2028-2029

Distribution Line Work

- [redacted]
  - ISD – December 2028-2029

Background

On May 1, 2024, transformer [redacted]. The immediate investigation reported that there was a [redacted]

Due to the emergent nature of this project, Work Order (WO) 82236894 was created under the CT Distribution Substation Annual project number DSEQ24 to install the [redacted] and begin replacement work. The funds were journaled to this CS00709 following partial funding approval, and the emergent WO was cancelled. Substation Operations and Maintenance installed the [redacted] over the weekend of May 25, 2024 which [redacted]

[4] Alternatives Considered

This project was presented to the Solution Design Committee (SDC) and Alternative 1 was approved on November 7, 2024.

Alternative 1 (Preferred) – A Three-Phased solution to [redacted]

This alternative is Phase 1 of a three-phased solution which would reach Eversource's long-term goal of [redacted] The scope for this alternative was presented to Eversource Management (Distribution Line Engineering, Substation Engineering, System Planning, Electric Operations, Electric Field Operations, Substation Operations, Asset Management, and Project Management) on June 9, 2024, and agreement was reached to pursue this alternative (Reference 6). After completion, [redacted]

Alternative 1 will support [redacted]

Based on Eversource's [redacted]

Phase 1:

D-SS (CS00709) scope includes the following at [redacted] (Attachment D):

- [redacted] No oil containment is required for the new transformer since there is not a significant increase in the volume of oil (less than 10,000 gallons in the new transformer) and the existence of other mitigation efforts in the substation such as a berm along fence line to protect nearby wetlands.
- [redacted].

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

ISD – August 2025

After completion of Phase 1 in August 2025 the [redacted]

[redacted]

After Phase 1 the [redacted]

Phase 2 (future work):

D Line project CD02504 includes building a [redacted]

After Phase 2 is completed, [redacted]

Phase 3 (future work to be completed under separate specific projects):

D SS (future projects) includes the installation of a [redacted]

D Line (future projects) include [redacted]

Advantages:

- [redacted]

[redacted]

Disadvantages:

- Phase 1 at [redacted] is $1.418M more expensive than Alternative 2 because it requires the replacement of additional equipment to be upgraded to current Eversource standards.
- Phase 1 will take longer to complete than Alternative 2 due to lead times of the additional equipment to be ordered, so the mobile transformer and circuit switcher would not be removed until August 2025.

Cost for CS00709 Phase 1: $10.164M -Planning Grade Estimate (Attachment A)

Alternative 2 (Non-preferred) - [redacted]

The scope of this alternative would include the [redacted] ith an expected delivery in March 2025. This [redacted]

Advantages:

- Alternative 2 would be $1.418M less expensive than Alternative 1, Phase 1.
- Alternative 2 could have been completed earlier than Alternative 1 since the transformer is to arrive in November 2024.
- Alternative 2 does not require the associated equipment replacements and below grade construction.

Disadvantages:

Alternative 2 will prolong the Eversource strategy to convert the [redacted] ISD – November 2024

Cost: $8.746M - Conceptual Grade Estimate

[5] Project Schedule

Milestone	Scheduled Completion Date
Emergent WO 82236894 initiation	5.1.2024
EPAC Partial Funding Approval (for applicable projects)	August 2024
Conversion of Tx development costs, 183 to 107 (applicable to projects that require SSF approval and/or ISO preferred alternative selection)	N/A
SDC Approval (for applicable projects)	November 2024
IFC Design Completion (or latest pre-full funding design phase)	February 2025
EPAC Full Funding Approval	February 2025
Siting Approval (for applicable projects)	N/A
Start of Construction	February 2025
Project In-Service Date (ISD)	August 2025
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 P6 Schedule.

[6] Regulatory Approvals

Regulatory approvals will not be required to remove and replace the existing transformer.

EJ Community Considerations:

Although the Town of [redacted] has Environmental Justice (EJ) Block Groups within its borders, the project is not sited within one (1). Furthermore, the Town of [redacted] is no longer designated as a distressed municipality due to its 5-year grace period ending. Acknowledging this, the Project Team will ensure the outreach plan (if appropriate) incorporates the necessary outreach activities and services to ensure Eversource is engaging and communicating with the community members effectively in accordance with the CT Environmental Justice Law CGS 20a-22a.

