EVERSOURCE

Operations Project Authorization Form

Approved on April 27, 2023 EPAC

Link to Meeting Minutes

Project Title: [redacted] **Distribution Transformer Replacement/Addition and Station Reconfiguration**	**Project Number: CS00365 (D SS), 405192 (T SS)**	
Date Prepared: 04/18/2023	**Company: Eversource CT**	
Organization: System Planning	**Class(es) of Plant: D SS**	**T SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformers**	
Managing Organization: Transmission / Major Projects	**Schedule ID#:** [redacted]	
Project Manager: [redacted]	**Project Type: Specific**	
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: Yes**	
Estimated in service date: August 2024	**Emergency Related Request? No**	
Eng./Constr. Resources Budgeted? Yes	**Facility Type (check all that apply):** ☐ **PTF** ☒ **non-regional PTF** ☒ **Distribution** ☐ **N/A (General Plant)**	
Total Capital Request: **CS00365 - $28.728M** **405192 - $14.727M**	**Authorization Type: Full Funding**	

[1] Executive Summary

This Project Authorization Form (PAF) requests full funding of $43.455M (Distribution Substation $28.728M, Transmission Substation $14.727M) to convert [redacted] and add [redacted]; including [redacted]. This solution will address the current and future distribution load growth at [redacted] located in Old Saybrook, CT.

[redacted] Substation with [redacted]) and [redacted] to serve the local area load. The normal and emergency substation ratings are 75MVA and 70MVA, respectively. In 2020 and 2021, both were exceeded per the Eversource Distribution System Planning Guide. The forecasted peak load in 2023 is [redacted], and will exceed the Load Carrying Capacity (LCC) of 70MVA which is limited by the Short-Term Emergency (STE) rating [redacted]. The forecasted load at the substation in 2032 is [redacted] subjecting the existing distribution transformers to overloads of [redacted] the normal limit, respectively. The 2032 forecasted load of [redacted] will also be at [redacted] of the LCC rating. See attachment D for the existing substation one-line.

Currently, [redacted]

[redacted]

Initial funding of $250K ($125K CS00365; $125K 405192) was approved in PowerPlan on November 3 and 23, 2020, respectively. The project received Partial Funding of $2.7M ($1.4M Distribution (CS00365) and $1.3M Transmission (405192)) approved in PowerPlan on October 18, 2021. To date, budget has been spent for vendor on-boarding, preliminary design completion, constructability walkdowns, and development of the full funding estimate and this Project Authorization Form (PAF). The project solution was approved by the Solution Design Committee (SDC) on May 26, 2021.

The following summary provides a breakdown of the project costs.

Project Number/ Work Order	**Class of Plant**	**Scope**	**Amount**
405192/80040137	T SS	[redacted]	$12.2**69**M
405192/80132124	T SS		$1.518M
405192/80132123	T SS		$0.94**0**M
Subtotal TSS			**$14.727M**
CS00365	D SS		$2**8.728**M
Total			**$43.455M**

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[2] PROJECT COSTS SUMMARY

WO# 80040137 - [redacted]

Line item Category	Prior Authorized		Actuals to Date	2023 to Go	2024	2025	2026	2027	2028	Total
1. ROW / Easements / Land Acquisition	$									
2. Environmental Approvals / Permits	$									
3. Outreach	$39			$8	$21					$29
4. Siting Approvals / Permits	$39		$2	$21	$54					$77
5. Engineering / Design	$658.9		$732	$395	$74					$1,201
6. Materials (Eversource purchased)	$			$554	$1,170					$1,724
7. Construction (incl matl's by contractors)	$		$11	$699	$2,887					$3,597
8. Testing / Commissioning	$			$312	$984					$1,297
9. Project Mgmt. Team	$235.0		$145	$76	$316					$537
10. Removals	$			$7	$27					$34
11. Other	$									
12. Risks	$			$297	$347					$644
SUBTOTAL DIRECTS W/ RISKS	**$971.9**		$890	$2,368	$5,881					$9,138
13. Indirects/Overhead	$356.1		$242	$568	$1,473					$2,284
14. AFUDC	$4.5		$60	$186	$233					$480
PROJECT TOTAL – BASELINE BUDGET	**$1,332.5**		$1,192	$3,122	$7,587					$11,901
15. Contingency	$			$100	$268					$368
TOTAL CAPITAL REQUEST	**$1,332.5**		$1,192	$3,222	$7,855					$12,269
16. Reimbursables/Customer Contribution	$									
PROJECT TOTAL (LESS REIMBURSABLES)	**$1,332.5**		$1,192	$3,222	$7,855					$12,269
O&M	$									
TOTAL REQUEST	**$1,332.5**		$1,192	$3,222	$7,855					$12,269

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WO# 80132124 - [redacted]

Line item Category	Prior Authorized	Actuals to Date	2023 to Go	2024	2025	2026	2027	2028	Total
1. ROW / Easements / Land Acquisition									
2. Environmental Approvals / Permits									
3. Outreach									
4. Siting Approvals / Permits									
5. Engineering / Design									
6. Materials (Eversource purchased)			$13	$29					$43
7. Construction (incl matl's by contractors)			$80	$334					$414
8. Testing / Commissioning			$87	$275					$362
9. Project Mgmt. Team			$20	$66					$87
10. Removals		$3	$23	$93					$119
11. Other									
12. Risks			$41	$38					$79
SUBTOTAL DIRECTS W/ RISKS		$3	$264	$836					$1,103
13. Indirects/Overhead		$13	$68	$244					$325
14. AFUDC		$3	$13	$26					$42
PROJECT TOTAL – BASELINE BUDGET		$19	$345	$1,107					$1,471
15. Contingency			$11	$37					$47
TOTAL CAPITAL REQUEST		$19	$356	$1,143					$1,518
16. Reimbursables/Customer Contribution									
PROJECT TOTAL (LESS REIMBURSABLES)		$19	$356	$1,143					$1,518
O&M									
TOTAL REQUEST		$19	$356	$1,143					$1,518

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WO# 80132123 - [redacted]

Line item Category	Prior Authorized	Actuals to Date	2023 to Go	2024	2025	2026	2027	2028	Total
1. ROW / Easements / Land Acquisition									
2. Environmental Approvals / Permits									
3. Outreach									
4. Siting Approvals / Permits									
5. Engineering / Design									
6. Materials (Eversource purchased)			$7	$15					$22
7. Construction (incl matl's by contractors)			$50	$211					$261
8. Testing / Commissioning			$51	$161					$212
9. Project Mgmt. Team			$13	$41					$55
10. Removals		$3	$15	$60					$78
11. Other									
12. Risks			$24	$24					$49
SUBTOTAL DIRECTS W/ RISKS		$3	$161	$513					$676
13. Indirects/Overhead		$12	$42	$153					$207
14. AFUDC		$3	$8	$16					$28
PROJECT TOTAL – BASELINE BUDGET		$17	$211	$683					$911
15. Contingency			$7	$22					$29
TOTAL CAPITAL REQUEST		$17	$217	$705					$940
16. Reimbursables/Customer Contribution									
PROJECT TOTAL (LESS REIMBURSABLES)		$17	$217	$705					$940
O&M									
TOTAL REQUEST		$17	$217	$705					$940

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WO# CS003651 - [redacted]

Line item Category	Prior Authorized	Actuals to Date	2023 to Go	2024	2025	2026	2027	2028	Total
1. ROW / Easements / Land Acquisition	$								
2. Environmental Approvals / Permits	$84.4	$28							$28
3. Outreach	$		$19	$41	$13				$74
4. Siting Approvals / Permits	$		$51	$107	$35				$193
5. Engineering / Design	$548.1	$900	$258	$141	$45				$1,343
6. Materials (Eversource purchased)	$		$3,353	$4,766	$455				$8,574
7. Construction (incl matl's by contractors)	$	$0	$895	$3,232	$1,774				$5,901
8. Testing / Commissioning	$		$241	$1,517	$789				$2,547
9. Project Mgmt. Team	$187.0	$108	$260	$285	$15				$668
10. Removals	$		$119	$451	$253				$823
11. Other	$								
12. Risks	$		$737	$811					$1,548
SUBTOTAL DIRECTS W/ RISKS	**$819.5**	$1,037	$5,934	$11,350	$3,379				$21,699
13. Indirects/Overhead	$448.6	$535	$1,043	$2,623	$1,157				$5,359
14. AFUDC	$136.8	$72	$334	$433					$838
PROJECT TOTAL – BASELINE BUDGET	**$1,404.9**	$1,644	$7,311	$14,406	$4,536				$27,897
15. Contingency	$		$238	$458	$135				$831
TOTAL CAPITAL REQUEST	**$1,404.9**	$1,644	$7,548	$14,864	$4,671				$28,727
16. Reimbursables/Customer Contribution	$								
PROJECT TOTAL (LESS REIMBURSABLES)	**$1,404.9**	$1,644	$7,548	$14,864	$4,671				$28,727
O&M	$								
TOTAL REQUEST	**$1,404.9**	$1,644	$7,548	$14,864	$4,671				$28,727

[redacted] Transmission Estimated Risks

Risk	Allocation
1. Potential UG Obstructions	$114,000
2. Severe Weather, Delays, OT	$111,000
3. Design development	$54,000
4. Outage Constraints which cause project delays	$85,000
5. Over Time due to Project Acceleration	$98,000
6. Overtime due to Outage Durations	$97,000
7. Delay in material delivery	$85,000
Total	**$ $644,000**

[redacted] Transmission [redacted] Estimated Risks

Risk	Allocation
1. Potential UG Obstructions	$19,200
2. Severe Weather, Delays, OT	$19,300
3. Design development	$19,900
4. Outage Constraints which cause project delays	$20,300
5. Over Time due to Project Acceleration	$19,200
Total	**$78,700**

[redacted] Transmission [redacted] Estimated Risks

Risk	Allocation
1. Potential UG Obstructions	$11,800
2. Severe Weather, Delays, OT	$11,200
3. Design development	$10,100
4. Outage Constraints which cause project delays	$8,500
5. Over Time due to Project Acceleration	$7,000
Total	**$48,600**

[redacted] Distribution Estimated Risks

Risk	Allocation

1. Potential UG Obstructions	$266,000
2. Severe Weather, Delays, OT	$253,000
3. Design development	$195,000
4. Outage Constraints which cause project delays	$210,000
5. Over Time due to Project Acceleration	$220,000
6. Overtime due to Outage Durations	$180,000
7. Delay in material delivery	$224,000
Total	**$1,548,000**

Explain unique payment provisions, if applicable:

A material order exception form was created in June 2022 to order equipment for a 2023 construction start. The equipment ordered was [redacted] The total request for material authorization was $3.878M.

