EVERSOURCE

Program Release Form

Approved on December 22, 2021 EPAC

Link to Meeting Minutes

Date Prepared: 12/14/2021	**Project Title:** [redacted]
Company: Eversource CT	**Facility Name:** [redacted]
Organization: Asset Management	**Project Number: CS00495**
Project Initiator: [redacted]	**Class(es) of Plant: D SS**
Project Manager: [redacted]	**Project Category: Stations - SCADA**
Project Sponsor: [redacted]	**Project Type: Program**
Program Level Title: DSCADA LTC Receivers Program Upgrades	**Capital Investment Part of Original Operating Plan? Yes**
Program Level Project Number: CS00407	**O&M Expenses Part of the Original Operating Plan? N/A**
Total Request: $862K	**Estimated in service date(s): 04/29/2022**
	Facility Type (check all that apply): ☐ PTF ☐ non-PTF ☒ Distribution

Executive Summary

This Program Release is requesting dollar authorization in accordance with the program level criteria specified in Program Level Project Authorization Form (PAF) - DSCADA LTC Receivers Program Upgrades (CS00407) (see Attachment F) and this document for this specific location. The scope for this Program Release is defined in the Program Level PAF and in this document with modifications necessary that address this location. Location/site modification from the Program Level PAF shall be fully described herein for scope and unit cost.

This Program Release is requesting $862K to install [redacted]

The Program Level PAF CS00407 had $250K of initial funding approved in PowerPlan on May 25, 2021. As of November 17, 2021, approximately $31K has been charged to WOs CS009021

(under old program CS00090 noted in the Program Level PAF) and 80089556 (under new program CS00407) for preliminary and a portion of detailed engineering and design at [redacted] substations. These prior charges will be journaled to this new release project number upon approval.

Project Scope

[redacted]

Scope of Work

[redacted]

10. Transformer outages will be required to complete the listed scope of work.

Major Material to be Purchased

1. Two (2) LTC DSCADA cabinets with a Remote Terminal Unit (RTU), one (1) for each transformer
2. Two (2) LTC tap position monitors, one (1) for each transformer
3. Two (2) M-2001D Beckwith tap changer controls with adapter panels

A constructability review was performed on July 14, 2021 (see Attachment C). It was determined that there is adequate space for the DSCADA improvements.

Unitized Release Cost

Note: Dollar values are in thousands

Line item Category	Unitized Program Level PAF Cost	Release Cost	Delta
1. ROW / Easements / Land Acquisition	$	$	$
2. Environmental Approvals / Permits	$	$	$
3. Outreach	$6	$1	($5)
4. Siting Approvals / Permits	$	$	$
5. Engineering / Design	$36	$39	$3
6. Materials (Eversource purchased)	$52	$43	($9)
7. Construction (incl matl's by contractors)	$252	$218	($34)
8. Testing / Commissioning	$188	$152	($36)
9. Project Mgmt Team	$22	$7	($15)
10. Removals	$4	$5	$1
11. Other	$	$	$
12. Risks	$142	$64	($78)
SUBTOTAL DIRECTS W/ RISKS	**$702**	**$529**	**($173)**
13. Indirects/Overhead	$376	$303	($73)
14. AFUDC	$30	$8	($22)
PROJECT TOTAL – BASELINE BUDGET	**$1,108**	**$840**	**($268)**
15. Contingency	$	$22	$22
TOTAL CAPITAL REQUEST	**$1,108**	**$862**	**($246)**
16. Reimbursables/Customer Contribution	$	$	$
PROJECT TOTAL (LESS REIMBURSABLES)	**$1,108**	**$862**	**($246)**
O&M	$	$	$
Total Request	**$1,108**	**$862**	**($246)**

*CT program unit cost (Option #3) is $554,100 per transformer (upgrade, new conduit, and new control) and has been used in the unitized PAF cost for the 11R-5X and 35K-6X. However, the 11R-5X transformer will utilize an existing spare conduit.

Justification for Modification

1. **ROW / Easements / Land Acquisition: $0 –** No changes from the Program Level PAF.
2. **Environmental Approvals / Permits: $0 –** No changes from the Program Level PAF.
3. **Outreach: – ($5K)** Unit price per transformer reflects outreach required at one station. A savings is realized as any required outreach for two (2) transformers can be accomplished simultaneously.
4. **Siting Approvals / Permits: $0 –** No changes from the Program Level PAF.
5. **Engineering / Design: $3K –** No major changes from the Program Level PAF.
6. **Materials (by Eversource): ($9K) –** Civil conduit construction reduction for the [redacted] transformer from the Program Level PAF.
7. **Construction (including materials supplied by contractors): ($34K)**– Civil conduit construction reduction for the 11R-5X transformer.
8. **Testing / Commissioning: ($36K) –** Savings in economies of scale.
9. **Project Management Team: ($15K)** - Savings in economies of scale.
10. **Removals: $1 –** No major changes from the Program Level PAF.
11. **Other: $0 –** No changes from the Program Level PAF.
12. **Risk: ($78K) –** Savings recognized in economies of scale.
13. **Indirects/Overhead: ($73K) –** Indirects are proportional to direct costs.
14. **AFUDC: ($22K) –** AFUDC is proportional to direct costs.
15. **Contingency: $22K –** Contingency was not included in the Program Level unitized cost but is included to account for unique project unknowns in each Release.
16. **Reimbursables/Customer Contribution: $0 –** No changes from the Program Level PAF.

O&M: $0 - No changes from the Program Level PAF.

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Project Costs Summary for two (2) transformers

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 to Go	2022	Total
1. ROW / Easements / Land Acquisition	$		$	$	$
2. Environmental Approvals / Permits	$		$	$	$
3. Outreach	$		$	$1	$1
4. Siting Approvals / Permits	$		$	$	$
5. Engineering / Design	$	$31	$8	$	$39
6. Materials (Eversource purchased)	$		$41	$2	$43
7. Construction (incl matl's by contractors)	$		$	$218	$218
8. Testing / Commissioning	$		$	$152	$152
9. Project Mgmt Team	$		$5	$3	$7
10. Removals	$		$	$5	$5
11. Other	$		$	$	$
12. Risks	$		$22	$42	$64
SUBTOTAL DIRECTS W/ RISKS	**$250**	**$31**	**$76**	**$422**	**$529**
13. Indirects/Overhead	$		$30	$273	$303
14. AFUDC	$		$2	$6	$8
PROJECT TOTAL – BASELINE BUDGET	**$250**	**$31**	**$108**	**$701**	**$840**
15. Contingency	$		$	$22	$22
TOTAL CAPITAL REQUEST	**$250**	**$31**	**$108**	**$723**	**$862**
16. Reimbursables/Customer Contribution	$	$	$	$	$
PROJECT TOTAL (LESS REIMBURSABLES)	**$250**	**$31**	**$108**	**$723**	**$862**
O&M	$		$		$
TOTAL REQUEST	**$250**	**$31**	**$108**	**$723**	**$862**

Risk of $64K included for potential underground obstructions ($18K), severe weather delays, OT ($24K), and design development ($22K).

Breakout Costs

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021	2022	Total
ST Labor		$31	$8	$11	$50
OT Labor			$	$	$
Outside Services Labor			$5	$362	$366
Materials*			$41	$2	$43
Removals			$	$5	$5
Other			$22	$65	$87
Indirects			$30	$273	$303
AFUDC			$2	$6	$8
TOTAL CAPITAL REQUEST - W/O REIMBURSABLES	**$250**	**$31**	**$108**	**$723**	**$862**

*All materials including Eversource purchased and outside service purchased. Note that outside service purchased material included in construction in project cost summary above.

Future Financial Impacts:

Provide below the estimated future costs that will result from the project: N/A
Note: Dollar values are in thousands:

Future Costs	Year 2021__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital		$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other costs noted above:
Only Capital expenditure for 2021. No O&M, nor Other.

What functional area(s) will these future costs be funded in? **N/A**

If this is other than a Reliability Project, please complete the section below.
This is a reliability project. This section is N/A
Provide below the estimated financial benefits that will result from the project: N/A
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other benefits noted above: N/A

What functional area(s) will these benefits be reflected in? **N/A**
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

None

Is there an ARO associated with this project? N/A

Are there other environmental cleanup costs associated with this project?

None known at this time.

Alternatives considered with cost Estimates

No changes from the Program Level PAF.

Regulatory Approvals

N/A - No changes from the Program Level PAF.

Risks and Risk Mitigation Plans

Risk allocation is included in the estimate for potential underground obstructions, severe weather, delays, overtime, and design development.

A full Single Contingency Load Loss (SCLL) study will be completed before construction begins.

Contingency

$22K of contingency is included for project unknowns.

Project Schedule

Milestone/Phase Name	Estimated Dates
Program Level Initial Funding Approval (CS00407)	May 25, 2021
EPAC Meeting – Release Presentation	December 22,2021
Engineering IFC Complete	January 10, 2022
Material Received	March 2022
Construction Start	March 2022
Construction Completion	April 2022
ISD	April 2022

See Attachment B for the P6 schedule.

Attachments

- Attachment A - [redacted] CS00495 Estimate DSCADA LTC Upgrades
- Attachment B - [redacted] CS00495 P6 Schedule
- Attachment C - Substation Constructability Review Form COS COB 07162021
- Attachment D - [redacted] Nomenclature
- Attachment E - [redacted] RAILROAD Nomenclature
- Attachment F - Program Level PAF - DSCADA Load Tap Changer (LTC) Receivers Upgrades CS00407

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Project Checklist - Transmission & Substation Capital Project			
Project Name: [redacted]		**Project Number: CS00495**	
Facility Type: ☐ BPS ☐ BES ☐ PTF ☐ non-PTF ☐ CIP ☒ Distribution			
PLANNING			
Is a NX-9 required?		No	
Is an ISO-NE PAC presentation required?		No	
ISO-NE Presentation Date (if completed):		Enter Date	
Cost in ISO-NE Presentation ($M) (if completed):		Enter Cost ($M)	
Is a PPA required?		No	
Is a TCA Application Required?		No	
TCA Submittal Date (if submitted):		Enter Date	
Cost in TCA Submittal ($M) (if submitted):		Enter Cost ($M)	
Enter ISO-NE RSP / Asset Condition ID, if assigned:		Enter ISO-NE ID	
PLANNING/PROTECTION & CONTROLS			
Are RAS/SPS/UVLs affected?		No	
OPERATIONS			
Outage Required?	☒ Primary Equipment (Power Transfer)	☐ Secondary Equipment (P&C only)	☐ Outage Not Required
Do SCLL Conditions Exist?		Yes	
Has an outage schedule been approved?		No	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		Yes	
SUBSTATION ENGINEERING			
Does this impact Revenue Metering		No	
Is preliminary short circuit/ breaker duty analysis required?		No	
Are there any changes to the baseline audible noise?		No	
Is there an impact to the existing ground grid?		Yes	
Is a Transient Over Voltage (TOV) analysis required?		No	

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Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted]	**Project Number: CS00495**
P&C ENGINEERING	
OP-22 - Are PMUs and DDR required?	No
If BPS, is an NPCC Directory #4 presentation required?	No
Are ISO-NE OP-24 Appendix B updates necessary?	No
TRANSMISSION LINE ENGINEERING	
Are there any changes that affect the baseline EMF?	No
Are there any changes that affect the baseline EMI?	No
SITING	
Is a Siting filing required? *(If yes, list in regulatory approvals section)*	No
PERMITTING	
Is there any permitting required? *(If yes, list in regulatory approvals section)*	No
SITING & CONSTRUCTION SERVICES (OUTREACH)	
What is the level of outreach expected?	Low
INITIATOR	
Has a field constructability review been completed?	Yes
INVESTMENT RECOVERY	
Does the project require development of an Investment Recovery plan?	No
COST ESTIMATING	
What team/firm prepared the cost estimate?	Estimate was prepared by Eversource Engineering
Name of the person who prepared the estimate:	[redacted]
Was the estimate reviewed by Eversource Estimating?	Yes - Full Review

Cost Estimate Backup Details

See Attachment A for the detailed cost backup file.