[7] Risk and Risk Mitigation Plans

Contingency:

Contingency of $350K has been included in the total project cost to capture unforeseen costs that may occur during the execution of the project.

Risk Mitigation:

Risk	Mitigation
1. – Construction Labor Cost Impact	Coordinate closely with the selected contractor on schedule, number of crews needed and expected overtime to meet the schedule. Risk allocation is included in the estimate to address this risk.
2. Construction Weather Delays Impact	Be flexible and review with contractors to determine availability. Build float time into the construction schedule. Carefully prepare engineering design documents to allow sequence revisions in the event of unexpected changes in the system/outage availability. Risk allocation has been included in the estimate.

[8] References

References
1. DSEQ24 – CT D SS Emergent Annual, WO 82236894, initiated 5.1. 2024
2. CS00709 - [redacted] - PF PAF, Approved 8.15.2024
3. CS00709 - [redacted] - SSF, Approved 11.7.2024
4. 405533-CS00714 – [redacted] IFR Rev 2, Approved 11.5.2024
5. CD02504 - [redacted] PF PAF, Approved 9.13.2024
6. [redacted] Presentation, July 9, 2024
7. CS00365 - [redacted], 8.4.2023

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

Attachment	Included in Submittal?
A. [redacted] Cost Estimate	YES
B. [redacted] P6 Schedule	YES
C. [redacted] Constructability Review-Preliminary	YES
D. [redacted] Nomenclature Diagram	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]		**Project Number: CS00709**	
Facility Type: ☐BPS ☐BES ☐PTF ☐local PTF ☐non-PTF ☐CIP ☒Distribution ☐General Plant ☐CONVEX ☐SCADA			
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 ($M) (if completed):		N/A	
Is a PPA required?		Yes	
ISO-NE Approval Date (if completed):		N/A	
Is a TCA Application Required?		No	
TCA Submittal Date (if submitted):		N/A	
Cost in TCA Submittal ($M) (if submitted):		N/A	
Enter ISO-NE RSP / Asset Condition ID, if assigned:		ES-24-LSP-146	
PLANNING/PROTECTION & CONTROLS			
Are RAS/SPS/UVLs affected?		No	
OPERATIONS			
Outage Required?	☒ Primary Equipment (Power Transfer)	☐ Secondary Equipment (P&C only)	☐ Outage Not Required
Do SCLL Conditions Exist?		No	
Has an outage schedule been approved?		No	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		Yes	
SUBSTATION ENGINEERING			
Does this impact Revenue Metering		No	
Is preliminary short circuit/ breaker duty analysis required?		No	
Are there any changes to the baseline audible noise?		Yes	
Is there an impact to the existing ground grid?		Yes	
Is a Transient Over Voltage (TOV) analysis required?		NR	

Project Checklist - Transmission & Substation Capital Project

Project Name: [redacted]

Project Number: CS00709

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)*	No
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
Has ROW Coordination reviewed this project?	No
Is this project coordinating with other existing scheduled work?	Yes
ENVIRONMENTAL JUSTICE COMMUNITIES	
Has the Equity and Environmental Justice team reviewed this project?	Yes
Name of Equity and Environmental Justice contact:	[redacted]
Is any part of this project in an Environmental Justice Community?	No
Was the Equity Framework Checklist completed?	No
Has enhanced outreach required per State Regulatory requirements been completed?	N/A
INITIATOR	
Has a field constructability review been completed?	Yes

Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted]	**Project Number: CS00709**
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

Return to TOC

Project name [redacted]
Project no **CS00709**
Project manager [redacted]
Project estimator [redacted]

Est accuracy **Planning (-25% to +25%)**
Ext accuracy **N/A**
State **CT**
Business unit **Distribution**