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

Not applicable

[3] TECHNICAL JUSTIFICATION

Project Need, Objective and Justification

Project Need Statement

Distribution system planning has identified the need to increase substation capacity at [redacted] substation to meet current and future load growth. To address this, distribution planning proposes to convert the distribution side to [redacted] and install new [redacted].

The proposed addition [redacted] will also require a reconfiguration on the transmission side as the Transmission System Design and Analysis Guideline (TSDAG) states that for a configuration of [redacted] In addition, Eversource's Distribution System Planning Guide states that the design of the station should be such that a single transmission event will not cause the loss of more than one (1) distribution element.

Project Objectives

The main objectives of this project are to address [redacted] and resolve [redacted] by implementing the following:

[redacted]

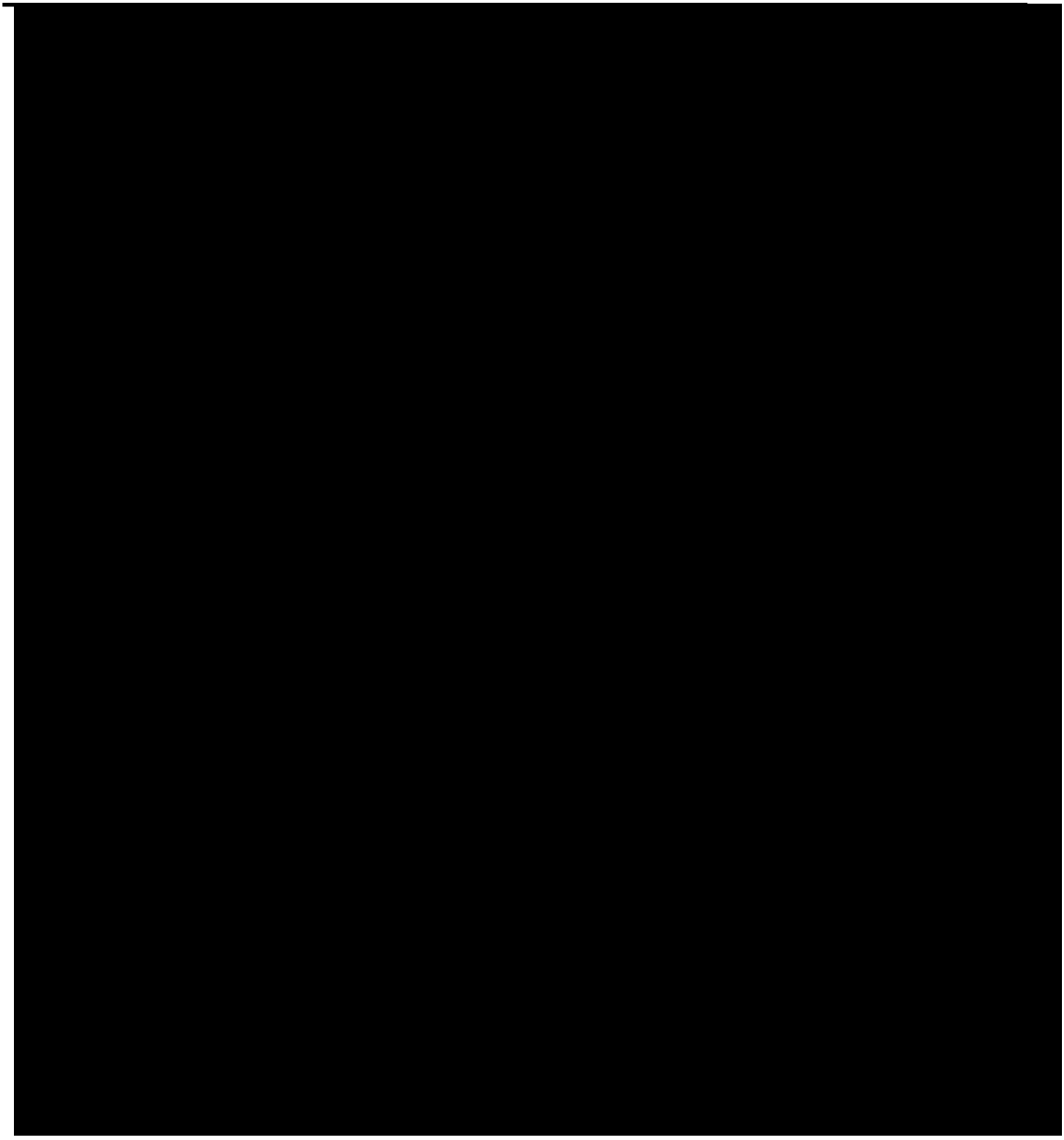
Project Scope

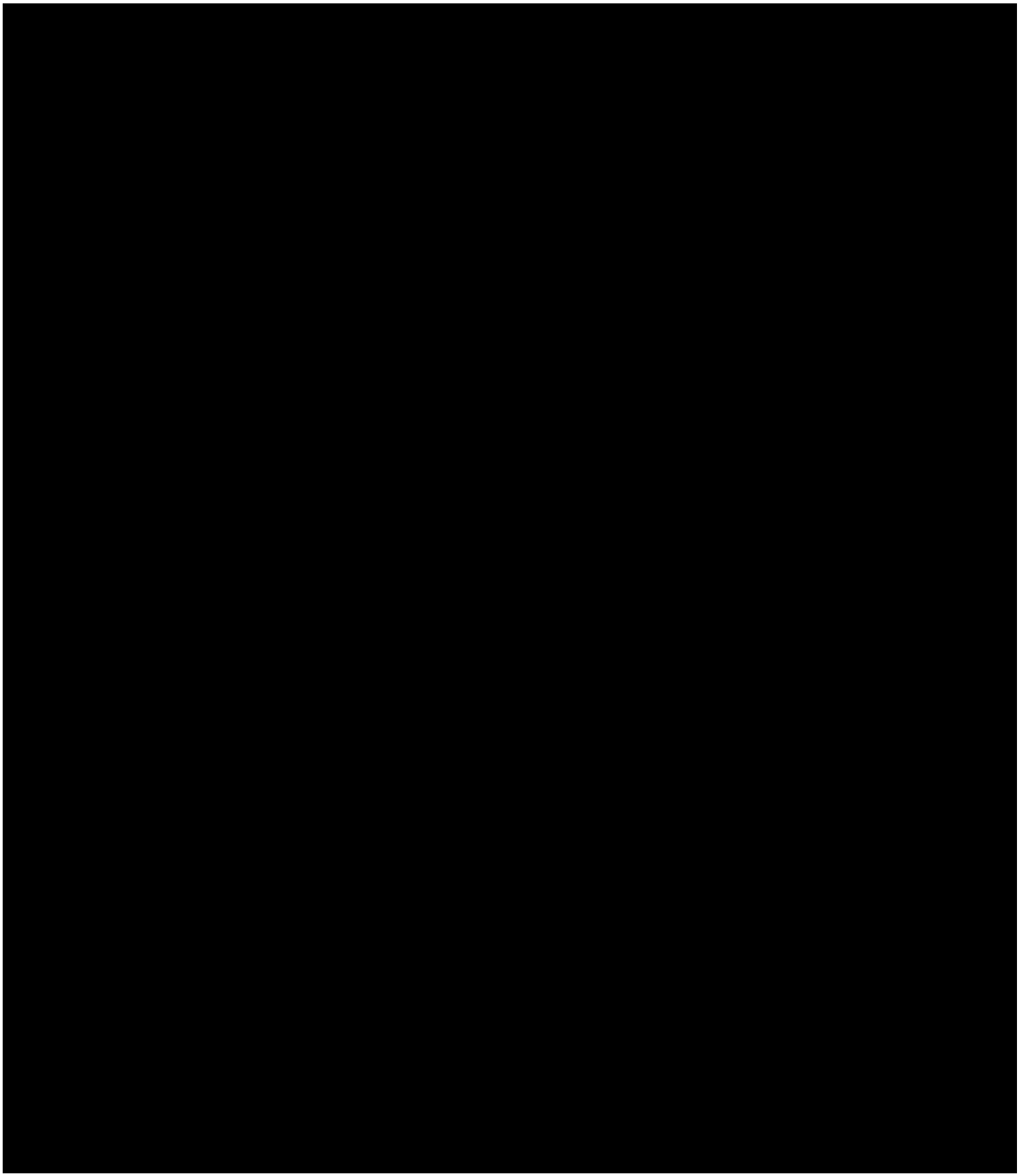
I. Scope of Work

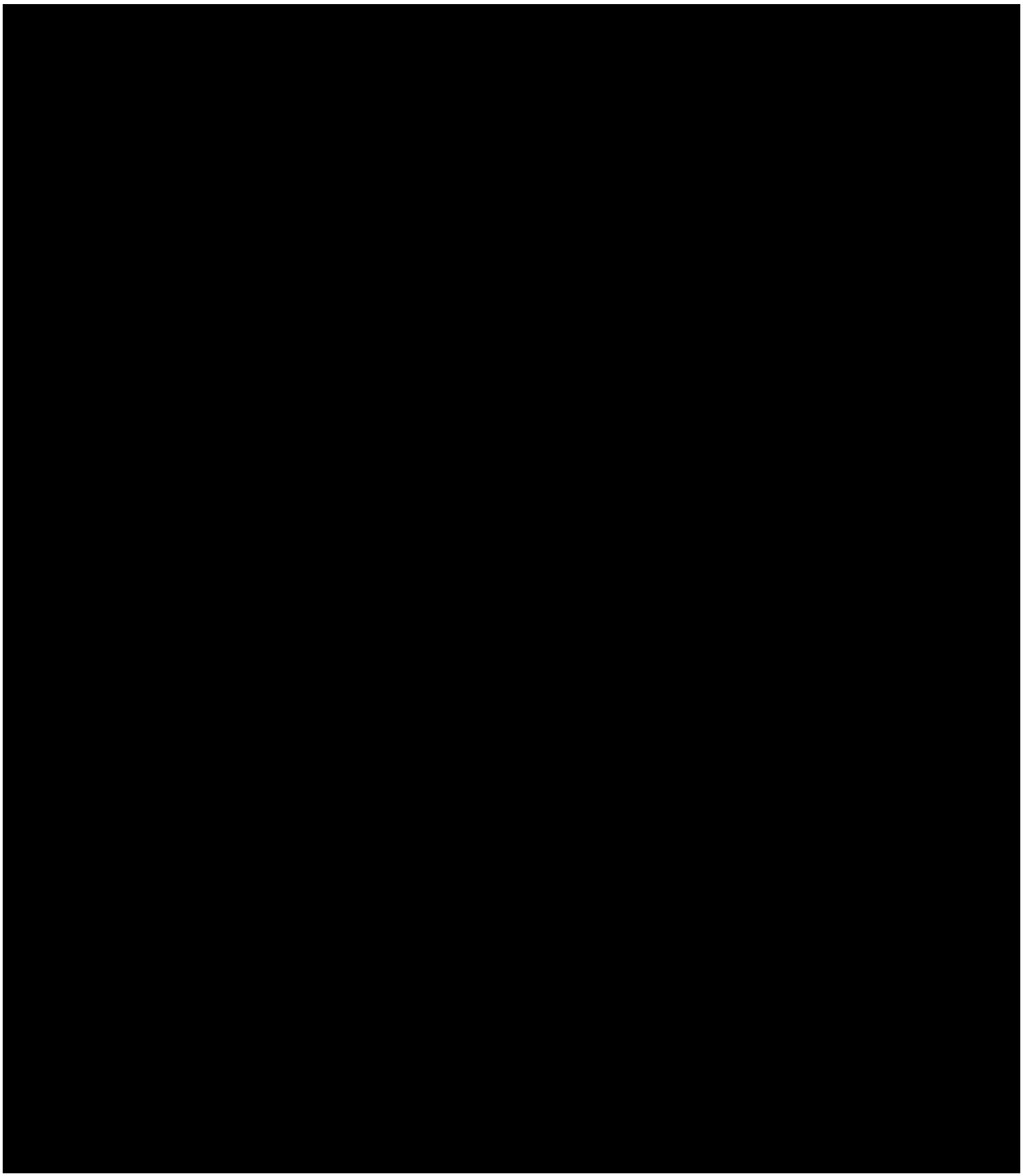
The scope of this project to address [redacted] and resolve [redacted] issues includes the following system upgrades:

[redacted]

[redacted]







[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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

Background

[redacted]

[4] ALTERNATIVES CONSIDERED

Distribution Alternative #1 – This is the approved solution



Alternative 1: Planning grade estimate for this solution is $**28.7M**.

Transmission Alternative 4A – This is the approved solution



[redacted]

[redacted]

Planning grade cost estimate for the Transmission portion of Alternative 4A is **$14.7M**.

[5] PROJECT SCHEDULE

Milestone	Scheduled Completion Date
IFR Approval	November 2020
SDC Approval (for applicable projects)	May 2021
EPAC Partial Funding Approval (for applicable projects)	October 2021
Detailed Design Completion	May 2023
EPAC Full Funding Approval	April 2023
Start of Construction	September 2023
Project In-Service Date (ISD)	August 2024
Project Need Date (for applicable projects)	June 2023
ISO Related Milestones: (for applicable projects)	
• PPA Approval	October 2021
• PAC Presentation	N/A
• TCA Approval	N/A

A P6 schedule is included as Attachment B.

[6] REGULATORY APPROVALS

All work for this project is expected to take place within the existing substation fence. A Notice of Exempt Modification to the Connecticut Siting Council will be needed.

[7] Risk and Risk Mitigation Plans

Contingency: A total of $1,337K ($466K for 405192 and $871K for CS00365) has been allocated for project unknowns.

[redacted] **Transmission Risk Mitigation:**

Risk	Mitigation
1. Potential UG Obstructions	Complete potholing after 70% engineering is completed to identify obstructions and incorporate into design prior to IFC. Cross check original substation prints. Risk allocation is also included.
2. Severe Weather, Delays, OT	Define construction critical paths, identify float, and ensure that on-time resolutions are developed for projects to avoid delays. Risk allocation is also included.
3. Design development	Clearly define scope – review engineering firms design on schedule – perform constructability review prior to start of construction. Risk allocation is also included.
4. Outage Constraints which cause project delays	Project has been sequenced to minimize outages during construction. Risk allocation is also included.
5. Over Time due to Project Acceleration	Construction delays caused by weather and storm duty are possible. Try to be flexible with construction schedules. Risk is allocated in the project budget for delays.
6. Overtime due to Outage Durations	Most construction will be done without the need of outages; therefore, minimizing any SCLL concerns. Current discussions with SCLL committee show low risk; most of the construction will be completed without taking any outages. Risk is allocated to the project budget for any SCLL changes.
7. Contaminated Soil Testing & Removal	As civil construction starts there could be contaminated soil that would require to be dealt with. Contaminated soil is not expected, but soil samples will be taken to verify. Risk is allocated in the project budget for removal of any possible contaminated soil.
8. Delay in material delivery	Use approved vendors, contract delivery dates, hold contractors to schedule, Liq. Damages clause in contract – request factory testing of critical path items. Risk allocation is also included.