ESTIMATE SUMMARY

Project Title: [redacted] - DSCADA LTC UPGRADE
Project Mgr/Lead: [redacted]

Project Number: CS00495
WO & Task #: 80089556
Estimate revision #: 00
Estimate Type - Station work

Estimate #: C- xxx-xx
Date of Estimate:11/17/2021

Estimate done by: [redacted]
In Service date (ISD) 06/29/2022

Template Revision # 01.05d

Alt Estimate Summary for PP4 Calc (escalation separate)

Estimate #: C- xxx-xx
Date of Estimate:11/17/2021

Project Number: CS00495
WO & Task #: 80089556

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	TOTAL w/ escal broken out
1	ROW / Easements / Land purchases															ROW / Easements / Land purchas $ -
2	Environmental Approvals / Permits															Environmental Approvals / Permit: $ -
3	Outreach	$800	0 2%	0.1%		$100	$700									Outreach $ 800
4	Siting Approvals / Permits															Siting Approvals / Permits $ -
5	Engineering / Design	$38,900	7.4%	4.5%	$30,700	$8,200										Engineering / Design $ 38,900
6	Materials (Eversource purchased)	$42,900	8.1%	5.0%		$40,900	$2,000									Materials (Eversource purchased) $ 42,900
7	Construction (incl matl's by contractors)	$217 900	41 2%	25.3%			$217 900									Construction (incl matl's by contr $ 211,200
8	Testing / Commissioning	$152,100	28 8%	17.6%			$152,100									Testing / Commissioning $ 147,700
9	PMT Project Mgmt Team	$7,400	1.4%	0.9%		$4,500	$2,900									PMT Project Mgmt Team $ 7,300
10	Removals	$4,700	0 9%	0.5%			$4,700									Removals $ 4,500
11	Other															Other $ -
12	Risks	$64,000	12.1%	7.4%		$22 000	$42 000									Risks $ 64 000
125																
	Project Directs Total w/Risks	**$528,700**	100 0%	61.3%	**$30,700**	**$75,700**	**$422,300**									**$517,300**
13	Indirects/Overhead	$303,100		35.2%		$30,100	$273,000									Indirects/Overhead $ 295,100
14	AFUDC	$7,700		0.9%		$2,000	$5,700									AFUDC $ 7,700
135																$ -
	Project Total - Baseline Budget	**$839,500**		97.4%	**$30,700**	**$107,800**	**$701,000**									**$820,100**
15	Contingency	$22,300		2.6%			$22,300									$ -
	Project Total - Funding Approval Level	**$861,800**		100.0%	**$30,700**	**$107,800**	**$723,300**									Contingency $ 22,300
16	Reimbursables/Customer Contribution															**$842,400**
170																$ -
	Project Total (less reimbursables)	**$861,800**			**$30,700**	**$107,800**	**$723,300**									$ -
	Cost per key qty (if appl)	430,900	$'s / EA													**$842,400**
	Amount of Escalation included above	$19,400					$19,400									$ 19,400
6	Total materials - Eversource	$42,900				$40,900	$2,000									
	Total materials - Contractor															Escal total **$861,800**
	Total materials	$42 900				$40 900	$2 000									Check total
	NOTE: Risk / Contingency is 11.1% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)															

Estimate Range	**-25%**	**25%**
	$646,000	**$1,077,000**

COMMENTS:

Project Scope:

Key qty's and UOM (tie to inputs on est sheets) 2 EA

[redacted]

- Two (02) CABINETS, ENCLOSURE, LTC DSCADA, AL, 24 IN X 18 IN X 14 IN .
- Two (02) MONITORS, LTC TAP POS, PROGRAMMABLE, 120VAC, 4 TO 20 MA ANALOG OUTPUT, RS-232.
- Two (02) M-2001D Beckwith tap changer controls with Adapter Panels.

Assumptions/Clarifications:

Indirect rates based on: 11 - CT Station work

Note

1.This estimate assumes all construction (electrical, test and civil) will be outsourced. each transformer will need to be de-energized for 5 days for installation, and testing will take place partially during the outage and upon energization.
2.The estimate include manhours for Lead Commission Engineer, Construction Representative, Electrical, Test and Civil
3.Estimated risks are assumed to be 7% of the project total cost as per the estimating group recommendations
4.OSCADA commissioning and switching will be done in house
5.Estimate assumes existing communication are in good working condition.
6.Drawings have been issued and all material have been ordered
7.The transformer alarms will not be modified and will not be taken back to the SEL-2240 Axion.

RISKS

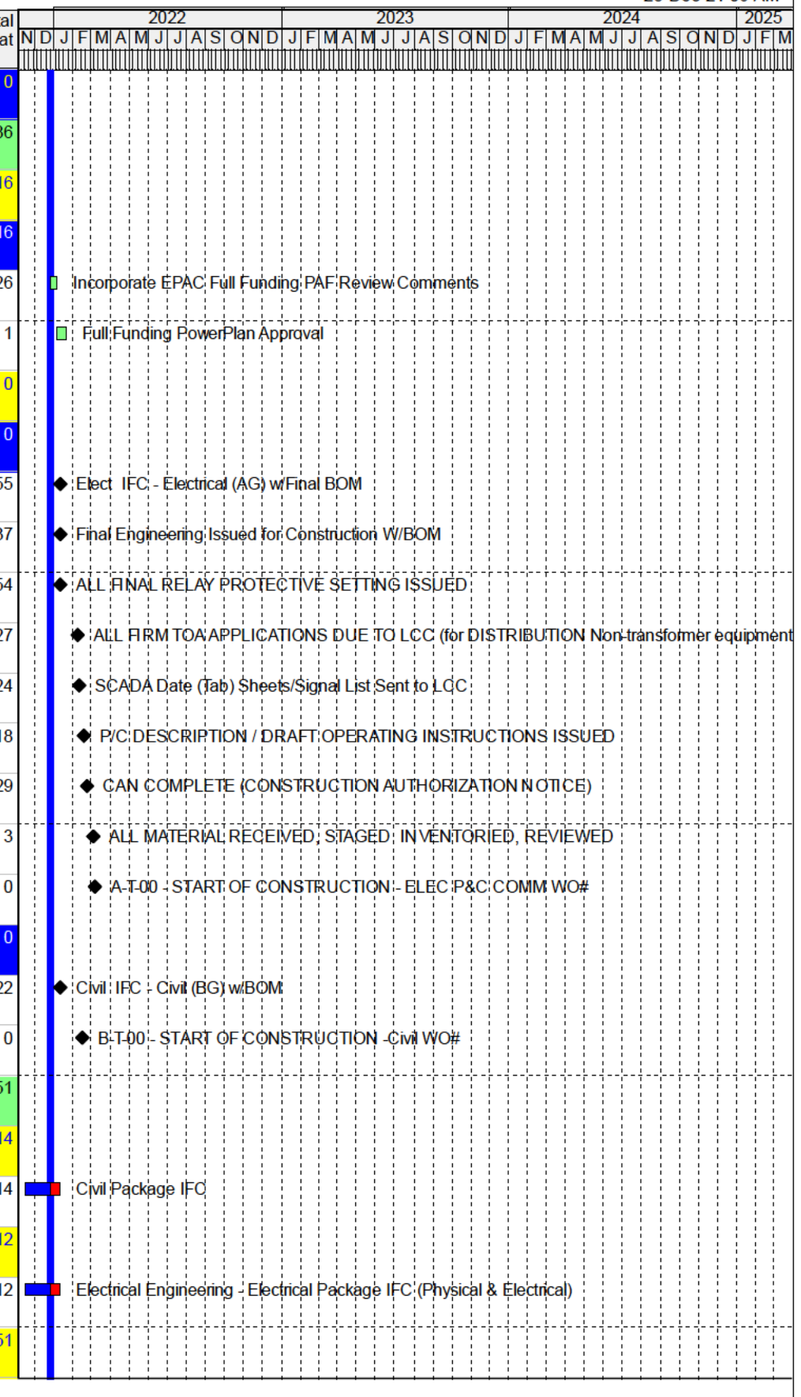
Potential UG Obstructions	$ 18.000
Severe Weather. Delays. OT	$ 24.000
Design development	$ 22.000