Description	% Directs	% Total	[redacted] Estimate
ROW / Easements / Land purchases	0.0%	0.0%	-
Environmental Approvals / Permits	0.3%	0.2%	20,000
Project Services	0.2%	0.1%	13,000
Siting Approvals / Permits	1.0%	0.7%	68,800
Engineering / Design	6.1%	4.3%	435,300
Materials (Eversource purchased)	46.1%	32.6%	3,315,400
Construction (inc contractor sourced material)	17.6%	12.5%	1,268,900
Testing / Commissioning	9.2%	6.5%	658,500
PMT Project Mgmt Team	5.2%	3.7%	371,800
Removals	3.6%	2.6%	260,300
Other (including CWIP & Taxes)	1.8%	1.3%	131,500
Risks	9.0%	6.4%	650,000
Project Directs (including risks)	**100.0%**	**70.8%**	**7,193,500**
Indirects/Overhead		23.3%	2,369,700
AFUDC		2.5%	250,400
Project Total - Baseline Budget		**96.6%**	**9,813,600**
Contingency		3.4%	350,000
Project Total - Approval Level		**100.0%**	**10,163,600**
Reimbursables/Customer Contribution		0.0%	-
Project Total (less reimbursables)			**10,163,600**

Metrics	[redacted]
Escalation (included above)	330,600
Miscellaneous	
Risks & Contingency / Project Total - Approval level (less Risks & Contingency)	10.91%
Estimate Range	*Planning (-25% to +25%)*
Low	7,622,700
Expected	10,163,600
High	12,704,500

Return to TOC

CBS1 > 2 > 3 > 4	Description	Total Amount	Actual Amount	Labor Hours	Labor Amount	Material Amount	Subcontract Amount	Equipment Amount	Other Amount
		10,163,663	1,435,852	[redacted]	[redacted]	3,371,239	-	163,441	2,993,458
Enfield 12C-2X Estimate		10,163,663	1,435,852	[redacted]	[redacted]	3,371,239	-	163,441	2,993,458
02	Environmental Approvals / Permits	19,986	14,554	[redacted]	[redacted]	-	-	-	-
03	SCS Outreach	13,007	-	-	[redacted]	-	-	-	-
04	Siting Approvals / Permits	68,788	499	-	[redacted]	-	-	-	-
05	Engineering / Design	435,298	39,773	[redacted]	[redacted]	-	-	-	-
06	Equipment /Materials (Eversource purchased)	3,315,433	82,803	-	-	3,254,460	-	-	(21,829)
07	Construction (incl matl's by contractors)	1,268,893	276,269	[redacted]	[redacted]	116,779	-	163,441	5,444
08	Testing / Commissioning	658,510	92,610	[redacted]	[redacted]	-	-	-	-
09	PMT Project Mgmt Team	371,845	68,507	[redacted]	[redacted]	-	-	-	-
10	Removals	260,330	119,109	[redacted]	[redacted]	-	-	-	-
11	Other	131,478	-	-	-	-	-	-	131,478
12	Risks	650,000	-	-	-	-	-	-	650,000
13	Indirects/Overhead	2,369,669	707,967	-	-	-	-	-	1,661,702
14	AFUDC	250,424	33,761	-	-	-	-	-	216,663
15	Contingency	350,000	-	-	-	-	-	-	350,000
Grand Total		10,163,663	1,435,852	16,257	2,199,672	3,371,239	-	163,441	2,993,458

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

Substation Constructability Review

Project Title: [redacted]	☒	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): *CS00709*	**Project Constructability Phase:**	
Date(s) of Constructability Review: 01/15/2025	☐ Conceptual Engineering Design	
Click to enter a date	☒ Preliminary Engineering Design	
	☐ Detailed Engineering Design	

Project Scope Statement:

- [redacted]
- [redacted]
- [redacted]
- A phase rolling structure will be added this includes:
  - [redacted]

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

Substation Constructability Review

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 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] *Date 01/22/25*

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

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

Substation Constructability Review

Action Items and Resolutions:

Item No.	Const. Review Action Item/Concern	Design Resolution/Mitigation:
1	[redacted]	[redacted]
2	Position of new ATS	[redacted]
3	[redacted]	[redacted]
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	☐	• [redacted]
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?	☐	• [redacted]

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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
3	**Control House -** [redacted]	☒	
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	☐	• [redacted]
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?	☐	• [redacted]
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?	☒	