9. Outage coordination issues with other projects	Distribution Engineering is finalizing the line side project numbers to coordinate with all feeder outages. Risk allocation is also included.

[redacted] **Distribution Risk Mitigation:**

Risk	Mitigation
1. Potential UG Obstructions	Complete potholing after 70% engineering is completed to identify obstructions and incorporate into design prior to IFC. Cross check original substation prints. Risk allocation is also included.
2. Severe Weather, Delays, OT	Define construction critical paths, identify float, and ensure that on-time resolutions are developed for projects to avoid delays. Risk allocation is also included.
3. Design development	Clearly define scope – review engineering firms design on schedule – perform constructability review prior to start of construction. Risk allocation is also included.
4. Outage Constraints which cause project delays	Project has been sequenced to minimize outages during construction. Risk allocation is also included.
5. Over Time due to Project Acceleration	Construction delays caused by weather and storm duty are possible. Try to be flexible with construction schedules. Risk is allocated in the project budget for delays.
6. Overtime due to Outage Durations	Most construction will be done without the need of outages; therefore, minimizing any SCLL concerns. Current discussions with SCLL committee show low risk; most of the construction will be completed without taking any outages. Risk is allocated to the project budget for any SCLL changes.
7. Contaminated Soil Testing & Removal	As civil construction starts there could be contaminated soil that would require to be dealt with. Contaminated soil is not expected, but soil samples will be taken to verify. Risk is allocated in the project budget for removal of any possible contaminated soil.
8. Delay in material delivery	Use approved vendors, contract delivery dates, hold contractors to schedule, Liq. Damages clause in contract – request factory testing of critical path items. Risk allocation is also included.
9. Outage coordination issues with other projects	Distribution Engineering is finalizing the line side project numbers to coordinate with all feeder outages. Risk allocation is also included.

[8] REFERENCES

References
1. Distribution System Planning Guide
2. Transmission System Design and Analysis Guideline
3. CS00365 – 405192 – [redacted] Distribution Transformer Replacement – Initial Funding – PAF – 10/26/2020
4. CS00365 - 405192 – [redacted] SS Reconfiguration – Partial Funding – PAF – 9/15/2021
5. 405192 - CS00365 - [redacted] Dist XFRM Repl-Addition and STA Reconfig - SSF– 7/23/2021

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

Attachment	Included in Submittal?
A1. 405192 [redacted] T EXT rev#03	*YES*
A2. 405192 [redacted] Remote End T EXT rev01	*YES*
A3. 405192 [redacted] Remote End T EXT rev01	*YES*
A4. CS00365 [redacted] D EXT rev#04	*YES*
B. [redacted] P6 Schedule	*YES*
C. Constructability Review Form [redacted]	*YES*
D. [redacted] Existing One-line	*YES*
E. 20602-91001-Construction-All	*YES*

Project Checklist - Transmission & Substation Capital Project			
Project Name: [redacted]		**Project Number: 405192 / CS00365**	
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):		Enter N/ADate	
Cost in ISO-NE Presentation ($M) (if completed):		Enter N/ACost ($M)	
Is a PPA required?		Yes	
ISO-NE Approval Date (if completed):		10/27/2021	
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?		Yes	
Has an outage schedule been approved?		TBD	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		Yes	
SUBSTATION ENGINEERING			
Does this impact Revenue Metering		No	
Is preliminary short circuit/ breaker duty analysis required?		Yes	
Are there any changes to the baseline audible noise?		Yes	
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]

Project Number: 405192 / CS00365

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?	Yes
TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	No
Are there any changes that affect the baseline EMI?	No
SITING	
Is a Siting filing required? *(If yes, list in regulatory approvals section)*	Yes
PERMITTING	
Is there any permitting required? *(If yes, list in regulatory approvals section)*	No
PROJECT SERVICES (OUTREACH) and ROW WORK COORDINATION	
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?	Yes
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?	Eversource Cost 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: [redacted]
Project Mgr/Lead:

Template Revision 2.5a

SUMMARY OF ESTIMATES

WI	Description	TOTAL	% of Directs	% of Total	Substation Expansion [redacted] Planning C-23-76	Substation Expansion [redacted] Planning C-23-77	[redacted] Planning C-23-77A	[redacted] Planning C-23-77B
	Estimate Type: Planning							
1	ROW / Easements /							
2	Environmental	$27,800	0.1%	0.1%	$27,800			
3	Outreach	$102,300	0.3%	0.2%	$73,700	$28,600		
4	Siting Approvals /	$270,700	0.8%	0.6%	$193,400	$77,300		
5	Engineering / Design	$2,544,000	7.8%	5.9%	$1,343,400	$1,200,600		
6	Materials (Eversource	$10,362,400	31.8%	23.8%	$8,574,000	$1,723,600	$22,100	$42,700
7	Construction (incl	$10,172,700	31.2%	23.4%	$5,901,300	$3,596,600	$261,000	$413,800
8	Testing /	$4,418,000	13.5%	10.2%	$2,546,700	$1,296,600	$212,400	$362,300
9	PMT Project Mgmt	$1,345,900	4.1%	3.1%	$667,800	$536,700	$54,700	$86,700
10	Removals	$1,053,800	3.2%	2.4%	$822,900	$34,200	$77,700	$119,000
11	Other							
12	Risks	$2,319,300	7.1%	5.3%	$1,548,000	$644,000	$48,600	$78,700
	Project Directs Total w/Risks	**$32,616,900**	100.0%	75.1%	$21,699,000	$9,138,200	$676,500	$1,103,200
13	Indirects/Overhead	$8,174,800		18.8%	$5,359,100	$2,283,500	$206,800	$325,400
14	AFUDC	$1,388,200		3.2%	$838,500	$479,700	$27,700	$42,300
	Project Total - Baseline Budget	**$42,179,900**		97.1%	$27,896,600	$11,901,400	$911,000	$1,470,900
15	Contingency	$1,274,700		2.9%	$830,900	$367,800	$28,800	$47,200
	Project Total - Funding Approval Level	**$43,454,600**		100.0%	$28,727,500	$12,269,200	$939,800	$1,518,100
16	Reimbursables/Customer Contribution							
	Project Total (less reimbursables)	**$43,454,600**			$28,727,500	$12,269,200	$939,800	$1,518,100
	Cost per key qty (if appl)					$12,269,200	$313,267	$379,525
	Amount of Escalation included above	$1,275,300			$887,600	$311,100	$29,200	$47,400
6	Total materials - Eversource	$10,362,400			$8,574,000	$1,723,600	$22,100	$42,700
	Total materials - Contractor	$293,519			$225,819	$67,700		
	Total materials	$10,655,919			$8,799,819	$1,791,300	$22,100	$42,700

NOTE: Risk / Contingency is 9% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	-25%	25%
	$32,591,000	$54,318,000

Project Scope:

ESTIMATE SUMMARY

Project Title: [redacted]
Project Mgr/Lead: [redacted]
Project Number: 405192
WO & Task #: 80040137
Estimate revision #: 03
Estimate Type - Station work

Estimate #: C-23-77
Date of Estimate:05/26/2023
Estimate done by: [redacted]
In Service date (ISD):06/01/2024

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2023	2024	2025	2026	2027
1	ROW / Easements / Land purchases									
2	Environmental Approvals / Permits									
3	Outreach	$28,600	0.3%	0.2%		$7,900	$20,700			
4	Siting Approvals / Permits	$77,300	0.8%	0.6%	$2,400	$20,600	$54,300			
5	Engineering / Design	$1,200,600	13.1%	9.8%	$732,000	$395,100	$73,500			
6	Materials (Eversource purchased)	$1,723,600	18.9%	14.0%		$553,700	$1,169,900			
7	Construction (incl materials by contractors)	$3,596,600	39.4%	29.3%	$10,600	$698,600	$2,887,400			
8	Testing / Commissioning	$1,296,600	14.2%	10.6%		$312,400	$984,200			
9	PMT Project Mgmt Team	$536,700	5.9%	4.4%	$144,600	$75,800	$316,300			
10	Removals	$34,200	0.4%	0.3%		$6,700	$27,500			
11	Other									
12	Risks	$644,000	7.0%	5.2%		$297,000	$347,000			
125										
	Project Directs Total w/Risks	**$9,138,200**	100.0%	74.5%	**$889,600**	**$2,367,800**	**$5,880,800**			
13	Indirects/Overhead	$2,283,500		18.6%	$242,400	$568,200	$1,472,900			
14	AFUDC	$479,700		3.9%	$60,500	$186,200	$233,000			
125										
	Project Total - Baseline Budget	**$11,901,400**		97.0%	**$1,192,500**	**$3,122,200**	**$7,586,700**			
15	Contingency	$367,800		3.0%		$99,800	$268,000			
	Project Total - Funding Approval Level	**$12,269,200**		100.0%	**$1,192,500**	**$3,222,000**	**$7,854,700**			
16	Reimbursables/Customer Contribution									
125										
	Project Total (less reimbursables)	**$12,269,200**			**$1,192,500**	**$3,222,000**	**$7,854,700**			
	Cost per key qty (if appl)	12,269,200	$'s / EA 115kV Substation Expansion Transmission							
	Amount of Escalation included above	$311,100					$311,100			
6	Total materials - Eversource	$1,723,600				$553,700	$1,169,900			
	Total materials - Contractor	$67,700				$21,900	$45,800			
	Total materials	$1,791,300				$575,600	$1,215,700			

NOTE: Risk / Contingency is 9% of Project Total Costs (Incl escal/Indirects/AFUDC but excl reimb.)

Estimate Range	-25%	-	25%
	$9,202,000	-	**$15,337,000**

COMMENTS:

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

[redacted]

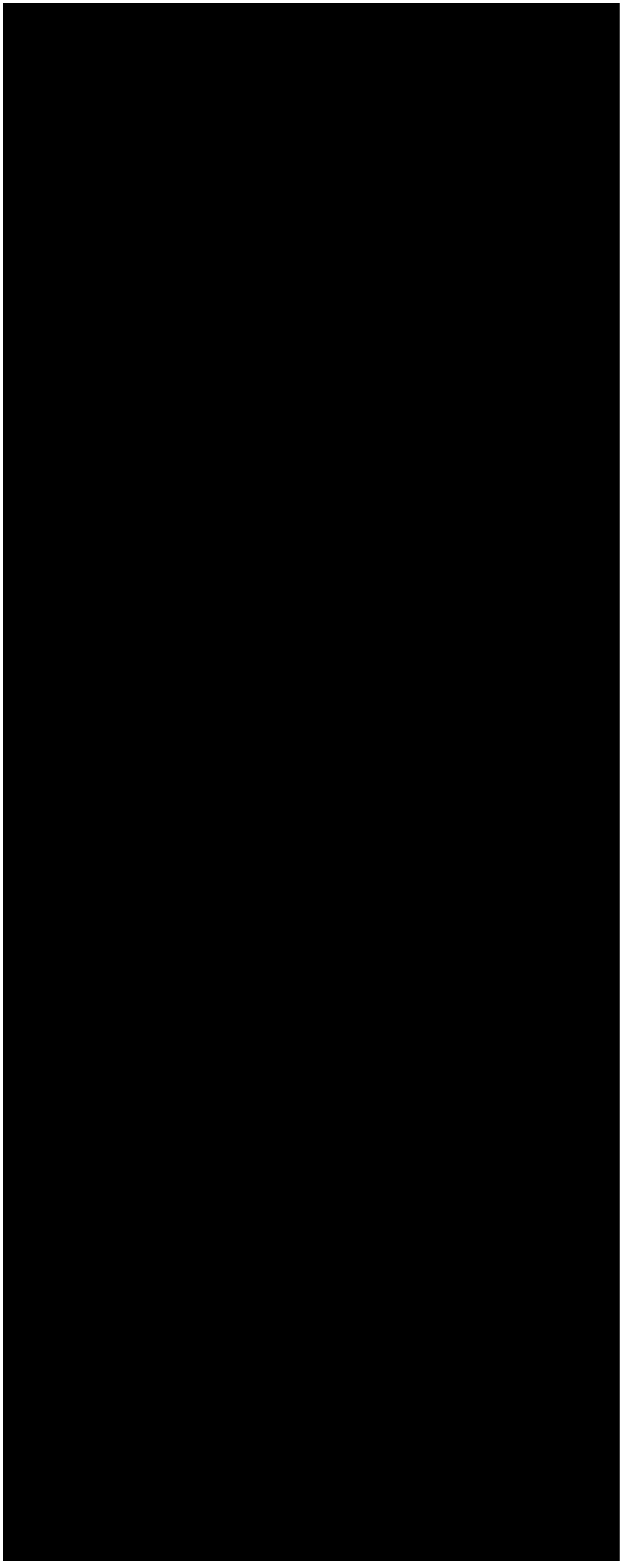
Potential UG Obstructions	$	114.000
Severe Weather. Delays. OT	$	111.000
Design development	$	54.000
Outage Constraints which cause project delays	$	85.000
Over Time due to Project Acceleration	$	98.000
Overtime due to Outage Durations	$	97.000
Delay in material delivery	$	85.000

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-23-77
Date of Estimate:05/26/2023

Project Number: 405192
WO & Task #: 80040137

		TOTAL w/ escal broken out
ROW / Easements / Land purchas	$	-
Environmental Approvals / Permit	$	-
Outreach	$	27,500
Siting Approvals / Permits	$	74,700
Engineering / Design	$	1,197,200
Materials (Eversource purchased	$	1,755,479
Construction (incl materials by c	$	3,393,521
Testing / Commissioning	$	1,249,800
PMT Project Mgmt Team	$	521,700
Removals	$	33,400
Other	$	-
Risks	$	644,000
		$8,897,300
Indirects/Overhead	$	2,213,400
AFUDC	$	479,700
	$	-
		$11,590,400
	$	-
Contingency	$	367,800
		$11,958,200
	$	-
	$	-
		$11,958,200
	$	311,100
Escal total		**$12,269,300**
Check total		$100



ESTIMATE SUMMARY

Project Title: [redacted]
Project Mgr/Lead: [redacted]

Proiect Number: 405192
WO & Task #: 80132123
Estimate revision #: 01
Estimate Type - Station work

Estimate #: C-23-77A
Date of Estimate:05/26/2023

Estimate done by: [redacted]
In Service date (ISD):06/01/2024

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-23-77A
Date of Estimate:05/26/2023