UNESCALATED LINE ITEM DOLLARS

Project Number CS00495
Date of Estimate 11/17/2021
Estimate revision # 00

Escalation Rate			E Rate $	53						TOTAL
			Prior		2021		22	1		
CSTXX-CONSTRUCTION	R		Mhrs	DOLLARS	Mhrs	DOLLARS	DOLLARS			DOLLARS
Electrical Construction	LT									
General Construction	LT									
SCADA / Automation	LT						$4,240			$4,240
Telecom - Field	LT									
Construction Reps (Internal)	LT						$1,272			$1,272
Support Switch/Tag	LT						$4,240			$4,240
Other (specify)	LT									
Other (specify)	LT									
Other (specify)	LT									
LT Total							$9,752			$9,752
Employee Expenses	AE	6%					$468			$468
Construction Purchased Material	AM	1%					$1,976			$1,976
Outside Construction Vendor	AO						$197,454			$197,454
Sales tax on Constr. Vendor										
Vehicles (now in Indirects section)	AV									
Inspection services (Outside Vendor)	AO									
Construction Rep (Outside vendor)	AO						$3,456			$3,456
Rents and Leases	BR									
CSTXX Subtotal							$213,125			$213,125
Escalation										
CSTXX Total							$213,125			$213,125
ENRXX-TG ENGINEERING/DESIGN										
Project Services/Drafting	LT					$1,272				$1,272
T- Line Engineering/Design	LT									
D- Street Engineering/Design	LT									
Civil Engineering/Design	LT					$1,272				$1,272
Substation (T) Engineering/Design	LT									
Substation (D) Engineering/Design	LT					$1,272				$1,272
Protection & Controls Engineering	LT					$1,908				$1,908
Survey Engineering	LT									
SCADA / Automation Engineering	LT									
Telecom Engineering	LT					$848				$848
Other - PP Actuals	LT			$30,663						$30,663
Other - Project Engineer	LT					$1,272				$1,272
LT Total				$30,663		$7,844				$38,507
Employee Expenses	AE	6%				$392				$392
Contractor Engineering - T-Lines	AO									
Contractor Engineering - D-Street	AO									
Contractor Engineering - T-Station	AO									
Contractor Engineering - D-Station	AO									
Contractor Engineering - P&C	AO									
Contractor Engineering - Survey	AO									
Contractor Engineering - SCADA / Automation	AO									
Contractor Engineering - Telecom	AO									
Contractor Engineering - Specify	AO									
Contractor Engineering - Specify	AO									
Contractor Engineering - Specify	AO									
Vehicles (now in Indirects section)	AV									
ENRXX Subtotal				$30,663		$8,236				$38,899
Escalation										
ENRXX Total				$30,663		$8,236				$38,899
LNDXX-TG LAND										
Real Estate	LT									
Employee Expenses	AE	6%								
Purchase Land	AM									
Vehicles (now in Indirects section)	AV									
Fees and Payments	BF									
LNDXX Subtotal										
Escalation										
LNDXX Total										
MATXX-TG MATERIAL										
Eversource	AM					$36,400				$36,400
Outside Services	AM									
Freight	AM									
Sales Tax Eversource/outside services	3.2%	3.2%				$1,500				$1,500
Other										
MATXX Subtotal						$40,900				$40,900
Escalation										
MATXX Total						$40,900				$40,900
PSMXX-PROJECT MANAGER & SUPPORT										
Project Management (PM)	LT									
Project Planning/Cost (IP)	LT									
Contracts/Purchasing (CIP)	LT									
System Planning	LT									
Environmental	LT									
SCG - Notification	LT					$5		$37		$42
Legal	LT									
Estimating	LT							$1,272		$1,272
Siting - Local Zoning	LT									
Asset Management	LT									
Other -	LT									
Other -	LT									
Other -	LT									
Other -	LT									
LT Total						$5		$1,309		$1,314
Employee Expenses	AE	6%						$66		$66
Project Support Vendor - PM	AO					$4,500		$1,500		$6,000
Project Support Vendor - IP	AO									
Project Support Vendor - CIP	AO									
Project Support Vendor - System Planning	AO									
Project Support Vendor - Environmental	AO									
Project Support Vendor - SCG - Notification	AO					$90		$690		$780
Project Support Vendor - Legal	AO									
Project Support Vendor - Estimating	AO									
Project Support Vendor - Siting - Local Zoning	AO									
Project Support Vendor - Asset Management	AO									
Project Support Vendor - Other	AO									
Project Support Vendor - Other	AO									
Project Support Vendor - Other	AO									
Project Support Vendor - Other	AO									
Vehicles (now in Indirects section)	AV									
Property or CWIP tax large proj. allowance	BR									
	BR									
Fees and Payments - Environmental	BF									
Fees and Payments - Siting	BF									
Fees and Payments - Other	BF									
PSMXX Subtotal						$4,595		$3,584		$8,179
Escalation										
PSMXX Total						$4,595		$3,584		$8,179
REMXX-TG REMOVAL										
Engineering/Design	LT									
Internal Construction	LT									
LT Total										
Employee Expenses	AE	15%								
Outside Services	AO									
Contractor Labor	AO							$4,530		$4,530
Vehicles (now in Indirects section)	AV									
Rents and Leases	BR									
REMXX Subtotal								$4,530		$4,530
Escalation										
REMXX Total								$4,530		$4,530
TSTXX-TG TEST										
Test / Field Engr. Labor (In House)	LT									
Lead Commissioning Engr. (LCE) (Internal)	LT									
Employee Expense	AE	10%								
Test / Field Engr. Labor (contractor)	AO							$93,600		$93,600
Lead Commissioning Engr. (LCE) (contactor)	AO							$54,060		$54,060
Vehicles (now in Indirects section)	AV									
TSTXX Subtotal								$147,660		$147,660
Escalation										
TSTXX Total								$147,660		$147,660
SUBTOTAL PROJECT DIRECT COST			-	$30,663		$83,731	2148	$368,889	2,326	$485,283
Risk										
Risk						$22,000		$42,000		$64,000
						$ -		$ -		
						$ -		$ -		
Risk Total						$22,000		$42,000		$64,000
TOTAL PROJECT DIRECT COST (w/risk)			-	$30,663		$78,731	2148	$410,889	2,326	$617,283
INDIRECTS										
Non-Productive Time Allocation (ZNP)	15.3%					$1,101		$1,995		$2,946
Payroll Benefits Allocation (ZPB) Incl NPT	44.0%							$4,937		$4,937
Gen SVC OO Overhead (ZBA) Incl NPT	75.0%					$6,773		$1,130		$7,903
E&S Allocations (ZSB,ZEL,ZES)	60.0%					$12,236		$224,456		$236,692
AS&E Allocations (ZAS)	1.3%					$824		$7,513		$8,437
Stores Expense Allocation (ZST)	8.0%					$3,152				$3,152
Lobby Stock										
MOEC (ZME)	6.0%					$3,811		$22,242		$25,953
Vehicles (ZVE)	38.0%					$2,196		$3,097		$5,295
Indirects Subtotal						$30,075		$265,040		$295,115
TOTAL PROJECT COST - Direct & Indirect (excl AFUDC)				$30,663		$108,806		$675,929		$912,398
AFUDC										
AFUDC (ZK)					4.01%	$2,010	4.01%	$5,729	0	$7,739
In Service Dollars										
Cumulative ISS						-		-		
AFUDC Subtotal						$2,010		$5,729		$7,739
TOTAL PROJECT COST - Baseline Budget				$30,663		$107,816		$681,658		$820,137
Contingency										
Contingency								$22,278		$22,278
Other			$	-	$	-	$	-		
Contingency SubTotal								$22,278		$22,278
TOTAL PROJECT COST - Approved Funding				$30,663		$107,816		$703,936		$842,414
Reimbursables / Customer Contribution										
Reimbursables / Customer Contribution (enter as negative)			$	-	$	-	$	-		

Activity Flag	Activity ID	Activity Name	At pletion	Start	Finish	Resources	Activity Schedule	Total Float
80089556 [redacted] DSCADA LTC Controls Upgrade (CS00495)			161	15-Nov-21 08 AM A	06-Jul-22 04 PM			0
80089556.01 INITIALIZATION AND SCOPE DEVELOPEMENT			47	27-Dec-21 08 AM	07-Mar-22 08 AM			86
80089556.01.09 Project Initiation			17	27-Dec-21 08 AM	20-Jan-22 04 PM			116
80089556.01.09.3 EPAC Full Funding			17	27-Dec-21 08 AM	20-Jan-22 04 PM			116
	PAFF2200	Incorporate EPAC Full Funding PAF Review Comments	7	27-Dec-21 08 AM	05-Jan-22 04 PM	[redacted]		126
PPA-FF	FF1010	Full Funding PowerPlan Approval	10	06-Jan-22 08 AM*	20-Jan-22 04 PM	Eversource Project		1
80089556.01.12 T-Minus Milestones			37	10-Jan-22 04 PM	07-Mar-22 08 AM			0
80089556.01.12.1 T-Minus Milestones "A"Electrical			37	10-Jan-22 04 PM	07-Mar-22 08 AM			0
AG-IFC	AT0805E	Elect IFC - Electrical (AG) w/Final BOM	0		10-Jan-22 04 PM			55
ENG-IFC	A3570	Final Engineering Issued for Construction W/BOM	0		10-Jan-22 04 PM			37
	AT0404	ALL FINAL RELAY PROTECTIVE SETTING ISSUED	0		11-Jan-22 04 PM			54
	AT0409	ALL FIRM TOA APPLICATIONS DUE TO LCC (for DISTRIBUTION Non-transformer equipment)	0		07-Feb-22 04 PM			27
	AT1201	SCADA Date (Tab) Sheets/Signal List Sent to LCC	0		10-Feb-22 04 PM			24
	AT1202	P/C DESCRIPTION / DRAFT OPERATING INSTRUCTIONS ISSUED	0		16-Feb-22 04 PM			18
	AT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)	0		21-Feb-22 04 PM*			-29
	AT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED	0		03-Mar-22 04 PM			3
SOC	AT00	A-T-00 - START OF CONSTRUCTION - ELEC P&C COMM WO#	0	07-Mar-22 08 AM*				0
80089556.01.12.2 T-Minus Milestones "B" Civil			34	10-Jan-22 04 PM	14-Feb-22 08 AM			0
BG-IFC	BT0805C	Civil IFC - Civil (BG) w/BOM	0		10-Jan-22 04 PM			-22
SOC	BT00	B-T-00 - START OF CONSTRUCTION -Civil WO#	0	14-Feb-22 08 AM*				0
80089556.05 ENGINEERING & DESIGN			64	15-Nov-21 08 AM A	16-Feb-22 04 PM			51
80089556.05.01 Civil Engineering			38	15-Nov-21 08 AM A	10-Jan-22 04 PM			-14
ES-IFC	DSSE-120	Civil Package IFC	38	15-Nov-21 08 AM A	10-Jan-22 04 PM			-14
80089556.05.02 Electrical Engineering			37	16-Nov-21 12 AM A	10-Jan-22 04 PM			-12
ES-IFC	DSSE-240	Electrical Engineering - Electrical Package IFC (Physical & Electrical)	37	16-Nov-21 12 AM A	10-Jan-22 04 PM			-12
80089556.05.04 P&C Engineering			36	27-Dec-21 08 AM	16-Feb-22 04 PM			51



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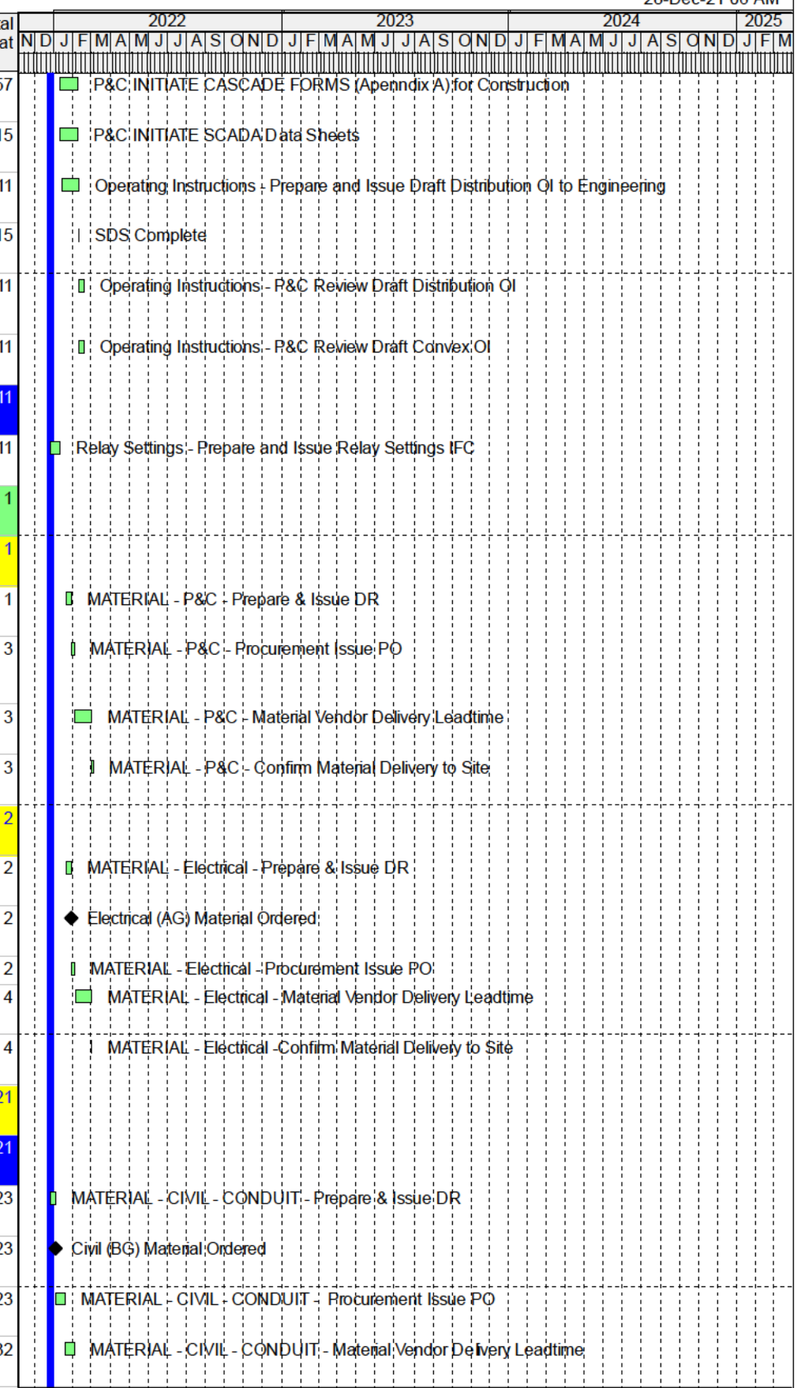
Activity Flag	Activity ID	Activity Name	At pletion	Start	Finish	Resources	Activity Schedule	Total Float
	DSSE-480	P&C INITIATE CASCADE FORMS (Apenndix A) for Construction	20	11-Jan-22 08 AM	08-Feb-22 04 PM			57
	DSSE-990	P&C INITIATE SCADA Data Sheets	20	11-Jan-22 08 AM	08-Feb-22 04 PM			15
	DSSE-450	Operating Instructions - Prepare and Issue Draft Distribution OI to Engineering	20	12-Jan-22 08 AM	09-Feb-22 04 PM			11
	DSSE-220	SDS Complete	2	09-Feb-22 08 AM	10-Feb-22 04 PM			15
	DSSE-470	Operating Instructions - P&C Review Draft Distribution OI	5	10-Feb-22 08 AM	16-Feb-22 04 PM			11
	DSSE-930	Operating Instructions - P&C Review Draft Convex OI	5	10-Feb-22 08 AM	16-Feb-22 04 PM			11
80089556.05.04.1 Relay Settings			11	27-Dec-21 08 AM	11-Jan-22 04 PM			11
ES-RSET	DSSE-440	Relay Settings - Prepare and Issue Relay Settings IFC	11	27-Dec-21 08 AM	11-Jan-22 04 PM			11
80089556.06 MATERIAL PROCUREMENT			46	27-Dec-21 08 AM	03-Mar-22 04 PM			1
80089556.06.01 MATERIAL FOR P&C			29	21-Jan-22 08 AM	03-Mar-22 04 PM			1
DR-RM	DSSE-510	MATERIAL - P&C - Prepare & Issue DR	5	21-Jan-22 08 AM	27-Jan-22 04 PM			1
	DSSE-980	MATERIAL - P&C - Procurement Issue PO	5	28-Jan-22 08 AM	01-Feb-22 04 PM	Purchasing Departmen Lubor		3
	DSSE-1000	MATERIAL - P&C - Material Vendor Delivery Leadtime	29	02-Feb-22 08 AM	02-Mar-22 04 PM			3
M-DELIV	DSSE-1010	MATERIAL - P&C - Confirm Material Delivery to Site	1	03-Mar-22 08 AM	03-Mar-22 04 PM			3
80089556.06.02 MATERIAL FOR ELECTRICAL			28	21-Jan-22 08 AM	02-Mar-22 04 PM			2
DR-RM	DSSE-520	MATERIAL - Electrical - Prepare & Issue DR	5	21-Jan-22 08 AM	27-Jan-22 04 PM			2
DR-AGMAT	DSSE-530	Electrical (AG) Material Ordered	0		27-Jan-22 04 PM			2
	DSSE-1020	MATERIAL - Electrical - Procurement Issue PO	5	28-Jan-22 08 AM	03-Feb-22 04 PM	Purchasin		2
	DSSE-1030	MATERIAL - Electrical - Material Vendor Delivery Leadtime	26	04-Feb-22 08 AM	01-Mar-22 04 PM			4
M-DELIV	DSSE-550	MATERIAL - Electrical -Confirm Material Delivery to Site	1	02-Mar-22 08 AM	02-Mar-22 04 PM			4
80089556.06.03 MATERIAL FOR CIVIL			26	27-Dec-21 08 AM	02-Feb-22 04 PM			21
80089556.06.03.02 MATERIAL FOR CIVIL - CONDUIT			26	27-Dec-21 08 AM	02-Feb-22 04 PM			21
DR-RM	DSSE-1140	MATERIAL - CIVIL - CONDUIT - Prepare & Issue DR	5	27-Dec-21 08 AM	03-Jan-22 04 PM			23
DR-BGMAT	DSSE-1170	Civil (BG) Material Ordered	0		03-Jan-22 04 PM			23
	DSSE-1150	MATERIAL - CIVIL - CONDUIT - Procurement Issue PO	10	04-Jan-22 08 AM	18-Jan-22 04 PM	Purchasing Departmen		23
	DSSE-1160	MATERIAL - CIVIL - CONDUIT - Material Vendor Delivery Leadtime	14	19-Jan-22 08 AM	01-Feb-22 04 PM			32