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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.)	☒	
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	☒	
9	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	☐	• Nomenclature will be updated
10	BPS Separation Requirements - Is this BPS Substation? Y/N (part of PAF) - Changes to pre-existing BPS standards?	☒	
11	IEC 61850 Substation Automation and Communication Requirements - Any Impacts/Retrofit needed?	☒	
12	Any Upgrades to ES Standards - Is retrofit needed to bring up to ES standards? Can that be done?	☒	
B	**Construction**		
1	**Any safety hazards specific to the facility? i.e., Low Bus, Deterioration, etc.**	☐	Work zone is in close proximity to other energized areas.
2	**Prior known Site Specific Conditions** -Common or Obvious station Issues -Missing scope items that could impact costs?	☒	None
3	**Identify/Consider Required Depts for Construction?** -Who is constructor: Internal vs External Resources -S/S Ops, GO, Test, Field Engineering, etc.	☐	Internal construction G.O. External Civil Internal Test (during removals) External Test (during new install)

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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?	☐	1.N/A 2.N/A 3.YES – SS is large enough to utilize trailer, and additional equipment. 4.N/A 5.N/A 6.N/A 7.N/A 8.N/A 9.NO 10.NO 11.NO 12.YES 13.NO 14.Large area outside station 15.Same location 16.N/A
5	Unique Equipment Considerations: Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser	☒	

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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	☐	1-7 – ESOP-100 Eversource grounding requirements & MADD approach distance will be followed. 8.TBD 9.TBD – Need design to determine Relay permissions. 10.Potential – Depending on when work starts.
7	**Equipment Testing & Acceptance** -Grounding plans / Resources? Will we need grounds hung? -Hi-pot testing and where will the equipment be set up?	☐	Workman grounds will be hung as needed.
8	Need for mobile generator and where connected (if needed)	☐	No
9	Need for mobile battery and where connected (if needed)	☐	No
10	OT work required or Notable Permit Conditions (special hours)?	☐	OT not required at this time.
11	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☒	

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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 associated with the [redacted] footprint have been pre-characterized and soils are clean, no remediation is needed. If any additional excavation activities occur associated with other equipment addition/changes for this project, those areas will also need to be pre-characterized. If cables are not run through existing duct banks to the Control House, pre-characterization of trench will also be required.
2	**Desktop investigation and EAD Review** -Required Permits -Stormwater Considerations -Dewatering requirements -Wetland and buffer review	☐	No permits are anticipated for this work. Dewatering needs will be evaluated when pre-characterization samples are collected. Sample depth to 4 feet below grade based on anticipated depth of new foundations.
3	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	The [redacted] previously contained PCBs. Pre-characterization activities performed within the [redacted] footprint did not identify the presence of PCBs.
4	Transformer Spill Containment Recommended?	☒	
5	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☒	
6	Environmental oversight considerations? (Inspection type/Interval)	☒	
7	Environmental mitigations - Any matting or seasonal needs? Review D&M Plan with CR.	☒	
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?	☐	[redacted], then just a CSC 'Notice' will suffice as a follow-up to the July 30, 2024 notice to CSC on the [redacted] However, filing of a CSC "Exempt Modification" will be required if it is NOT a [redacted]
2	Other siting considerations?	☒	

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Substation Constructability Review

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
3	**Neighbor/Abutter impacts:** - Any noise, visual impacts, or sensitive abutters - Any changes to lighting or additional lighting needed?	☐	List of abutters has been requested. No changes to lighting
4	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☐	No weekend and night work required. Needs to be reviewed further
5	Installation within Eversource Rights - Is Rights and Restrictions Review required?	☒	
6	Expanding Footprint / New Buildings / Fence line or future Expansion Plans?	☐	Emergency Fence expansion needs to be returned to original footprint.
7	Proposed Equipment on same property? - Any Encroachments	☐	Yes
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☐	Yes
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☐	Yes
3	Panel fronts conform to drawings	☐	Yes
4	Access to bring new panels into control enclosure	☒	
5	Nameplate list and location of nameplates	☐	Yes
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	☐	Yes
7	Temporary protection, relays, control cable needed? How long will they be required?	☒	
8	Will relay setting changes be needed? Any additional outage requirements for changes?	☐	Yes, relay settings changes needed. Additional outages may be needed depending on feeder re-coordination.
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	☐	No concern
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.	☒	

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Substation Constructability Review

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

Photos

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

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6/13/2024 11:19 AM - GALLIA - 14901-91001.DWG - As Built