Project Number: 405192
WO & Task #: 80132123

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2023	2024	2025	2026	2027
1	ROW / Easements / Land purchases									
2	Environmental Approvals / Permits									
3	Outreach									
4	Siting Approvals / Permits									
5	Engineering / Design									
6	Materials (Eversource purchased)	$22,100	3.3%	2.4%		$6,900	$15,200			
7	Construction (incl materials by contractors)	$261,000	38.6%	27.8%		$50,300	$210,700			
8	Testing / Commissioning	$212,400	31.4%	22.6%		$51,200	$161,200			
9	PMT Project Mgmt Team	$54,700	8.1%	5.8%		$13,300	$41,400			
10	Removals	$77,700	11.5%	8.3%	$2,600	$14,700	$60,400			
11	Other									
12	Risks	$48,600	7.2%	5.2%		$24,400	$24,200			
125										
	Project Directs Total w/Risks	**$676,500**	100.0%	72.0%	**$2,600**	**$160,800**	**$513,100**			
13	Indirects/Overhead	$206,800		22.0%	$11,700	$41,900	$153,200			
14	AFUDC	$27,700		2.9%	$3,000	$8,300	$16,400			
125										
	Project Total - Baseline Budget	**$911,000**		96.9%	**$17,300**	**$211,000**	**$682,700**			
15	Contingency	$28,800		3.1%		$6,500	$22,300			
	Project Total - Funding Approval Level	**$939,800**		100.0%	**$17,300**	**$217,500**	**$705,000**			
16	Reimbursables/Customer Contribution									
	Project Total (less reimbursables)	**$939,800**			**$17,300**	**$217,500**	**$705,000**			
	Cost per key qty (if appl)	313,267	$'s / EA Replace Relays							
	Amount of Escalation included above	$29,200					$29,200			
6	Total materials - Eversource	$22,100				$6,900	$15,200			
	Total materials - Contractor									
	Total materials	$22,100				$6,900	$15,200			

NOTE: Risk / Contingency is 9% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	**-25%**	-	**25%**
	$705,000	-	**$1,175,000**

	TOTAL w/ escal broken out
ROW / Easements / Land purchas	$ -
Environmental Approvals / Permit	$ -
Outreach	$ -
Siting Approvals / Permits	$ -
Engineering / Design	$ -
Materials (Eversource purchased	$ 21,600
Construction (incl materials by cc	$ 250,900
Testing / Commissioning	$ 204,700
PMT Project Mgmt Team	$ 52,800
Removals	$ 75,900
Other	$ -
Risks	$ 48,600
	$654,500
Indirects/Overhead	$ 199,500
AFUDC	$ 27,700
	$ -
	$881,700
	$ -
Contingency	$ 28,800
	$910,500
	$ -
	$ -
	$910,500
	$ 29,200
Escal total	**$939,700**
Check total	-$100

COMMENTS:

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

[redacted]

RISKS

Potential UG Obstructions	$ 11.800
Severe Weather. Delays. OT	$ 11.200
Design development	$ 10.100
Outage Constraints which cause project delays	$ 8.500
Over Time due to Project Acceleration	$ 7.000

[redacted]

ESTIMATE SUMMARY

Project Title: [redacted]
Project Mgr/Lead: [redacted]
Project Number: 405192
WO & Task #: 80132124
Estimate revision #: 01
Estimate Type - Station work

Estimate #: C-23-77B
Date of Estimate:05/26/2023
Estimate done by: [redacted]
In Service date (ISD):06/01/2024

ESTIMATE SUMMARY

Estimate Type: Planning
External Est Category:

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2023	2024	2025	2026	2027
1	ROW / Easements / Land purchases									
2	Environmental Approvals / Permits									
3	Outreach									
4	Siting Approvals / Permits									
5	Engineering / Design									
6	Materials (Eversource purchased)	$42,700	3.9%	2.8%		$13,400	$29,300			
7	Construction (Incl materials by contractors)	$413,800	37.5%	27.3%		$79,700	$334,100			
8	Testing / Commissioning	$362,300	32.8%	23.9%		$87,300	$275,000			
9	PMT Project Mgmt Team	$86,700	7.9%	5.7%		$20,300	$66,400			
10	Removals	$119,000	10.8%	7.8%	$2,900	$22,700	$93,400			
11	Other									
12	Risks	$78,700	7.1%	5.2%		$40,500	$38,200			
125	**Project Directs Total w/Risks**	**$1,103,200**	100.0%	72.7%	**$2,900**	**$263,900**	**$836,400**			
13	Indirects/Overhead	$325,400		21.4%	$13,300	$68,100	$244,000			
14	AFUDC	$42,300		2.8%	$3,100	$13,000	$26,200			
125	**Project Total - Baseline Budget**	**$1,470,900**		96.9%	**$19,300**	**$345,000**	**$1,106,600**			
15	Contingency	$47,200		3.1%		$10,700	$36,500			
	Project Total - Funding Approval Level	**$1,518,100**		100.0%	**$19,300**	**$355,700**	**$1,143,100**			
16	Reimbursables/Customer Contribution									
145	**Project Total (less reimbursables)**	**$1,518,100**			**$19,300**	**$355,700**	**$1,143,100**			
	Cost per key qty (if appl)	379,525 $'s / EA Replace Relays								
	Amount of Escalation included above	$47,400					$47,400			
6	Total materials - Eversource	$42,700				$13,400	$29,300			
	Total materials - Contractor									
	Total materials	$42,700				$13,400	$29,300			

NOTE: Risk / Contingency is 9% of Project Total Costs (Incl escal/Indirects/AFUDC but excl reimb.)

Estimate Range	-25%	-	25%
	$1,139,000	-	**$1,898,000**

COMMENTS:

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

[redacted]

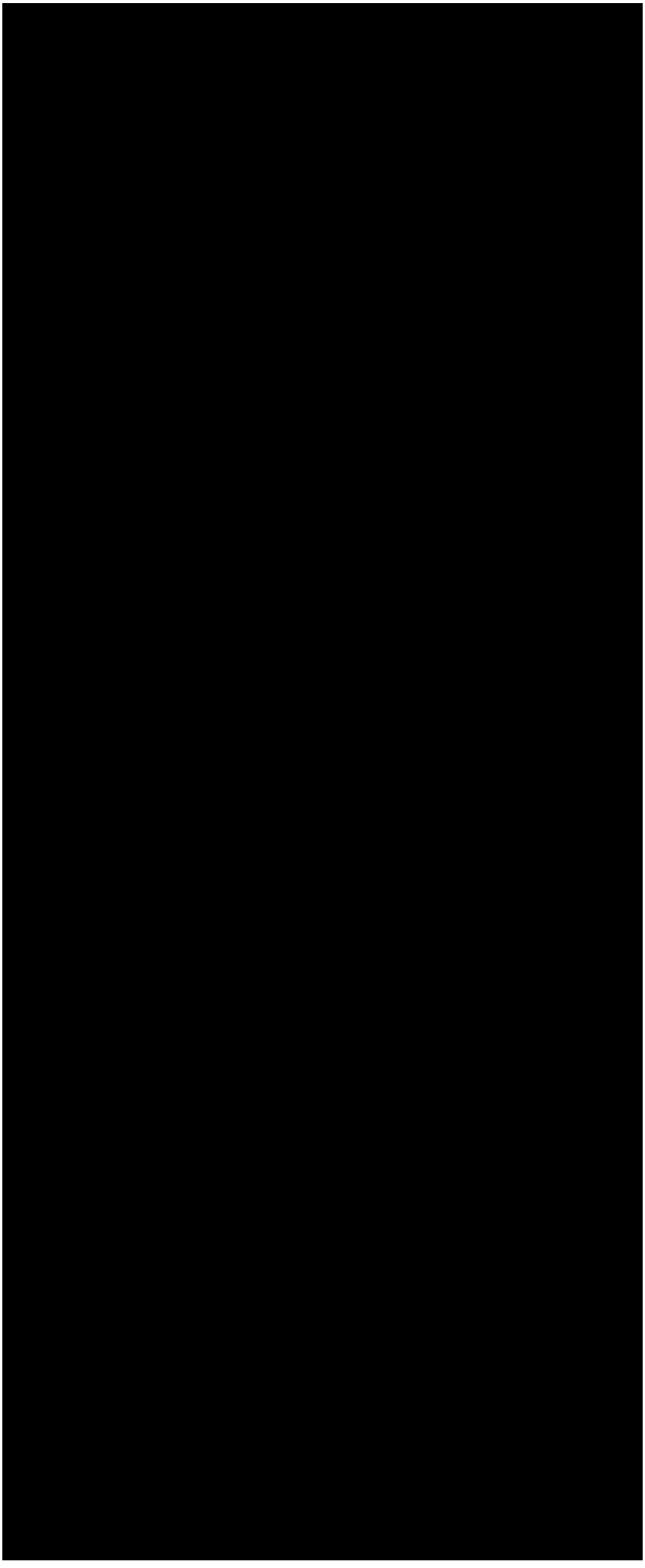
Potential UG Obstructions	$	19,200
Severe Weather. Delays. OT	$	19,300
Design development	$	19,900
Outage Constraints which cause project delays	$	20,300
Over Time due to Project Acceleration	$	-

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-23-77B
Date of Estimate:05/26/2023

Project Number: 405192
WO & Task #: 80132124

		TOTAL w/ escal broken out
ROW / Easements / Land purchas	$	-
Environmental Approvals / Permit	$	-
Outreach	$	-
Siting Approvals / Permits	$	-
Engineering / Design	$	-
Materials (Eversource purchased	$	41,800
Construction (incl materials by c	$	397,800
Testing / Commissioning	$	349,200
PMT Project Mgmt Team	$	83,500
Removals	$	116,200
Other	$	-
Risks	$	78,700
		$1,067,200
Indirects/Overhead	$	313,800
AFUDC	$	42,300
	$	-
		$1,423,300
	$	-
Contingency	$	47,200
		$1,470,500
	$	-
	$	-
		$1,470,500
	$	47,400
Escal total		**$1,517,900**
Check total		-5200



ESTIMATE SUMMARY

Project Title: [redacted]
Project Mgr/Lead: [redacted]
Project Number: CS00365
WO & Task #: CS003651
Estimate revision #: 04
Estimate Type - Station work

Estimate #: C-23-76
Date of Estimate:05/26/2023
Estimate done by: [redacted]
In Service date (ISD):06/01/2024

ESTIMATE SUMMARY

Estimate Type: Planning
External Est Category:

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2023	2024	2025	2026	2027
1	ROW / Easements / Land purchases									
2	Environmental Approvals / Permits	$27,800	0.1%	0.1%	$27,800					
3	Outreach	$73,700	0.3%	0.3%		$19,500	$40,800	$13,400		
4	Siting Approvals / Permits	$193,400	0.9%	0.7%		$51,100	$107,200	$35,100		
5	Engineering / Design	$1,343,400	6.2%	4.7%	$900,100	$257,700	$140,600	$45,000		
6	Materials (Eversource purchased)	$8,574,000	39.5%	29.8%		$3,353,100	$4,766,100	$454,800		
7	Construction (incl materials by contractors)	$5,901,300	27.2%	20.5%						
8	Testing / Commissioning	$2,546,700	11.7%	8.9%	$400	$895,400	$3,231,600	$1,773,900		
9	PMT Project Mgmt Team	$667,800	3.1%	2.3%	$108,400	$259,700	$284,900	$14,800		
10	Removals	$822,900	3.8%	2.9%		$119,300	$450,500	$253,100		
11	Other									
12	Risks	$1,548,000	7.1%	5.4%		$737,000	$811,000			
125										
	Project Directs Total w/Risks	**$21,699,000**	100.0%	75.5%	**$1,036,700**	**$5,933,600**	**$11,349,700**	**$3,379,000**		
13	Indirects/Overhead	$5,359,100		18.7%	$535,100	$1,043,500	$2,623,400	$1,157,100		
14	AFUDC	$838,500		2.9%	$72,000	$333,600	$432,900			
125										
	Project Total - Baseline Budget	**$27,896,600**		97.1%	**$1,643,800**	**$7,310,700**	**$14,406,000**	**$4,536,100**		
15	Contingency	$830,900		2.9%		$237,700	$457,700	$135,500		
	Project Total - Funding Approval Level	**$28,727,500**		100.0%	**$1,643,800**	**$7,548,400**	**$14,863,700**	**$4,671,600**		
16	Reimbursables/Customer Contribution									
124										
	Project Total (less reimbursables)	**$28,727,500**			**$1,643,800**	**$7,548,400**	**$14,863,700**	**$4,671,600**		
	Cost per key qty (if appl)	-	$'s / EA							
	Amount of Escalation included above	$887,600					$528,500	$359,100		
6	Total materials - Eversource	$8,574,000				$3,353,100	$4,766,100	$454,800		
	Total materials - Contractor	$225,819			$19	$88,600	$125,500	$11,700		
	Total materials	$8,799,819			$19	$3,441,700	$4,891,600	$466,500		

NOTE: Risk / Contingency is 9% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	-25%	-	25%
	$21,546,000	-	**$35,909,000**

COMMENTS:

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

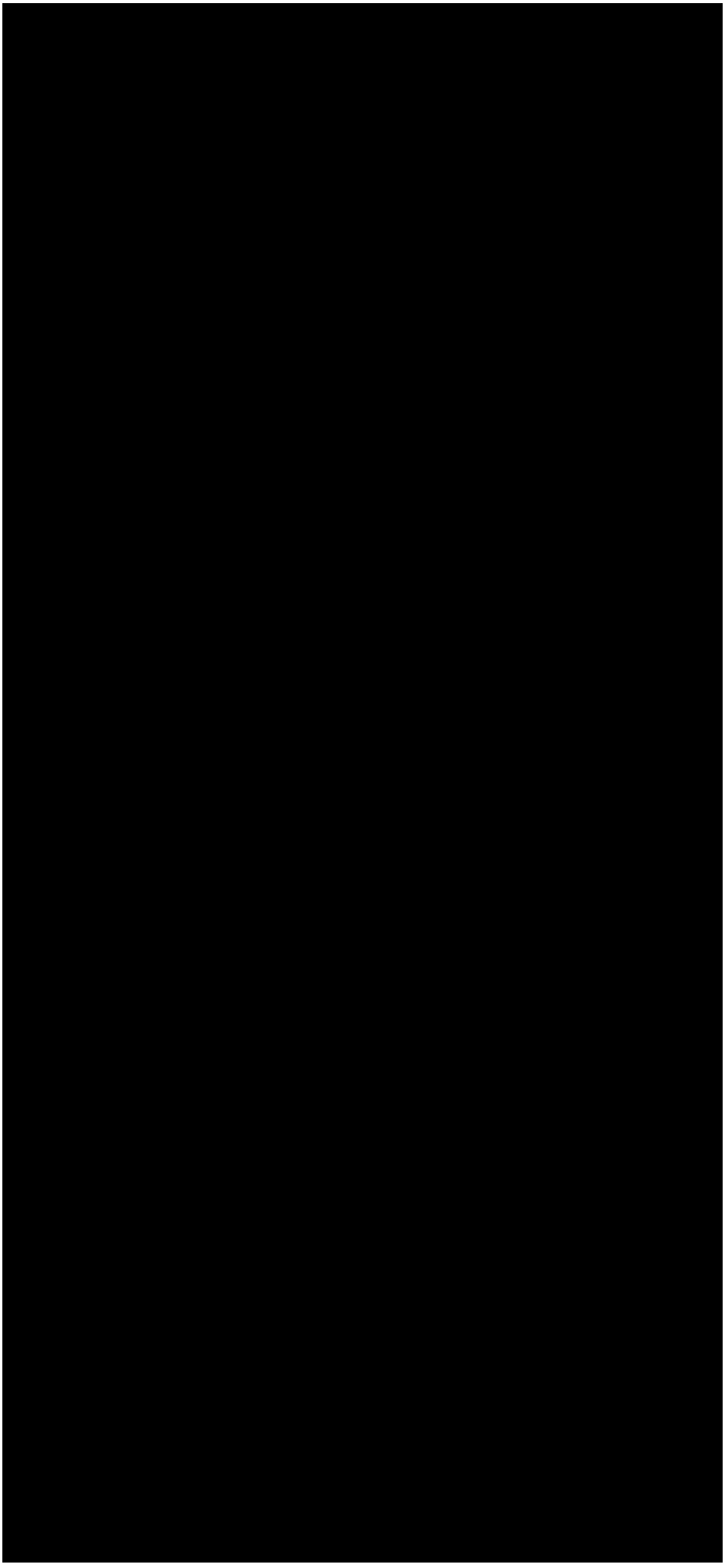
[redacted]

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C-23-76
Date of Estimate:05/26/2023

Project Number: CS00365
WO & Task #: CS003651

	TOTAL w/ escal broken out
ROW / Easements / Land purchas	$ -
Environmental Approvals / Permit	$ 27,800
Outreach	$ 70,600
Siting Approvals / Permits	$ 185,300
Engineering / Design	$ 1,333,000
Materials (Eversource purchased	$ 8,633,755
Construction (incl materials by cı	$ 5,379,245
Testing / Commissioning	$ 2,408,000
PMT Project Mgmt Team	$ 652,900
Removals	$ 795,300
Other	$ -
Risks	$ 1,548,000
	$21,033,900
Indirects/Overhead	$ 5,136,600
AFUDC	$ 838,500
	$ -
	$27,009,000
	$ -
Contingency	$ 830,800
	$27,839,800
	$ -
	$ -
	-
	$27,839,800
	$ 887,600
Escal total	**$28,727,400**
Check total	-$100



Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
CS003651	[redacted]					
[redacted]						
PROJECT PLANNING & FUNDING						
T-Minus Milestones						
Civil T-Minus Milestone						
AT0805C	Civil IFC - Civil (BG) w/BOM	0			12-Jul-23	
AT0814	ALL CONSTRUCTION CONTRACTS IN PLACE	0			19-Jul-23	
AT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)	0			09-Aug-23	
AT00	T-00 START OF CONSTRUCTION Civil Pre-Outage - WO#	0	04-Sep-23*			
Electrical T-Milestones						
BT1202	P/C DESCRIPTION / DRAFT OPERATING INSTRUCTIONS ISSUED	0			13-Jun-23	
BT0805P	P&C IFC - P&C w/BOM	0			15-Jun-23	
BT0805E	Elect IFC - Electrical (AG) w/Final BOM	0			14-Jul-23	
BT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)	0			09-Aug-23	
BT0409	B-T-04 ALL FIRM TOA APPLICATIONS DUE TO LCC ([redacted])	0			30-Aug-23	
BT1801	T-18 All Firm TOA Applications Due to LCC	0			30-Aug-23	
BT2404	DETERMINE / ASSIGN LCE (LEAD COMMISSIONING ENGINEER)	0			21-Sep-23	
BT0814	ALL CONSTRUCTION CONTRACTS IN PLACE	0			27-Nov-23	
BT1805	B-T-18 NX9 Preliminary Ratings to LCC for New Equipment ([redacted]')	0			01-Feb-24	
BT0404	ALL FINAL RELAY PROTECTIVE SETTING ISSUED	0			05-Feb-24	
BT1301	COMMISSIONING PLAN COMPLETE	0			16-Feb-24	
BT0301	B-T-03 NX9 THERMAL RATINGS TO LCC AND CONVEX	0			09-Apr-24	
BT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED	0			20-Apr-24	
BT00	T-00 START OF CONSTRUCTION Electrical Outage - WO#	0	06-May-24*			
Project Funding						
Full Funding						
EPAC - FF						
PAFF2110	EPAC Full Funding Meeting	0			11-May-23*	
PAFF2200	Incorporate EPAC Full Funding PAF Review Comments	7	12-May-23		22-May-23	
FF1010	Ful Funding PowerPlan Approval	7	12-May-23		22-May-23	
FF1000	EPAC Full Funding Approval	0			22-May-23	
Project Management						
Compliance Authorization Notification						
1170	Prepare CAN (Construction Authorization Notice)	15	20-Jul-23		09-Aug-23	
Outage Permits / TOAs Request						
1290	Construction Rep SUBMIT OUTAGE REQUESTS[redacted]	45	28-Jun-23		30-Aug-23	

TASK filter: Remove Completes.

(c) Primavera Systems, Inc.

Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
1250	Construction Rep SUBMIT OUTAGE REQUESTS[redacted]	45	28-Jun-23		30-Aug-23	
SITING APPROVALS / PERMITS / PROJECT SERVICES						
State Approvals and Permits						
Siting Council / Board						
3630	Notice of Exempt Modification to the Connecticut Siting Council	10	28-Jun-23		12-Jul-23	
ENGINEERING DETAILED / IFC DESIGN						
Civil Engineering						
Civil Engineering Detailed Design						
CE1210	ES Engineering Review Civil Substation Detail Design & Approves the Deliverables Checklist	11	03-Apr-23 A	03-Apr-23	01-May-23	
Civil Engineering IFC Design						
CE1300	Vendor Engineer Develop Civil Substation IFC in Accordance with the Deliverables Checklist	40	02-May-23		27-Jun-23	
CE1310	ES Engineering Review Civil Substation IFC & Approves the Deliverables Checklist	10	28-Jun-23		12-Jul-23	
Electrical Engineering						
Electrical Engineering Detailed Design						
EE1210	ES Engineering Review Electrical Substation Detail Design & Approves the Deliverables Checklist	11	03-Apr-23 A	03-Apr-23	01-May-23	
Electrical Engineering IFC Design						
EE1300	Vendor Engineer Develop Electrical Substation IFC in Accordance with the Deliverables Checklist	40	02-May-23		27-Jun-23	
EE1310	ES Engineering Review Electrical Substation IFC	12	28-Jun-23		14-Jul-23	
[redacted] - Vendor Drawings with Schematics						
[redacted]		30	11-Aug-23		22-Sep-23	
[redacted]		10	25-Sep-23		06-Oct-23	
[redacted]		10	10-Oct-23		23-Oct-23	
[redacted] Diagrams						
[redacted]	[redacted]	40	03-Apr-23 A	03-Apr-23	12-Jun-23	
[redacted]	[redacted]	10	13-Jun-23		26-Jun-23	
[redacted]	[redacted]a	10	27-Jun-23		11-Jul-23	
P&C Engineering						
P&C Engineering Detailed Design						
PC1110	ES Engineering Review P&C Detail Design	11	03-Apr-23 A	03-Apr-23	01-May-23	
P&C SCADA						
EE920	Operating Instructions - SSED Review Draft Convex OI	30	02-May-23		13-Jun-23	
EE460	Operating Instructions - SSED Review Draft Distribution OI	30	02-May-23		13-Jun-23	
P&C Engineering IFC Design						
P&C Design Package						
PC1320	Vendor Engineer Creates SDS in Accordance with the Deliverables Checklist	22	02-May-23		01-Jun-23	
PC1330	ES Engineering Reviews and Issues SDS	10	02-Jun-23		15-Jun-23	

TASK filter: Remove Completes.

(c) Primavera Systems, Inc.

Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
Relay Settings						
PC1400	[redacted]	24	02-Jan-24*		05-Feb-24	
P&C DFR Design						
DFR1040	Verify CASCADE Forms Exists for S/S DFR, if not then Initiate Form	10	16-Jun-23		29-Jun-23	
DFR1000	Verify DFR Calibration is Required	10	16-Jun-23		29-Jun-23	
DFR1010	P&C Prepare Configuration for DFRs	5	30-Jun-23		07-Jul-23	
DFR1020	Peer Review and Comment DFR Configuration	5	10-Jul-23		14-Jul-23	
DFR1030	P&C Issue Configuration For DFR	5	17-Jul-23		21-Jul-23	
DFR1050	DFR Config Complete	5	24-Jul-23		28-Jul-23	
Electrical Engineering NX-9						
[redacted]						
[redacted]	[redacted]	5	12-Jul-23		18-Jul-23	
[redacted]	[redacted]	5	19-Jul-23		25-Jul-23	
[redacted]	[redacted]	5	26-Jul-23		01-Aug-23	
[redacted]	[redacted]	5	02-Aug-23		08-Aug-23	
Substation Thermal Rating [redacted]						
[redacted]						
Substation - [redacted]						
[redacted]		5	12-Jul-23		18-Jul-23	
[redacted]		5	19-Jul-23		25-Jul-23	
[redacted]		5	26-Jul-23		01-Aug-23	
[redacted]		5	01-Dec-23		07-Dec-23	
[redacted]		5	08-Dec-23		14-Dec-23	
[redacted]		5	15-Dec-23		21-Dec-23	
[redacted]		5	22-Dec-23		29-Dec-23	
[redacted]		5	02-Jan-24		08-Jan-24	
[redacted]		5	09-Jan-24		16-Jan-24	
[redacted]		5	17-Jan-24		23-Jan-24	
[redacted]		1	24-Jan-24		24-Jan-24	
[redacted]		5	25-Jan-24		31-Jan-24	
[redacted]		1	01-Feb-24		01-Feb-24	
Substation - [redacted]						
[redacted]		5	02-Feb-24		08-Feb-24	
[redacted]		5	09-Feb-24		15-Feb-24	
[redacted]		5	16-Feb-24		23-Feb-24	
[redacted]		5	26-Feb-24		01-Mar-24	

TASK filter: Remove Completes.

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Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
	[redacted]	5	04-Mar-24		08-Mar-24	
	[redacted]	5	11-Mar-24		15-Mar-24	
	[redacted]	5	18-Mar-24		22-Mar-24	
	[redacted]	5	25-Mar-24		29-Mar-24	
	[redacted]	1	01-Apr-24		01-Apr-24	
	[redacted]	5	02-Apr-24		08-Apr-24	
	[redacted]	1	09-Apr-24		09-Apr-24	
	Substation [redacted]					
	Substation [redacted]					
	[redacted]	5	12-Jul-23		18-Jul-23	
	[redacted]	5	19-Jul-23		25-Jul-23	
	[redacted]	5	26-Jul-23		01-Aug-23	
	[redacted]	5	01-Dec-23		07-Dec-23	
	[redacted]	5	08-Dec-23		14-Dec-23	
	[redacted]	5	15-Dec-23		21-Dec-23	
	[redacted]	5	22-Dec-23		29-Dec-23	
	[redacted]	5	02-Jan-24		08-Jan-24	
	[redacted]	5	09-Jan-24		16-Jan-24	
	[redacted]	5	17-Jan-24		23-Jan-24	
	[redacted]	1	24-Jan-24		24-Jan-24	
	[redacted]	5	25-Jan-24		31-Jan-24	
	[redacted]	1	01-Feb-24		01-Feb-24	
	[redacted]	1	06-May-24		06-May-24	
	[redacted]	3	02-Aug-24		06-Aug-24	
	[redacted]	1	06-Aug-24		06-Aug-24	
	[redacted]	5	07-Aug-24		13-Aug-24	
	PROCUREMENT LONG LEAD MATERIAL					
	Electrical Long Lead Material					
	MATERIAL FOR [redacted]					
	[redacted]	274	26-Sep-22 A	26-Sep-22	15-Jan-24	
	[redacted]	21	23-May-23		21-Jun-23	
	[redacted]	15	22-Jun-23		13-Jul-23	
	[redacted]	10	14-Jul-23		27-Jul-23	
	[redacted]	5	28-Jul-23		03-Aug-23	
	[redacted]	5	04-Aug-23		10-Aug-23	
	[redacted]	5	16-Jan-24		20-Jan-24	

TASK filter: Remove Completes.

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Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
	MATERIAL FOR [redacted]					
	[redacted]	113	05-Sep-22 A	05-Sep-22	07-Aug-23	
		121	05-Sep-22 A	05-Sep-22	15-Aug-23	
		365	05-Sep-22 A	05-Sep-22	15-Apr-24	
		5	23-May-23		30-May-23	
		10	31-May-23		09-Jun-23	
		5	16-Apr-24		20-Apr-24	
	MATERIAL FOR [redacted]					
	[redacted]	121	06-Mar-23 A	06-Mar-23	15-Aug-23	
		10	16-Aug-23		25-Aug-23	
	PROCUREMENT MATERIAL [redacted]					
	Civil Balance of Material					
	[redacted]	5	07-Jun-23		11-Jun-23	
		10	12-Jun-23		21-Jun-23	
		90	22-Jun-23		19-Sep-23	
		5	20-Sep-23		24-Sep-23	
	Electrical Balance of Material					
	[redacted]	5	12-Jun-23		16-Jun-23	
		10	17-Jun-23		26-Jun-23	
		90	27-Jun-23		24-Sep-23	
		5	25-Sep-23		29-Sep-23	
	P&C Balance of Material					
	[redacted]	5	12-Jun-23		16-Jun-23	
		10	17-Jun-23		26-Jun-23	
		90	27-Jun-23		24-Sep-23	
		5	25-Sep-23		29-Sep-23	
	PROCUREMENT OF SERVICE CONTRACTS					
	Constructor of Choice - Direct Award or Bid					
3430	CONST.SERVICES - BID - Eversource provide Spec / RFP	11	13-Feb-23 A	13-Feb-23	01-May-23	
3440	CONST.SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	20	16-May-23		13-Jun-23	
3450	CONST.SERVICES - BID - Eversource reviews contractor proposals	20	14-Jun-23		12-Jul-23	
3460	CONST.SERVICES - BID - Contract is Awarded - PO Issued	5	13-Jul-23		19-Jul-23	
	Testing Service - Direct Award or Bid					
1010	STAFFING DECISION: EVERSOURCE OR OUTSOURCE BID/COC	10	10-Aug-23		23-Aug-23	
	TEST SERVICES - CONTRACTOR OF CHOICE					
3470	TEST SERVICES - COC - Eversource Provides Spec / RFQ to COC	5	24-Aug-23		30-Aug-23	

TASK filter: Remove Completes.