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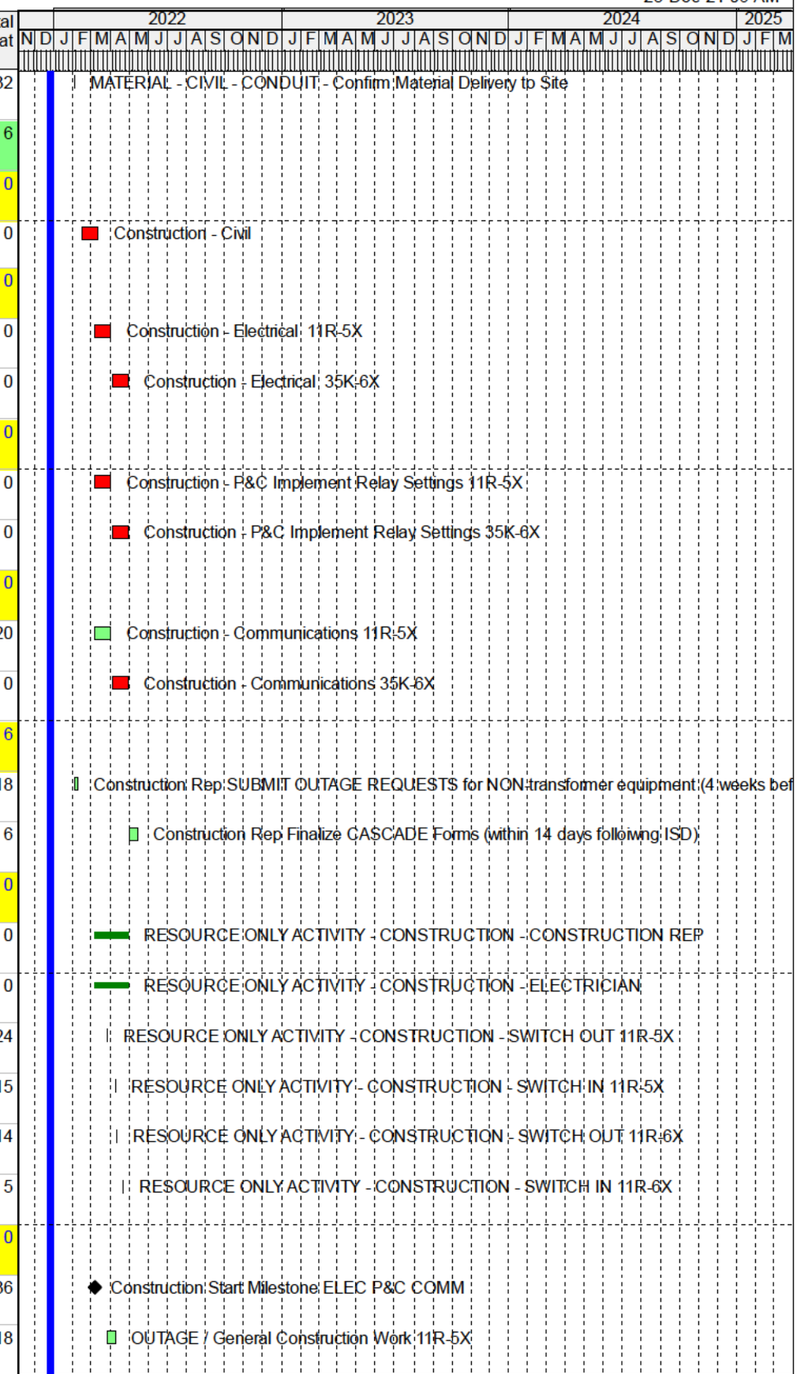
Activity Flag	Activity ID	Activity Name	At pletion	Start	Finish	Resources	Activity Schedule	Total Float
M-DELIV	DSSE-1130	MATERIAL - CIVIL - CONDUIT - Confirm Material Delivery to Site	1	02-Feb-22 08 AM	02-Feb-22 04 PM	[redacted]	[redacted]	32
80089556.07 CONSTRUCTION			73	01-Feb-22 08 AM	13-May-22 04 PM			6
80089556.07.01 CONSTRUCTION - CIVIL			19	14-Feb-22 08 AM	11-Mar-22 04 PM			0
	A1120	Construction - Civil	19	14-Feb-22 08 AM*	11-Mar-22 04 PM	Const Rep Field Sup -		0
80089556.07.02 CONSTRUCTION - ELECTRICAL			40	07-Mar-22 08 AM	29-Apr-22 04 PM			0
	A1130	Construction - Electrical [redacted]	20	07-Mar-22 08 AM*	01-Apr-22 04 PM	Const Rep Field Sup -		0
	A1135	Construction - Electrical	20	04-Apr-22 08 AM*	29-Apr-22 04 PM	Const Rep Field Sup -		0
80089556.07.03 CONSTRUCTION - P&C			40	07-Mar-22 08 AM	29-Apr-22 04 PM			0
	A1140	Construction - P&C Implement Relay Settings [redacted]	20	07-Mar-22 08 AM*	01-Apr-22 04 PM	Constructio Rep		0
	A1145	Construction - P&C Implement Relay Settings	20	04-Apr-22 08 AM*	29-Apr-22 04 PM	Constructio Rep		0
80089556.07.04 CONSTRUCTION - COMMUNICATIONS			40	07-Mar-22 08 AM	29-Apr-22 04 PM			0
	A1150	Construction - Communications [redacted]	20	07-Mar-22 08 AM	01-Apr-22 04 PM	Constructio Rep		20
	A1155	Construction - Communications	20	04-Apr-22 08 AM*	29-Apr-22 04 PM	Constructio Rep		0
80089556.07.92 CONSTRUCTION - CONST.REP TASKS			73	01-Feb-22 08 AM	13-May-22 04 PM			6
	A1250	Construction Rep SUBMIT OUTAGE REQUESTS for NON-transformer equipment (4 weeks before outage)	5	01-Feb-22 08 AM*	07-Feb-22 04 PM	Constructio Rep		18
	A1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD)	10	02-May-22 08 AM	13-May-22 04 PM	Constructio Rep		6
80089556.07.94 CONSTRUCTION RESOURCE TRACKING			40	07-Mar-22 08 AM	29-Apr-22 04 PM			0
	ConRep-S	RESOURCE ONLY ACTIVITY - CONSTRUCTION - CONSTRUCTION REP	40	07-Mar-22 08 AM	29-Apr-22 04 PM	Constructio Rep		0
	CONSTelec	RESOURCE ONLY ACTIVITY - CONSTRUCTION - ELECTRICIAN	40	07-Mar-22 08 AM	29-Apr-22 04 PM	Distribution - S/S		0
	A1070	RESOURCE ONLY ACTIVITY - CONSTRUCTION - SWITCH OUT [redacted]	1	28-Mar-22 08 AM*	28-Mar-22 04 PM	Distribution Switching		24
	A1080	RESOURCE ONLY ACTIVITY - CONSTRUCTION - SWITCH IN [redacted]	1	08-Apr-22 08 AM*	08-Apr-22 04 PM	Distribution Switching		15
	A1175	RESOURCE ONLY ACTIVITY - CONSTRUCTION - SWITCH OUT [redacted]	1	11-Apr-22 08 AM*	11-Apr-22 04 PM	Distribution Switching		14
	A1085	RESOURCE ONLY ACTIVITY - CONSTRUCTION - SWITCH IN [redacted]	1	22-Apr-22 08 AM*	22-Apr-22 04 PM	Distribution Switching		5
80089556.07.96 CONSTRUCTION OUTAGES			40	07-Mar-22 08 AM	29-Apr-22 04 PM			0
CRH	CSM	Construction Start Milestone ELEC P&C COMM	0	07-Mar-22 08 AM				36
OUT	TOA-Const 11R-5X	OUTAGE / General Construction Work 11R-5X	11	28-Mar-22 08 AM*	08-Apr-22 04 PM	Constructio Resources		18



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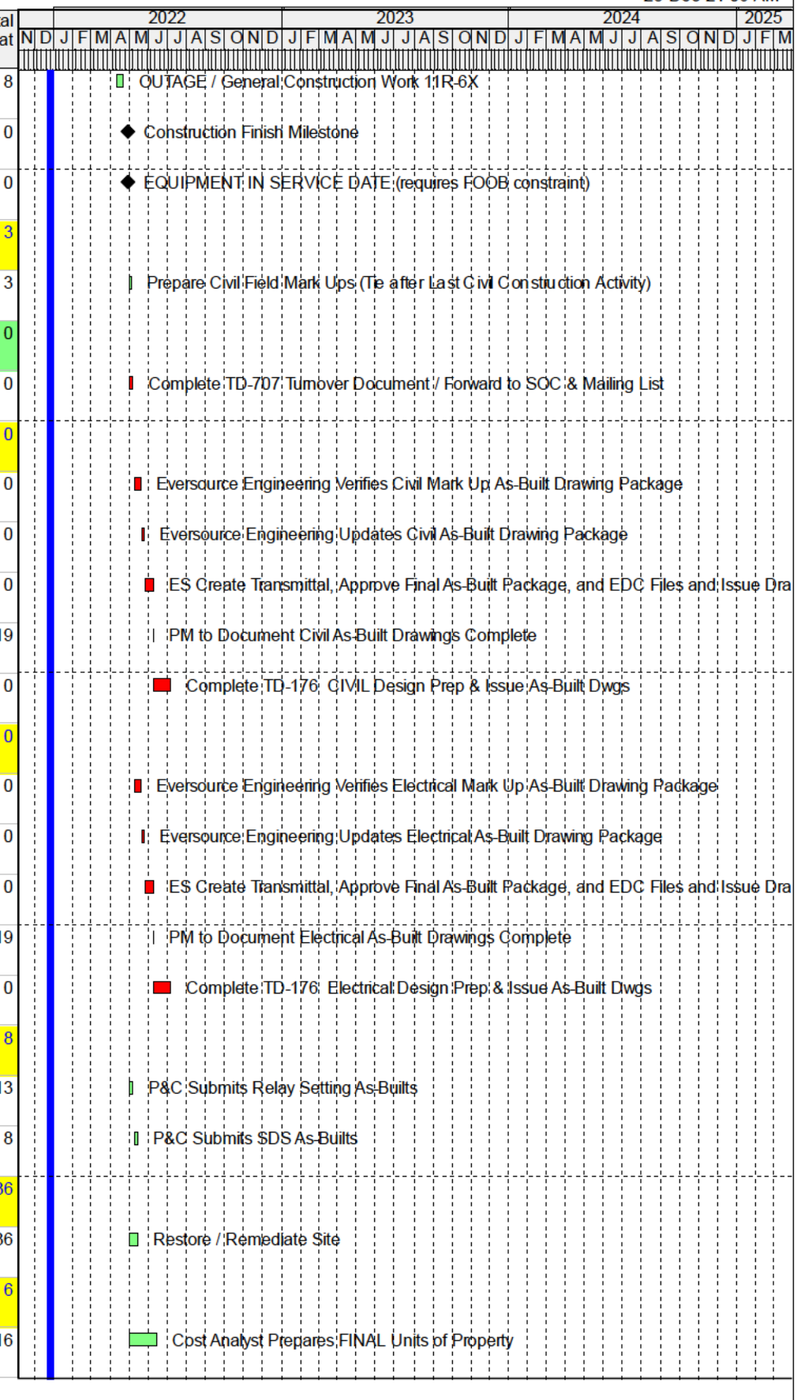
Activity Flag	Activity ID	Activity Name	At pletion	Start	Finish	Resources	Activity Schedule	Total Float
OUT	TOA-Const 11R-6X	OUTAGE / General Construction Work 11R-6X	11	11-Apr-22 08 AM*	21-Apr-22 04 PM	Construction Resources	[redacted]	8
	CFM	Construction Finish Milestone	0		29-Apr-22 04 PM			0
ISD	ISD	EQUIPMENT IN SERVICE DATE (requires FOOB constraint)	0		29-Apr-22 04 PM*			0
80089556.07.98 CONSTRUCTION CLOSEOUT			2	02-May-22 08 AM	03-May-22 04 PM			3
	DSSE-900	Prepare Civil Field Mark Ups (Tie after Last Civil Construction Activity)	2	02-May-22 08 AM	03-May-22 04 PM	Construction Resources		3
80089556.10 PROJECT CLOSE OUT			46	02-May-22 08 AM	06-Jul-22 04 PM			0
	DSSE-1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	5	02-May-22 08 AM	06-May-22 04 PM	Construction Rep		0
80089556.10.01 Civil As-Builts			41	09-May-22 08 AM	06-Jul-22 04 PM			0
	DSSE-860	Eversource Engineering Verifies Civil Mark Up As-Built Drawing Package	10	09-May-22 08 AM	20-May-22 04 PM			0
	DSSE-970	Eversource Engineering Updates Civil As-Built Drawing Package	3	23-May-22 08 AM	25-May-22 04 PM			0
ES-ASB	DSSE-870	ES Create Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	8	26-May-22 08 AM	07-Jun-22 04 PM			0
	DSSE-880	PM to Document Civil As-Built Drawings Complete	1	08-Jun-22 08 AM	08-Jun-22 04 PM			19
	DSSE-1120	Complete TD-176 CIVIL Design Prep & Issue As-Built Dwgs	20	08-Jun-22 08 AM	06-Jul-22 04 PM			0
80089556.10.02 Electrical As-Builts			41	09-May-22 08 AM	06-Jul-22 04 PM			0
	DSSE-820	Eversource Engineering Verifies Electrical Mark Up As-Built Drawing Package	10	09-May-22 08 AM	20-May-22 04 PM			0
	DSSE-940	Eversource Engineering Updates Electrical As-Built Drawing Package	3	23-May-22 08 AM	25-May-22 04 PM			0
ES-ASB	DSSE-830	ES Create Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	8	26-May-22 08 AM	07-Jun-22 04 PM			0
	DSSE-840	PM to Document Electrical As-Built Drawings Complete	1	08-Jun-22 08 AM	08-Jun-22 04 PM			19
	DSSE-1110	Complete TD-176 Electrical Design Prep & Issue As-Built Dwgs	20	08-Jun-22 08 AM	06-Jul-22 04 PM			0
80089556.10.03 P&C As-Builts			10	02-May-22 08 AM	13-May-22 04 PM			8
	DSSE-960	P&C Submits Relay Setting As-Builts	5	02-May-22 08 AM	06-May-22 04 PM			13
	DSSE-950	P&C Submits SDS As-Builts	5	09-May-22 08 AM	13-May-22 04 PM			8
80089556.10.05 SITE RESTORATION CLOSEOUT			10	02-May-22 08 AM	13-May-22 04 PM			36
	A1110	Restore / Remediate Site	10	02-May-22 08 AM	13-May-22 04 PM	CT/WMA.C Contractor-(		36
80089556.10.06 MATERIAL, EQUIPMENT, COST, AND ASSET MANAGEMENT CLOSEOUT			40	02-May-22 08 AM	27-Jun-22 04 PM			6
	A1020	Cost Analyst Prepares FINAL Units of Property	30	02-May-22 08 AM	13-Jun-22 04 PM	CT- Cost Analyst		16



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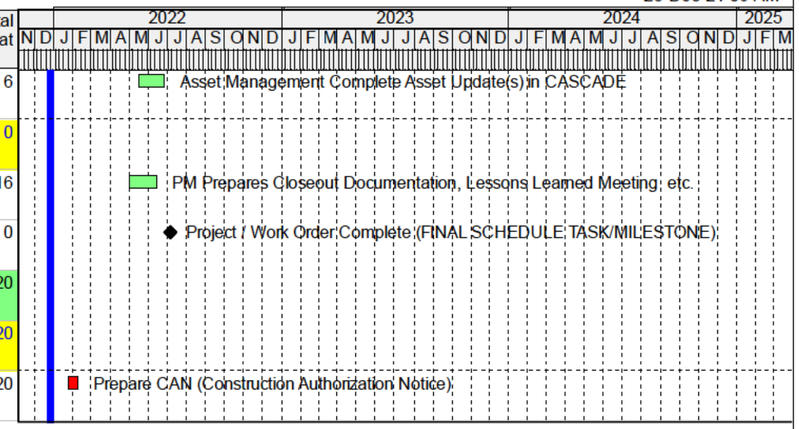
Activity Flag	Activity ID	Activity Name	At pletion	Start	Finish	Resources	Activity Schedule	Total Float
	A1030	Asset Management Complete Asset Update(s) in CASCADE	30	16-May-22 08 AM	27-Jun-22 04 PM	[redacted]	[redacted]	6
80089556.10.07 PROJECT MANAGEMENT CLOSEOUT			46	02-May-22 08 AM	06-Jul-22 04 PM			0
	A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30	02-May-22 08 AM	13-Jun-22 04 PM			16
	FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0		06-Jul-22 04 PM			0
80089556.13 OVERHEAD / INDIRECTS			11	24-Jan-22 08 AM	07-Feb-22 04 PM			-20
80089556.13.01 PROJECT MANAGEMENT			11	24-Jan-22 08 AM	07-Feb-22 04 PM			-20
	A1170	Prepare CAN (Construction Authorization Notice)	11	24-Jan-22 08 AM*	07-Feb-22 04 PM			-20



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Constructability Review Form: **Substation**

Project Title: [redacted]	☐	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00495	**Project Constructability Phase:**	
Date(s) of Constructability Review: 07/14/2021	☐ Conceptual Engineering Design	
Click to enter a date	☐ Preliminary Engineering Design	
	☒ Detailed Engineering Design	
Project Scope Statement:		
Install DSCADA equipment for the [redacted]		

Department Review/Walkdown Attendees*:

Required [X]	Attended [X]	Department	Name	Required [X]	Attended [X]	Department	
☐	☒	Project Management	[redacted]	☐	☒	S/S Engineering	[redacted]
☐	☐	Asset Management	[redacted]	☐	☐	P&C Engineering	
☐	☒	Constr. Management	[redacted]	☐	☒	Civil Engineering	
☐	☐	S/S Technical / LCE		☐	☐	Telecom	
☐	☒	S/S Operations**	[redacted]	☐	☐	Environmental	
☐	☐	Field Engineering	[redacted]	☐	☐	Real Estate	
☐	☐	Line Engineering		☐	☐	T&D ROW	
☐	☐	Vegetation Management		☐	☐	Survey Engineering	
☐	☐	Siting		☐	☐	Cost Estimating	
☐	☐	Safety		☐	☐	Outreach (SCS)	
☐	☒	SCADA	[redacted]	☐	☐	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] _____*7/14/21*_____*Name / Signature*

Date

EVERSOURCE

Constructability Review Form: **Substation**

Documents available for use prior to Constructability Review					
[X]	Document	[X]	Document	[X]	Document
☐	Initial Scope -Birdseye site plan -General Arrangement	☐	Preliminary Drawings -Civil Site Drawing -Electrical Drawing -Section Drawings	☒	Prints in hand for marking up -Panel Front/Read View -Control Enclosure Layout -Floor / Wall Plans
☐	Detailed Scope Document	☒	Proposed Schedule	☐	Construction Sequence/Timeline
☐	Previous Notes / Comments / Observations	☒	Major Material / Equipment List	☐	Replace / Reuse of equipment

Action Items and Resolutions:

Item No.	Const. Review Action Item/Concern	Design Resolution/Mitigation:
1		
2		
3		
4		
5		

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
A	**Engineering & Asset Management**		
1	**Scope of Work** - Is scope adequately developed and sufficiently detailed for intended deliverable? - Any complimentary projects or other adjacent obsolete equipment for inclusion? - Any overlapping projects that could impact work/outages? - Consider Physical Installation, P&C Scope, Civil Scope, Engineering studies, Design standard adherence - Any remote station impacts? - Engineering Estimates for Design and Technical Support? (EE and EOC) Total Project	☐	Scope adequate

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
2	**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?		Materials ordered
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..		Adequate space for Dscada addition
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	
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?	☐	N/A
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	

EVERSOURCE

Constructability Review Form: **Substation**

	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.)		Cable route shown on issued drawings adequate for intended use
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	☐	N/A
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?	☐	N/A
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?	☐	
3	**Identify/Consider Required Depts for Construction?** -Who is constructor: Internal vs External Resources -S/S Ops, GO, Test, Field Engineering, etc	☐	N/A

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
	-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?	☐	No issues
5	Unique Equipment Considerations: Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser		N/A

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
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	☐	Outages determined by construction
7	**Equipment Testing & Acceptance** -Grounding plans / Resources? Will we need grounds hung? -Hi-pot testing and where will the equipment be set up?	☐	N/A
8	Need for mobile generator and where connected (if needed)	☐	N/A
9	Need for mobile battery and where connected (if needed)	☐	N/A
10	OT work required or Notable Permit Conditions (special hours)?	☐	N/A
11	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☐	N/A