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Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
3480	TEST SERVICES - COC - COC Evaluates Spec and Provides Quote	10	31-Aug-23		14-Sep-23	
3490	TEST SERVICES - COC - Eversource Reviews Quote from COC	10	15-Sep-23		28-Sep-23	
3500	TEST SERVICES - COC - Eversource Awards Contract - PO Issued	10	29-Sep-23		13-Oct-23	
TEST SERVICES - BID PROCESS						
3510	TEST SERVICES - BID - Eversource provide Spec / RFP	15	24-Aug-23		14-Sep-23	
3520	TEST SERVICES - BID - Contractors Evaluate RFP and Provide Proposal	15	15-Sep-23		05-Oct-23	
3530	TEST SERVICES - BID - Eversource reviews contractor proposals	15	06-Oct-23		27-Oct-23	
3540	TEST SERVICES - BID - Eversource awards contract - PO Issued	20	30-Oct-23		27-Nov-23	
CONSTRUCTION						
CSM	Construction Start Milestone	0	04-Sep-23			
CFM	Construction Finish Milestone	0			01-Aug-24	
ISD	EQUIPMENT IN SERVICE DATE (requires FOOB constraint)	0			01-Aug-24	
Construction Support LOEs						
ConRep-S	RESOURCE ONLY ACTIVITY - CONSTRUCTION - CONSTRUCTION REP	230	05-Sep-23		01-Aug-24	
CONSTelec	RESOURCE ONLY ACTIVITY - CONSTRUCTION - ELECTRICIAN	30	20-Jun-24		01-Aug-24	
Outages						
[redacted]		45	06-May-24		19-Jun-24	
[redacted]		45	06-May-24		19-Jun-24	
Substation Construction						
[redacted]		30	04-Sep-23		03-Oct-23	
[redacted]		60	06-May-24		04-Jul-24	
[redacted]		60	06-May-24		04-Jul-24	
[redacted]		60	06-May-24		04-Jul-24	
P&C Construction						
[redacted]		5	20-Jun-24		26-Jun-24	
TEST & COMMISSIONING						
Isolation Plan						
[redacted]		30	28-Jun-23		09-Aug-23	
[redacted]		30	10-Aug-23		21-Sep-23	
[redacted]		15	22-Sep-23		06-Oct-23	
[redacted]		15	22-Sep-23		06-Oct-23	
[redacted]		45	10-Oct-23		12-Dec-23	
[redacted]		45	13-Dec-23		16-Feb-24	
Testing Activities						
[redacted]		30	20-Jun-24		01-Aug-24	
[redacted]		30	20-Jun-24		01-Aug-24	

TASK filter: Remove Completes.

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Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
PROJECT CLOSE OUT						
Civil Close Out						
CV1000	Prepare Civil Field Mark Ups (Tie after Last Civil Construction Activity)	21	09-Aug-24		09-Sep-24	
CV1100	Eversource Engineering Prepares & Sends Civil Field Mark Up Packge to Vendor	5	10-Sep-24		16-Sep-24	
CV1200	Vendor Engineering Verifies Civil Mark Ups and Updates As-Built Drawing Package. Submits Final Package t	30	17-Sep-24		29-Oct-24	
CV1300	Eversource Engineering Verifies Quality of Submitted Civil Drawings	20	30-Oct-24		27-Nov-24	
CV1400	ES Create Civil Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5	29-Nov-24		05-Dec-24	
PM1000	PM to Document Civil As-Built Drawings Complete	5	06-Dec-24		12-Dec-24	
CV1500	FE Files Civil Design Drawings at Station	30	13-Dec-24		28-Jan-25	
Electrical Close Out						
EV1000	Prepare Electrical Field Mark Ups	21	23-Aug-24		23-Sep-24	
EV1100	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	24-Sep-24		30-Sep-24	
EV1200	Vendor Engineering Verifies Electrical Mark Ups and Updates As-Built Drawing Package. Submits Final Packa	30	01-Oct-24		13-Nov-24	
EV1300	Eversource Engineering Verifies Quality of Submitted Electrical Drawings	20	14-Nov-24		12-Dec-24	
EV1400	Electrical Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5	13-Dec-24		19-Dec-24	
PM1100	PM to Document Electrical As-Built Drawings Complete (Electrical & P&C)	5	20-Dec-24		27-Dec-24	
EV1500	FE Files Substation Design Drawings at Station	30	30-Dec-24		11-Feb-25	
P&C Close Out						
PC8000	Prepare P&C Field Mark Ups	21	23-Aug-24		23-Sep-24	
PC1111	Eversource Engineering Prepares & Sends Electrical Field Mark Up Packge to Vendor	5	24-Sep-24		30-Sep-24	
PC1200	Vendor Engineering Verifies P&C Mark Ups and Updates As-Built Drawing Package. Submits Final Package t	30	01-Oct-24		13-Nov-24	
PC1300	Eversource Engineering Verifies Quality of Submitted P&C Drawings	20	14-Nov-24		12-Dec-24	
PC1411	P&C Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5	13-Dec-24		19-Dec-24	
PC8500	FE Files P&C Design Drawings at Station	30	30-Dec-24		11-Feb-25	
LCE Closeout						
LCE700	LCE Ensure Test Group Prepare Electrical Field Mark Ups	10	02-Aug-24		11-Aug-24	
LCE800	LCE Ensures Marked up Prints Ready for Pick-up	5	02-Aug-24		08-Aug-24	
LCE900	LCE Review Test Data and Issue Commissioning Report	10	09-Aug-24		22-Aug-24	
Work Order / Financial Close Out						
1020	Cost Analyst Prepares FINAL Units of Property	30	02-Aug-24		13-Sep-24	
1030	Asset Management Complete Asset Update(s) in CASCADE	30	16-Aug-24		27-Sep-24	
Project Management Close Out						
TD1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	5	02-Aug-24		08-Aug-24	
1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30	02-Aug-24		13-Sep-24	
1270	Prepare TD-707 Document	30	02-Aug-24		13-Sep-24	
1110	Restore / Remediate Site	10	02-Aug-24		15-Aug-24	

TASK filter: Remove Completes.

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Activity ID	Activity Name	Rem Dur	ES	Actual Start	EF	Actual Finish
1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD)	10	02-Aug-24		15-Aug-24	
FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0			11-Feb-25	

TASK filter: Remove Completes.

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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): CS00365 // 405192	**Project Constructability Phase:**	
Date(s) of Constructability Review: 01/18/2023	☐ Conceptual Engineering Design	
Click to enter a date	☐ Preliminary Engineering Design	
	☒ Detailed Engineering Design	
Project Scope Statement: Station Reconfiguration		

Department Review/Walkdown Attendees*:

Required [X]	Attended [X]	Department	Name	Required [X]	Attended [X]	Department	Name
☒	☒	Project Management	[redacted]	☒	☒	S/S Engineering	[redacted]
☐	☐	Asset Management		☒	☒	P&C Engineering	
☒	☒	Constr. Management	[redacted]	☒	☒	Civil Engineering	
☐	☐	S/S Technical / LCE		☐	☐	Telecom	
☒	☒	S/S Operations**	[redacted]	☒	☐	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

EVERSOURCE

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

Substation Constructability Review

[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] 1/9/22

Name / Signature *Date*

Documents available for use prior to Constructability Review					
[X]	Document	[X]	Document	[X]	Document
☐	Initial Scope -Birdseye site plan -General Arrangement	☐	Detailed 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	Get buy-in from Environmental Dept of 3X Oil Containment Design	[redacted] to follow up
2	Determine what updates required for Control wiring	Follow up meeting setup for 1/23/23
3		
4		
5		

EVERSOURCE

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
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	☐	- SOW has been reviewed and finalized. - No complimentary projects or other adjacent obsolete equipment for inclusion. - No overlapping projects that could impact work/outages. - Additional civil SOW to deal with flooding issues in the station. - No remote station impacts - Engineering Estimates for Design and Technical Support? (EE and EOC) Total Project – completed and included in SSF
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]
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

EVERSOURCE

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
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?	☐	Oil Containment for 3X needs further review
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?	☐	N/A
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.)	☐	N/A
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	☐	We will ground the new gear to the existing grid.

EVERSOURCE

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
9	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	☐	N/A
10	BPS Separation Requirements - Is this BPS Substation? Y/N (part of PAF) - Changes to pre-existing BPS standards?	☐	Not BPS
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?	☐	Some existing oil containments don't work well
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	☐	- Constructor has not been determined yet - Will need to perform UG surveys, soil testing/characterization

EVERSOURCE

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
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?	☐	- Construction Access will be through the existing station gate into the yard. - Laydown area will most likely be inside the station - If work is done by a contractor, then their trailer will be outside the station.
5	Unique Equipment Considerations: Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser		N/A

EVERSOURCE

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	☐	We have not performed Outage Planning or review yet.
7	**Equipment Testing & Acceptance** -Grounding plans / Resources? Will we need grounds hung? -Hi-pot testing and where will the equipment be set up?	☐	We have not performed detailed construction planning yet.
8	Need for mobile generator and where connected (if needed)	☐	We have not performed detailed construction planning yet.
9	Need for mobile battery and where connected (if needed)	☐	We have not performed detailed construction planning yet.
10	OT work required or Notable Permit Conditions (special hours)?	☐	We will work within normal work hours – no plans for OT
11	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☐	We have not discussed this

EVERSOURCE

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	☐	We will perform soil characterization
2	**Desktop investigation and EAD Review** -Required Permits -Stormwater Considerations -Dewatering requirements -Wetland and buffer review	☐	- Siting permit = Exempt MOD - No enviro permits since we are staying inside the station
3	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	Possible
4	Transformer Spill Containment Recommended?	☐	Yes
5	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☐	N/A
6	Environmental oversight considerations? (Inspection type/Interval)	☐	We will review later
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?	☐	Exempt Mod permit needed
2	Other siting considerations?	☐	N/A
3	**Neighbor/Abutter impacts:** - Any noise, visual impacts, or sensitive abutters - Any changes to lighting or additional lighting needed?	☐	N/A
4	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☐	We will review later
5	Installation within Eversource Rights - Is Rights and Restrictions Review required?	☐	Within S/S yard

EVERSOURCE

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?	☐	N/A
7	Proposed Equipment on same property? - Any Encroachments	☐	Same property – no encroachment
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☐	No concerns.
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☐	No concerns.
3	Panel fronts conform to drawings	☐	Confirmed existing panel conditions.
4	Access to bring new panels into control enclosure	☐	No concerns.
5	Nameplate list and location of nameplates	☐	Existing – see panel views and nameplate list.
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.
8	Will relay setting changes be needed? Any additional outage requirements for changes?		N/A.
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	☐	N/A
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 – telecom circuits are existing.
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 – telecom circuits are existing and no separation is required.
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	☐	N/A – only one fiber based scheme on each line, no diversity required.
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	☐	

EVERSOURCE

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	☐	
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)



[redacted]