EVERSOURCE

Constructability Review Form: **Substation**

	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	☐	N/R
2	**Desktop investigation and EAD Review** -Required Permits -Stormwater Considerations -Dewatering requirements -Wetland and buffer review	☐	N/A
3	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	N/A
4	Transformer Spill Containment Recommended?	☐	N/A
5	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☐	N/A
6	Environmental oversight considerations? (Inspection type/Interval)	☐	N/A
7	Environmental mitigations - Any matting or seasonal needs? Review D&M Plan with CR.	☐	N/A
D	**Siting, S&CS, and T&D Real Estate**		
1	**Any regulatory concerns or approvals needed?** - Consider scope/design alterations to mitigate concerns - Consider Visual screening considerations (feasibility or location) -Zoning Relief and Permits required	☐	N/A
2	**Neighbor/Abutter impacts:** - Any noise, visual impacts, or sensitive abutters - Any changes to lighting or additional lighting needed?	☐	N/A
3	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☐	N/A
4	Installation within Eversource Rights - Is Rights and Restrictions Review required?	☐	N/A
5	Expanding Footprint / New Buildings or future Expansion Plans?	☐	N/A
6	Proposed Equipment on same property? - Any Encroachments	☐	N/A

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☐	N/A
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☐	N/A
3	Panel fronts conform to drawings	☐	N/A
4	Access to bring new panels into control enclosure	☐	N/A
5	Nameplate list and location of nameplates	☐	N/A
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	☐	N/A
7	Temporary protection, relays, control cable needed? How long will they be required?	☐	N/A
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
3	Review current or proposed Telecom equipment power connections and validate with P&C any need for system 1 and system 2 separation.	☐	N/A
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	☐	N/A
5	Review and list any remote station impacts/updates	☐	N/A
6	Confirm whether correct interface equipment is available (i.e.) for fiber termination or multiplexor termination	☐	N/A
7	Confirm whether existing communications cabinets are enough to support additional telecommunications equipment installed	☐	N/A

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
8	Review space for any required additional communications cabinets which may be required to support additional telecommunications equipment installed	☐	Space for additional equipment in cabinet
9	Review third party Telecommunications at substation and confirm whether additional capacity or Ground Potential Rise protection is required	☐	N/A

Photos

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



EVERSOURCE

Constructability Review Form: **Substation**

[redacted]



[redacted]

EVERSOURCE

Operations Program Level Project Authorization Form

Approved at March 17, 2021 SDC

Link to Meeting Minutes

Date Prepared: 05/11/2021	**Program Title**: DSCADA LTC Receivers Program Upgrades
Company: Eversource CT	**Program Number:** CS00407
Organization: Asset Management	**Class(es) of Plant:** D SS
Project Initiator: [redacted]	**Project Category:** Stations - SCADA
Project Manager: [redacted]	**Project Type:** Program
Project Sponsor: [redacted]	**Project Purpose:** Replace Obsolete Radio System
Estimated in service date: Q4 2030	**If Transmission Project: PTF/Non-PTF? N/A**
Eng. / Constr. Resources Budgeted? Yes	**Capital Investment Part of Original Operating Plan?** Yes
Authorization Type: Program Approval with Initial Funding	**O&M Expenses Part of the Original Operating Plan?** N/A
Initial Funding Request: $250K	**Estimated Program value (CT):** $45M

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This Initial Funding Request of $250K is to establish a program to install [redacted]. Note that the $250K initial funding will cover through preliminary design, constructability review, full detailed schedules, estimate development and program release development/approval.

[redacted]

[redacted]

Background details:

$8.5M in total prior costs were charged under the original 2015 CS00090 general one-time approval program through 2020. Sixty-six (66) workorders remain open or in service in Power Plan™. Eighteen (18) of the original work orders were completed for a total direct cost of $4.5M. The total direct cost budget approved for CS00090 was $5.808M, so total direct costs had not exceeded the +/- 10% limit of the APS-1 procedure. As construction, system operations control, and regulatory scope requirements grew, costs per unit increased substantially. Therefore, it was determined that the remainder of the work would be completed as a new program with release documentation to better provide comparable data for each remaining station's scope for improved control and tracking. Accordingly, units / stations with completed construction on the previous CS00090 will remain on that project.

The original program's scope creep was primarily the result of SOC requirements and expectations for voltage tap changer control and position indication. As originally proposed, the scope for the program was primarily for relay and DSCADA connectivity to abandon the obsolete and failing radio control system. The estimate did not account for these additional SOC requirements. CS00090 program documentation is attached for reference.

Transitioning to a DSCADA LTC Automation program with subsequently funded project releases mitigates the need for a high dollar supplemental request to the original CS00090 program. The transitioning moved remaining work to new Program CS00407 for the primary purpose of tracking specific station costs of a release based on redefined detailed scope from an Engineering Checklist. The checklist that follows in the "Project Scope" section defines all possible scope (worst case) that could be required for a station LTC transformer. Release estimates going forward will be established against what most remaining transformers will require based on a revised/updated unitized cost. Extra scope (e.g. conduit, and/or controllers) will follow a pre-established tiered cost range/benchmark developed from current CS00407 Program Substation Engineering and Design's Decision-Making Estimates that follow.

Planned Releases

Upon approval of this Initial Funding, three releases are planned for three substations with a total of nine transformers, [redacted] CS00433, [redacted] Additionally, all planned releases will be coordinated with other programs and work conflicts (where possible) that might arise in the selected substations. Coordination with other station activities not currently identified entailing switching, repairs etc. will be considered when identifying and planning subsequent releases.

Project Costs Summary

Estimates include man-days for outsourced Lead Commissioning Engineer (LCE), and Construction Representative. Material estimates, labor estimates, and vendor quotes are based on recently completed work in 2020. All new equipment shall be installed within the confines of the existing fenced stations. Estimate for an individual substation will be developed during initial funding based on existing infrastructure at a substation. For example : the type of tap changer control, ability to reuse existing conduits to pull fiber, and the capability to use existing communication device to communicate with new device will all be identified to improve the accuracy of the estimate and control costs going forward.

The LTC DSCADA upgrade for each substation / transformer location is expected to follow one of three possible cost scenarios. Accordingly, the cost for each scenario will vary depending on the actual infrastructure and equipment condition. The funding provided by this Initial PAF will facilitate work scope definition at each substation. Some may need conduit installation; some may simply only need wiring and some a new tap changer control and / or combination of this items. All will require testing and commissioning. As a result of these scenarios, there are three (DME) estimates that reflect the different costs in cost ascending value:

1. LTC control upgrade only, existing control & conduit (least cost)
2. LTC control upgrade, new conduit, existing control
3. LTC Control upgrade, new control & conduit (most cost)

Table -1

Cost of D-SCADA LTC Project Scenarios

Description	1. Upgrade Only – existing Control & Conduit	2. Upgrade & Conduit – existing Control	3. Upgrade, New Control & Conduit
ROW / Easements / Land purchases			
Environmental Approvals / Permits			
Outreach	$1,900	$2,200	$3,200
Siting Approvals / Permits			
Engineering / Design	$10,400	$12,600	$17,600
Materials (Eversource purchased)	$18,400	$18,600	$26,200
Construction (incl. matl's by contractors)	$69,800	$90,900	$126,100
Testing / Commissioning	$61,300	$61,300	$94,200
PMT Project Mgmt Team	$10,500	$10,500	$10,500
Removals	$2,300	$2,300	$2,300
Other			
Risks	$63,200	$63,200	$71,000
Project Directs Total w/Risks	**$237,800**	**$261,600**	**$351,100**
Indirects/Overhead	$117,200	$134,000	$188,400
AFUDC	$9,600	$10,700	$14,600
Project Total - Baseline Budget	**$364,600**	**$406,300**	**$554,100**
Contingency			
Project Total - Funding Approval Level	**$364,600**	**$406,300**	**$554,100**
Reimbursables/Customer Contribution	**Not applicable**	**Not applicable**	**Not applicable**
Project Total (less reimbursables)	**$364,600**	**$406,300**	**$554,100**

Technical Justification:

Project Need Statement

[redacted]

Project Objectives

[redacted]

Project Scope

[redacted]

[redacted]

[redacted]

Background / Justification

Eversource CT failed the Spring 2014 ISO mandated voltage reduction test due to the poor

[redacted]

[redacted]

Business Process and / or Technical Improvements:

As the future of the grid evolves, remote voltage control will become critical to meet the requirements for Distributed Generation systems and provide energy savings. In addition to the ability to remotely control voltage at the LTCs, it is anticipated that remote control of the distribution capacitors and regulators will become necessary in the future (not part of this project). Adding this functionality to the LTCs as part of this DSCADA project is the most cost-effective manner for this work to be done.

Alternatives Considered

Eversource evaluated the following three alternatives:

1. [redacted]

   Cost estimate $554,100 (planning grade)

2. [redacted]

3. [redacted]

Project Schedule

All project releases in the program will have station specific P6 schedules. The following program schedule lists milestones leading to the start of construction.

Milestone/Phase Name	Estimated Date
SDC Meeting – Operations Program Level Approval with Initial Funding	3/17/2021
Revised with Comments – Operations Program Level Approval with Initial Funding	5/11/2021
SDC / EPAC Meeting Program Approval (email)	5/11/2021
Program Construction Start	Q3 2021
Program Construction Completion	Q4 2030

Due to potential financial and man-hour restrictions, this project will spread 99 LTC transformers over ten years for construction from 2021 – 2030. Engineering and material purchase will be done annually. Each transformer LTC upgrade on average may cost approximately $450K per unit. Justification for the length of this proposed 10-year program is cost. The program's duration can be adjusted if it is determined that the cost per unit is acceptable, and an increased investment in the program over other system needs is justified.

Planned LTC Upgrade Releases for 2021

Substation Name	Project Number	LTC Control Count	Equip Position
[redacted]			
TOTAL UNITS		9	

EVERSOURCE

Planned LTC Releases for 2022

Substation Name	Project Number	LTC Control	Equip Position
[redacted]			
TOTAL UNITS		13	

Planned LTC Releases for 2023

Substation Name	Project Number	LTC Control	Equip Position
[redacted]			
TOTAL UNITS		8	

Planned Number of LTC Releases (Unspecified Stations) for Years 2024 – 2030

Engineer and Upgrade LTC	Estimated In Service Date
10 Transformers	12/31/2024
10 Transformers	12/31/2025
10 Transformers	12/31/2026
10 Transformers	12/31/2027
10 Transformers	12/31/2028
10 Transformers	12/31/2029
9 Transformers	12/31/2030
69 Transformers	TOTAL UNITS

Regulatory Approvals

No advance regulatory approval is required for this project.

Risks and Risk Mitigation Plans

[redacted]

Contingency

None at the Program level.

References

ISO-NE Operating Procedure No. 13 – Standards for Voltage Reduction and Load Shedding Capability.

Attachments

Figure1
CONVEX LMS System



ESTIMATE SUMARY

Project Title: EVERSOURCE CT - DSCADA LTC CONTROLS UPGRADE
Proiect Mar/Lead:
Project Number:CS00407
WO & Task #:
Est. Revision #
Estimate Type - Station work

Estimate By: [redacted]
Date of Estimate: 02/09/2021

ISD:12/31/2021

Estimate #

Template Revision # 01.53

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026
1	ROW / Easements / Land purchases										
2	Environmental Approvals / Permits										
3	Outreach	$1,900	0.8%	0.5%		$1,900					
4	Siting Approvals / Permits										
5	Engineering / Design	$10,400	4.4%	2.9%		$10,400					
6	Materials (Eversource purchased)	$18,400	7.7%	5.0%		$18,400					
7	Construction (incl matl's by	$69,800	29.4%	19.1%		$69,800					
8	Testing / Commissioning	$61,300	25.8%	16.8%		$61,300					
9	PMT Project Mgmt Team	$10,500	4.4%	2.9%		$10,500					
10	Removals	$2,300	1.0%	0.6%		$2,300					
11	Other										
12	Risks	$63,200	26.6%	17.3%		$63,200					
	Project Directs Total w/Risks	**$237,800**	100.0%	65.2%		**$237,800**					
13	Indirects/Overhead	$117,200		32.1%		$117,200					
14	AFUDC	$9,600		2.6%		$9,600					
	Project Total - Baseline Budget	**$364,600**		100.0%		**$364,600**					
15	Contingency										
	Project Total - Funding Approval Level	**$364,600**		100.0%		**$364,600**					
16	Reimbursables/Customer Contribution										
	Project Total (less reimbursables)	**$364,600**				**$364,600**					
	Amount of Escalation included above										
6	Total materials - Eversource	$18,400				$18,400					
	Total materials - Contractor	$5,600				$5,600					
	Total materials	$24,000				$24,000					
	NOTE: Risk / Contingency is 21% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)										

Estimate Range	**-25%**	-	**25%**	
	$273,000	-	**$456,000**	

COMMENTS:

[redacted]

Assumptions/Clarifications:
Indirect rates based on: 11 - CT . Station work

Major material
1. One (1) CABINET, ENCLOSURE, LTC DSCADA, AL,24 IN X 18 IN X 14 IN, ANNUNCIATOR
2. One (1) MONITOR, LTC Tap position indicator device
3. 43AMR 3 position switch ("AUTO/MAN/REMOTE")

Notes:
1. Test manhours based on test contractor quote per LTC/transformer
2. Electrical construction manhours based on electrical contractor quote per LTC/transformer
3. Estimate assumes existing conduits can be used to install crush proof fiber between the transformer and the control house or switchgear. An estimated cost of $1,322 per ft to install conduit between transformer and control house or switchgear should be added to the estimate if required
4. Material quote based on previous projects

RISKS

Severe Weather, Delays, OT	$	13.200
Communication System Upgrade	$	50.000

ESTIMATE SUMARY

Project Title: EVERSOURCE CT - DSCADA LTC CONTROLS UPGRADE
Proiect Mar/Lead:
Project Number:CS00407
WO & Task #:
Est. Revision #
Estimate Type - Station work

Estimate By: [redacted]
Date of Estimate: 02/09/2021
ISD:12/31/2021
Estimate #

Template Revision # 01.53

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026
1	ROW / Easements / Land purchases										
2	Environmental Approvals / Permits										
3	Outreach	$2,200	0.8%	0.5%		$2,200					
4	Siting Approvals / Permits										
5	Engineering / Design	$12,600	4.8%	3.1%		$12,600					
6	Materials (Eversource purchased)	$18,600	7.1%	4.6%		$18,600					
7	Construction (incl matl's by	$90,900	34.7%	22.4%		$90,900					
8	Testing / Commissioning	$61,300	23.4%	15.1%		$61,300					
9	PMT Project Mgmt Team	$10,500	4.0%	2.6%		$10,500					
10	Removals	$2,300	0.9%	0.6%		$2,300					
11	Other										
12	Risks	$63,200	24.2%	15.6%		$63,200					
	Project Directs Total w/Risks	**$261,600**	100.0%	64.4%		**$261,600**					
13	Indirects/Overhead	$134,000		33.0%		$134,000					
14	AFUDC	$10,700		2.6%		$10,700					
	Project Total - Baseline Budget	**$406,300**		100.0%		**$406,300**					
15	Contingency										
	Project Total - Funding Approval Level	**$406,300**		100.0%		**$406,300**					
16	Reimbursables/Customer Contribution										
	Project Total (less reimbursables)	**$406,300**				**$406,300**					
	Amount of Escalation included above										
6	Total materials - Eversource	$18,600				$18,600					
	Total materials - Contractor	$7,800				$7,800					
	Total materials	$26,400				$26,400					
	NOTE: Risk / Contingency is 18.4% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)										

Estimate Range	**-25%**	-	**25%**	
	$305,000	-	**$508,000**	

COMMENTS:

Project Scope:

[redacted]

Assumptions/Clarifications:
Indirect rates based on: 11 - CT . Station work

Major material
1. One (1) CABINET, ENCLOSURE, LTC DSCADA, AL,24 IN X 18 IN X 14 IN, ANNUNCIATOR
2. One (1) MONITOR, LTC Tap position indicator device
3. 43AMR 3 position switch ("AUTO/MAN/REMOTE")

Notes:
1. Test manhours based on test contractor quote per LTC/transformer
2. Electrical construction manhours based on electrical contractor quote per LTC/transformer
3. Estimate assumes existing conduits can be used to install crush proof fiber between the transformer and the control house or switchgear. An estimated cost of $1,322 per ft to install conduit between transformer and control house or switchgear should be added to the estimate if required
4. Material quote based on previous projects

RISKS

Severe Weather, Delays, OT	$	13.200
Communication System Upgrade	$	50.000

ESTIMATE SUMMARY

Project Title: EVERSOURCE CT - DSCADA LTC CONTROLS UPGRADE
Project Mgr/Lead:
Project Number:CS00407
WO & Task #:
Est. Revision #
Estimate Type - Station work

Estimate By: [redacted]
Date of Estimate: 02/09/2021
ISD:12/31/2021
Estimate #

Template Revision # 01.53

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026
1	ROW / Easements / Land purchases										
2	Environmental Approvals / Permits										
3	Outreach	$3,200	0.9%	0.6%		$3,200					
4	Siting Approvals / Permits										
5	Engineering / Design	$17,600	5.0%	3.2%		$17,600					
6	Materials (Eversource purchased)	$26,200	7.5%	4.7%		$26,200					
7	Construction (incl matl's by	$126,100	35.9%	22.8%		$126,100					
8	Testing / Commissioning	$94,200	26.8%	17.0%		$94,200					
9	PMT Project Mgmt Team	$10,500	3.0%	1.9%		$10,500					
10	Removals	$2,300	0.7%	0.4%		$2,300					
11	Other										
12	Risks	$71,000	20.2%	12.8%		$71,000					
	Project Directs Total w/Risks	**$351,100**	100.0%	63.4%		**$351,100**					
13	Indirects/Overhead	$188,400		34.0%		$188,400					
14	AFUDC	$14,600		2.6%		$14,600					
	Project Total - Baseline Budget	**$554,100**		100.0%		**$554,100**					
15	Contingency										
	Project Total - Funding Approval Level	**$554,100**		100.0%		**$554,100**					
16	Reimbursables/Customer Contribution										
	Project Total (less reimbursables)	**$554,100**				**$554,100**					

	Amount of Escalation included above		
6	Total materials - Eversource	$26,200	$26,200
	Total materials - Contractor	$9,500	$9,500
	Total materials	$35,700	$35,700
	NOTE: Risk / Contingency is 14.7% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)		

Estimate Range	**-25%**	-	**25%**
	$416,000	-	**$693,000**

COMMENTS:

[redacted]

Indirect rates based on: 11 - CT . Station work

Major material

1. One (1) CABINET, ENCLOSURE, LTC DSCADA, AL,24 IN X 18 IN X 14 IN, ANNUNCIATOR
2. One (1) MONITOR, LTC Tap position indicator device
3. One (1) Beckwith M-2001D Digital Tapchanger Control and adapter panel
4. 43AMR 3 position switch ("AUTO/MAN/REMOTE")

Notes:

1. Test manhours based on test contractor quote per LTC/transformer
2. Electrical construction manhours based on electrical contractor quote per LTC/transformer
3. Civil manhours based on civil contractor quote to excavate 100 ft between transformer and control house or switchgear
4. Material quote based on previous projects

RISKS

Severe Weather, Delays, OT	$	21,000
Communication System Upgrade	$	50,000

Estimate Review Checklist

Type Project to be reviewed: Replace obsolete Radio Controlled sytem on the Transformer. Substation work no conduit, no controls alternative 1

Job Order: CS00407

Requestor: [redacted]

Work Order:

Date of Est: 2/9/21

Est#: Review Number C-21-136

Revsion of Est: 0

Job Description: Replace obsolete Radio controlled equipment.

Date of Review: 3/4/21

Estimator: [redacted]

Level of Estimate: Planning

Substation type project	Recommended Risk
Bus, Switch, Insulator, Misc Eqt Upgrades	Planning 7-12%

OH Project	Underground Project

Level Of Review	Purpose of Estimate
Full Review	Planning Study

Items Checked

Indirect Rates Correct? ☐ Yes ☑ No
Minor increases in some rates in new template.

Manpower/Mandays sufficient for project? ☑ Yes ☐ No
If No, explain:

AFUDC rates are current and correctly applied? ☐ Yes ☑ No
Minor changes in AFUDC rate on new template.

Scope deliverables match expectations for est. class? ☑ Yes ☐ No
If No, explain:

PM Support sufficient for proj? ☑ Yes ☐ No
If No System planning or scheduling required.

Milestones and schedule ISD match scope? ☐ Yes ☑ No
Milestones not completed.

Prior spending accounted for? ☐ Yes ☑ No
No priors reported to date.

Escalation allocated correctly across project time frame? ☐ Yes ☑ No
No escalation included project program will be for next ten years and estimate is for work done this year only.

Contingency and Risk in line with est. type? ☐ Yes ☑ No
No contingrency applied.

Construction Rep and LCE sufficient for project? ☑ Yes ☐ No
If No, explain:

Recommendations

Check AFUDC rate minor drop in CT D rate.

Check indirect rates to see if adjustment would increase accuracy.

Add Project management planning and system scheduling.

Adjust risk and contingency. Risk is at 17.3% of total change by moving 5.3% to Contingency and adjusting risk to 12%

Estimate Review Checklist

Type Project to be reviewed: Replace obsolete Radio Controlled sytem on the Transformer. Substation work new conduit, no controls alternative 2

Job Order: CS00407

Requestor: [redacted]

Work Order:

Date of Est: 2/9/21

Est#: Review Number C-21-136

Revsion of Est: 0

Job Description: Replace obsolete Radio controlled equipment.

Date of Review: 3/4/21

Estimator: [redacted]

Level of Estimate: Planning

Substation type project	Recommended Risk
Bus, Switch, Insulator, Misc Eqt Upgrades	Planning 7-12%

OH Project	Underground Project

Level Of Review	Purpose of Estimate
Full Review	Planning Study

Items Checked

Indirect Rates Correct? ☐ Yes ☑ No
Minor increases in some rates in new template.

Manpower/Mandays sufficient for project? ☑ Yes ☐ No
If No, explain:

AFUDC rates are current and correctly applied? ☐ Yes ☑ No
Minor changes in AFUDC rate on new template.

Scope deliverables match expectations for est. class? ☑ Yes ☐ No
If No, explain:

PM Support sufficient for proj? ☑ Yes ☐ No
If No System planning or scheduling required.

Milestones and schedule ISD match scope? ☐ Yes ☑ No
Milestones not completed.

Prior spending accounted for? ☐ Yes ☑ No
No priors reported to date.

Escalation allocated correctly across project time frame? ☐ Yes ☑ No
No escalation included project program will be for next ten years and estimate is for work done this year only.

Contingency and Risk in line with est. type? ☐ Yes ☑ No
No contingrency applied.

Construction Rep and LCE sufficient for project? ☑ Yes ☐ No
If No, explain:

Recommendations

Check AFUDC rate minor drop in CT D rate.

Check indirect rates to see if adjustment would increase accuracy.

Add Project management planning and system scheduling.

Adjust risk and contingency. Risk presently at 15.6% adjust risk to 11% and adjust contingency to 4.6% of total project.

Estimate Review Checklist

Type Project to be reviewed: Replace obsolete Radio Controlled sytem on the Transformer. Substation work new conduit and controls alternative 3

Job Order: CS00407

Requestor: [redacted]

Work Order:

Date of Est: 2/9/21

Est#: Review Number C-21-136

Revsion of Est: 0

Job Description: Replace obsolete Radio controlled equipment.

Date of Review: 3/4/21

Estimator: [redacted]

Level of Estimate: Planning

Substation type project	Recommended Risk
Bus, Switch, Insulator, Misc Eqt Upgrades	Planning 7-12%

OH Project	Underground Project

Level Of Review	Purpose of Estimate
Full Review	Planning Study

Items Checked

Indirect Rates Correct? ☐ Yes ☑ No
Minor increases in some rates in new template.

AFUDC rates are current and correctly applied? ☐ Yes ☑ No
Minor changes in AFUDC rate on new template.

PM Support sufficient for proj? ☑ Yes ☐ No
If No System planning or scheduling required.

Prior spending accounted for? ☐ Yes ☑ No
No priors reported to date.

Contingency and Risk in line with est. type? ☐ Yes ☑ No
No contingrency applied.

Manpower/Mandays sufficient for project? ☑ Yes ☐ No
If No, explain:

Scope deliverables match expectations for est. class? ☑ Yes ☐ No
If No, explain:

Milestones and schedule ISD match scope? ☐ Yes ☑ No
Milestones not completed.

Escalation allocated correctly across project time frame? ☐ Yes ☑ No
No escalation included project program will be for next ten years and estimate is for work done this year only.

Construction Rep and LCE sufficient for project? ☑ Yes ☐ No
If No, explain:

Recommendations

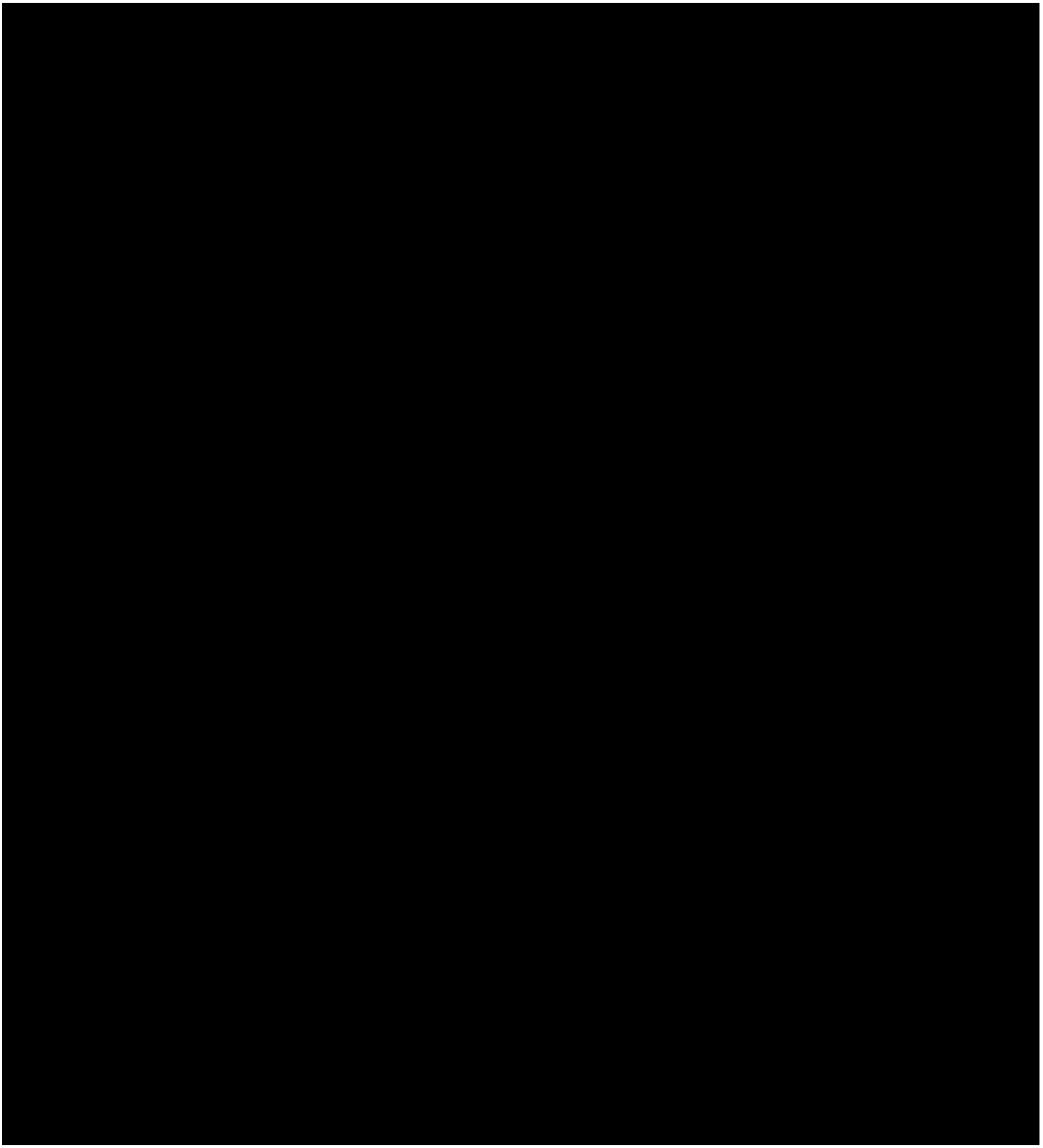
Check AFUDC rate minor drop in CT D rate.

Check indirect rates to see if adjustment would increase accuracy.

Add Project management planning and system scheduling.

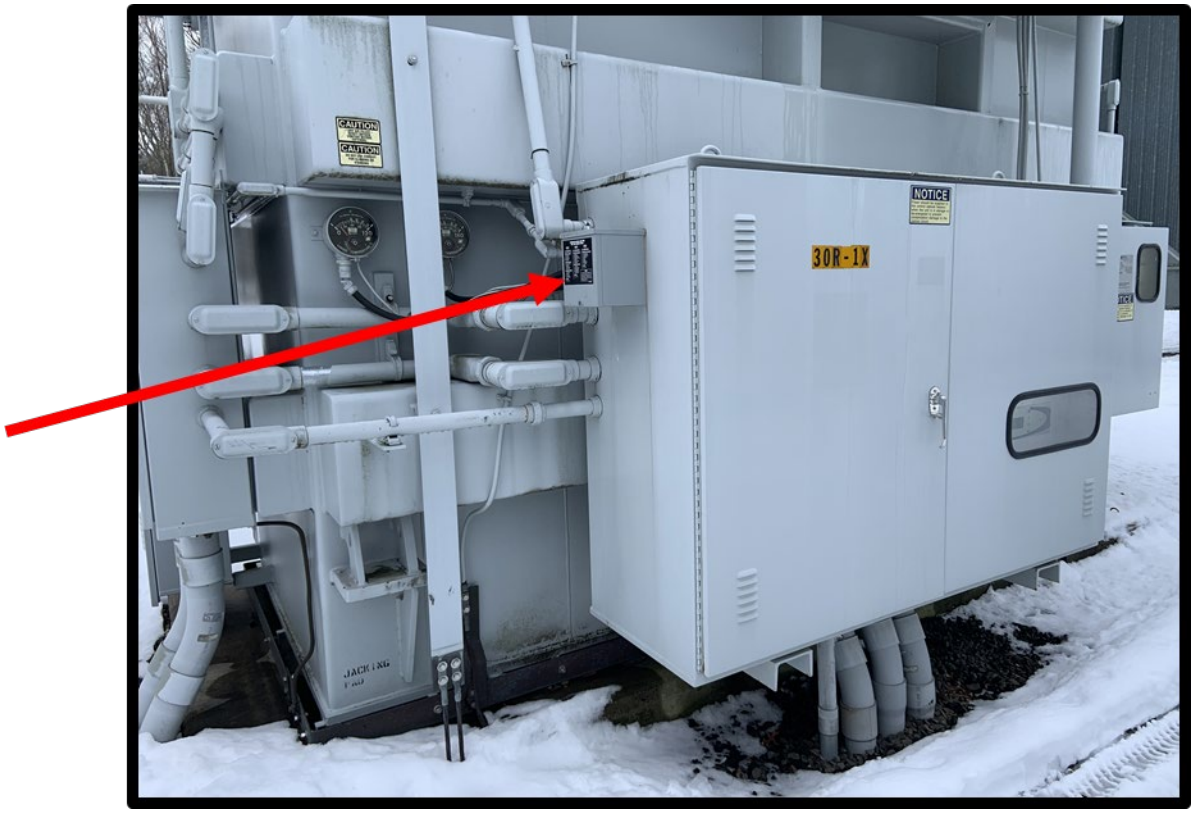
Adjust risk and contingency. Risk currently at 12.8% adjust risk to 10% of total and add contingency to 4% of total.

Attachment 2 – Substation – Transformer List

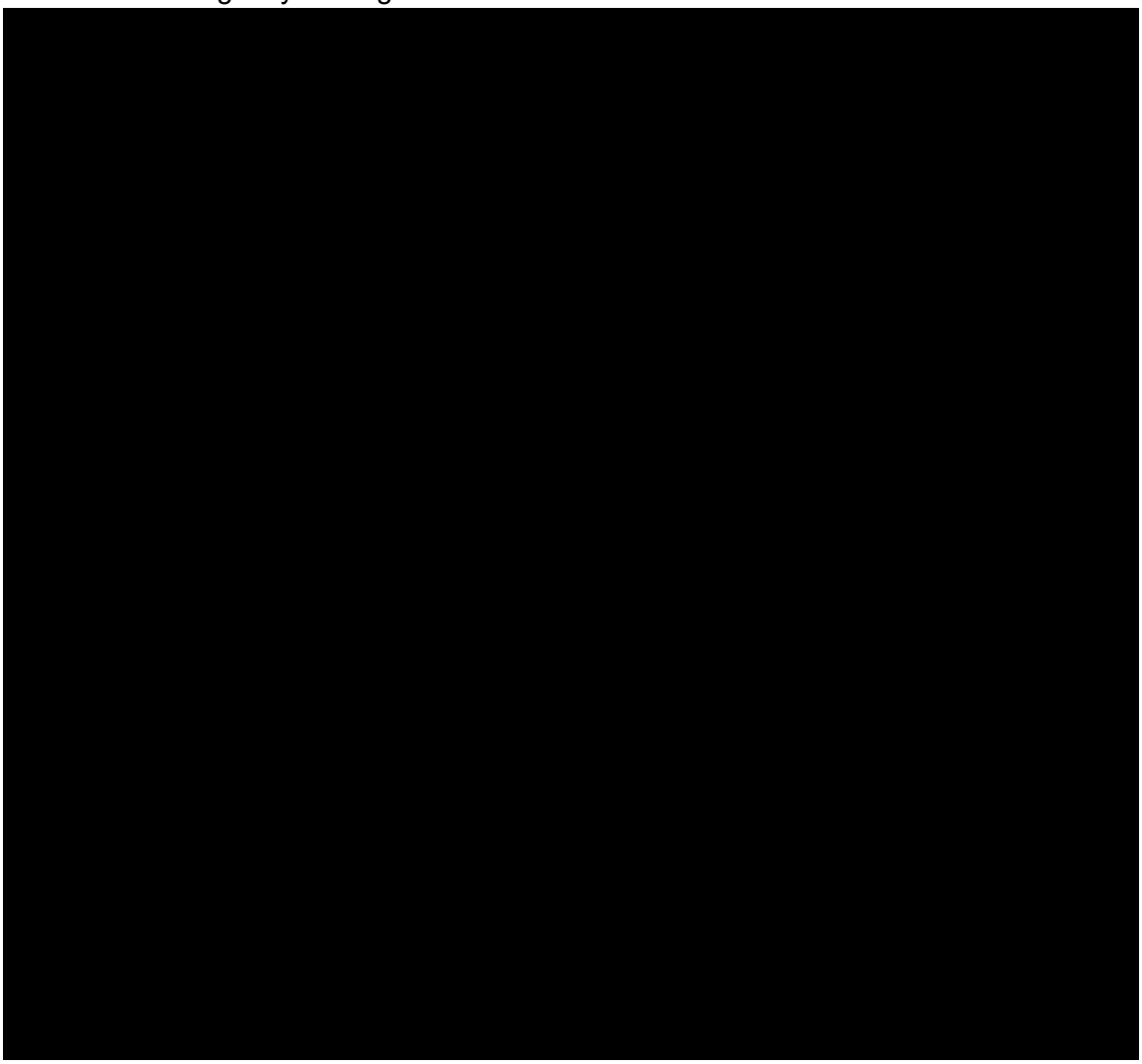


ATTACHMENT 3 - Photos

Pictures of an existing radio receiver that is mounted on the LTCs:



Regency Analog Receiver



New D-DSCADA LTC (RTU) Cabinet that is mounted on the Transformer:

