EVERSOURCE

Operations Project Authorization Form

Approved at September 02, 2020 EPAC

[Link to Meeting Minutes]

Date Prepared: 08/24/2020	**Project Title: Rockville [redacted] - New Manhole and Conduits**
Company: Eversource CT	**Project Number: CS00390**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Other**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Project Purpose: Upgrade Feeder Ratings**
Estimated in service date: May 31, 2021	**Capital Investment part of original Oper. Plan: Yes**
Eng./Constr. Resources Budgeted? Yes	**O&M Expenses part of original Oper. Plan: N/A**
Authorization Type: Full Funding	**Facility Type (check all that apply):**
Total Request: $294K	**☐ PTF ☐ non-PTF ☒ Distribution**

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This project is seeking full funding of $294K for the construction of one (1) new manhole and conduit system connecting from the existing [redacted] (spare) feeders to the new manhole and from the new manhole to three (3) new riser poles on [redacted] the purpose of upgrading the capacity of all the Rockville [redacted] feeders. The [redacted] station is in [redacted]. Distribution loading projections indicate the [redacted] feeder circuits will exceed normal and contingency ratings in 2020. The new manhole and conduit system will permit the rerouting of three (3) circuits out of the existing manholes and conduits permitting significant rating increases for all of the feeder circuits. The project objective is to build the required infrastructure to support [redacted] by reconfiguring the station get-away cables to increases station capacity. The three (3) new riser poles are included in the scope for [redacted].

A constructability review was completed on March 12, 2020. The new manhole will be located between the inner and outer substation fences, about half-way between the existing switchgear and the new riser poles. The new riser poles will be set prior to the installation of the new power conduits. There is adequate space between the switchgear cubicles to install the two (2) new 6”

power conduits without having to remove the existing 5” power conduits. Each of the two (2) active feeders can be removed from service one at a time over the course of several weeks, outside peak load periods. In-house resources will be utilized for engineering and contractor resources will be used for construction and test.

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Project Costs Summary

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2020 to Go	2021	2022	2023	2024	2025	Total
1. ROW / Easements / Land Acquisition	$		$	$	$	$	$	$	$
2. Environmental Approvals / Permits	$		$	$	$	$	$	$	$
3. Outreach	$		$	$	$	$	$	$	$
4. Siting Approvals / Permits	$		$	$	$	$	$	$	$
5. Engineering / Design	$		$4	$2	$	$	$	$	$6
6. Materials (Eversource purchased)	$		$	$18	$	$	$	$	$18
7. Construction (incl matl's by contractors)	$		$	$94	$	$	$	$	$94
8. Testing / Commissioning	$		$	$	$	$	$	$	$
9. Project Mgmt Team	$		$2	$1	$	$	$	$	$3
10. Removals	$		$	$	$	$	$	$	$
11. Other	$		$	$	$	$	$	$	$
12. Risks	$		$	$70	$	$	$	$	$70
SUBTOTAL DIRECTS W/ RISKS	**$**		**$6**	**$185**	**$**	**$**	**$**	**$**	**$192**
13. Indirects/Overhead	$		$19	$69	$	$	$	$	$88
14. AFUDC	$		$	$3	$	$	$	$	$3
PROJECT TOTAL – BASELINE BUDGET	**$**		**$26**	**$257**	**$**	**$**	**$**	**$**	**$283**
15. Contingency	$		$	$11	$	$	$	$	$11
	$		$	$	$	$	$	$	$
TOTAL CAPITAL REQUEST	**$**		**$26**	**$268**	**$**	**$**	**$**	**$**	**$294**
16. Reimbursables/Customer Contribution	$		$	$	$	$	$	$	$
	$		$	$	$	$	$	$	$
PROJECT TOTAL (LESS REIMBURSABLES)	**$**		**$26**	**$268**	**$**	**$**	**$**	**$**	**$294**
O&M	$		$	$	$	$	$	$	$
TOTAL REQUEST	**$**		**$26**	**$268**	**$**	**$**	**$**	**$**	**$294**

Note: Explain unique payment provisions, if applicable:

Risks include $70K potential UG obstructions ($50K) and environmental remediation ($20K).

Breakout Costs

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2020 to Go	2021	2022	2023	2024	2025	Total
ST Labor	$		$6	$3	$	$	$	$	$9
OT Labor	$		$	$	$	$	$	$	$
Outside Services Labor	$		$	$90	$	$	$	$	$90
Materials*	$		$	$22	$	$	$	$	$22
Removals	$		$	$	$	$	$	$	$
Other	$		$	$81	$	$	$	$	$81
Indirects	$		$19	$69	$	$	$	$	$88
AFUDC	$		$	$3	$	$	$	$	$3
TOTAL CAPITAL REQUEST - W/O REIMBURSABLES	**$**		**$26**	**$268**	**$**	**$**	**$**	**$**	**$294**

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

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

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;

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__	Year 20__	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

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

Is there an ARO associated with this project? No
If yes, please provide details: N/A

Are there other environmental cleanup costs associated with this project? Yes
If yes, please provide details: The estimate includes $20K in risk allocation for potential environmental remediation.

Technical Justification:

Project Need Statement

This project is to build one (1) new manhole and power conduit system to increase the ratings for all feeder circuits at the [redacted] substation. Distribution loading projections indicate the [redacted] feeder circuits will exceed normal and contingency ratings in 2020. The new manhole and power conduit system will permit the rerouting of three (3) circuits out of the existing manholes and conduits permitting significant rating increases for all of the feeder circuits. Two of the three circuits are active feeders and one is a spare. The project is needed to build the required infrastructure to support distribution line project CD01066 (see Background section below).

Project Objectives

The objective is to support distribution line project CD01066 and includes the installation of one (1) manhole and associated conduits to modify feeder get-away circuit configurations to increase feeder circuit ratings of the [redacted] substation.

Project Scope

The scope of this project is to install a new manhole and associated conduits to reroute existing feeder circuits [redacted] (spare) from the existing manhole and conduit systems. Each of the three (3) circuits will be provided with two (2) new 6" power conduits each to route the power cables from the switchgear to the manhole and from the manhole to the riser poles. These additional power conduits will be exiting the [redacted] where they will rise on three (3) riser poles which are not included in this estimate. Two of the three circuits are active feeders and one is a spare. The new riser poles are covered by project CD1066. The manhole will be installed about half way between the switchgear and the riser poles. The distribution relay settings will be evaluated by the P&C engineering group.

A constructability review was completed on March 12, 2020 (see Attachment B). The new manhole will be approximately 8' x 14' and located between the inner and outer substation fences. Power conduits from the switchgear to the manhole and from the manhole to the riser poles, including the manhole are included in the estimate. There is enough room in the switchgear cubicles to add the new 6" power conduits to each of the cubicles without having to remove the existing 5" power conduits. Each of the two (2) active feeders can be removed from service one at a time over the course of several weeks, outside peak load periods. Power cables are not included in the estimate, but are covered under project CD1066. This modification will permit rating upgrades of all the [redacted] feeder circuits. See Attachment C for a sketch that outlines the substation project.

Background / Justification

Eversource CT Distribution, as per project CD01066, is requesting a Substation Engineering Project be established to reroute the existing [redacted] (spare) feeders out of the existing manholes to a new manhole and conduit system from the switchgear to three (3) new riser poles on [redacted]. for the purpose of upgrading the capacity of all the [redacted] feeders. Due to projected overloads, most of the getaway cables will be replaced at [redacted] and ratings will be significantly increased further if [redacted] are placed into their own manhole and conduit system.

The normal load limits of the feeders were projected to be over 80% of their rating in 2019. All the feeders are limited by their getaway cables. Also, [redacted] is quickly approaching its substation limitation of 65.0 MVA. This is the Load Carrying Capacity (LCC) limit for [redacted] substation. The substation was projected to reach 64.8 MVA in 2019 and projected to exceed its 65.0 MVA limit in 2020. The installation of the manhole and conduits to reroute three (3) feeder circuits permitting circuit rating upgrades will eliminate all normal and contingency overloads for both the substation and all eight (8) of its feeders. All normal loadings will be reduced below both normal and contingency loading ratings.

Business Process and / or Technical Improvements:

The execution of this substation project in coordination with the associated distribution line project CD01066 will permit feeder circuit rating increases to meet the increasing Rockville 14W substation loading needs and ensure system and customer reliability.

Alternatives Considered with Cost Estimates

Project alternatives were investigated to increase the capacity of the overloaded feeders as follows:

Alternative 1 - Upgrade the getaway cables with 1,000 Cu cable - This alternative was not chosen since the upgrades only improved three (3) of the eight (8) distribution feeder circuits.

Alternative 2 - Offload the feeders projected to be overloaded to nearby substations - This alternative was not chosen since the upgrades only improved three (3) of the eight (8) distribution feeder circuits and has an anticipated higher cost.

Alternative 3 - Selectively do a hybrid combination of upgrades and offloads and was not chosen for the reasons stated above.

Alternative 4 - Install a new manhole and new conduit system. This is the chosen alternative and will eliminate all normal and contingency overloads for both the substation and all eight (8) of its feeders providing the most benefit to the distribution system.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Full Funding PAF Approval	September 2020
Issue Civil Drawings	December 31, 2020
Material Delivery	March 2021
Construction Starts	April 1, 2021
Construction Complete - ISD	May 31, 2021
Project Closeout	Q2 2021

Regulatory Approvals

None required

Risks and Risk Mitigation Plans

For this project, there is risk associated with potential UG obstructions and environmental remediation. The project estimate includes risk allocation of $70K for potential UG obstructions ($50K) and environmental remediation ($20K).

Contingency

Contingency was established at 3.9% ($11K) based on the scope and definition of the project at the time the cost estimate was prepared.

References

- CD01066 Distribution Line Project

Attachments (One-Line Diagrams, Images, etc.)

- Attachment A - Cost Estimate
- Attachment B - Constructability Review Form
- Attachment C - Sketch of Substation Project

Project Checklist – Transmission and Substation

INSTRUCTIONS:
It is the responsibility of the initiator to contact the subject matter experts in the listed area disciplines to determine if the project considerations contained in this list are applicable to their project. They should fill out the checklist and determine a transition plan for the purpose of project execution. See the PAF Guide for additional instruction.

Project Checklist - Transmission & Substation Capital Project					
Project Name: [redacted] **- New Manhole and Conduits**				**Project Number: CS00390**	
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?				No	
Has an outage schedule been approved?				No	
Are Operations & Maintenance procedures/training required?				No	
STANDARDS					
Does the project include standard equipment and designs?				Yes	
SUBSTATION ENGINEERING					
Does this impact Revenue Metering				No	
Is preliminary short circuit/ breaker duty analysis required?				No	
Are there any changes to the baseline audible noise?				No	
Is there an impact to the existing ground grid?				No	
Is a Transient Over Voltage (TOV) analysis required?				No	

Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] - New Manhole and Conduits	**Project Number: CS00390**
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?	No

Cost Estimate Backup Details

See Attachment A for the detailed cost estimate backup.

ESTIMATE SUMMARY

Project Title: [redacted] - Add Conduits & MH
Project Mgr/Lead:
Project Number:
WO & Task #:
Est. Revision # 1

Estimate By: [redacted]
Date of Estimate: 6/29/20
ISD:05/31/2021
Estimate # 6-29-20

Template Revision # 01.4

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Total	Priors	2020	2021	2022	2023	2024	2025
1	ROW / Easements / Land purchases									
2	Environmental Approvals / Permits									
3	Outreach									
4	Siting Approvals / Permits									
5	Engineering / Design	$6,100	2.1%		$4,300	$1,800				
6	Materials (Eversource purchased)	$18,400	6.3%			$18,400				
7	Construction (incl matl's by	$93,600	31.9%			$93,600				
8	Testing / Commissioning									
9	PMT Project Mgmt Team	$3,500	1.2%		$2,200	$1,300				
10	Removals									
11	Other									
12	Risks	$70,000	23.8%			$70,000				
	Project Directs Total w/Risks	**$191,600**	65.2%		**$6,500**	**$185,100**				
13	Indirects/Overhead	$88,100	30.0%		$19,300	$68,800				
14	AFUDC	$3,100	1.1%		$100	$3,000				
	Project Total - Baseline Budget	**$282,800**	96.3%		**$25,900**	**$256,900**				
15	Contingency	$10,900	3.7%			$10,900				
	Project Total - Funding Approval Level	**$293,700**	100.0%		**$25,900**	**$267,800**				
16	Reimbursables/Customer Contribution									
	Project Total (less reimbursables)	**$293,700**			**$25,900**	**$267,800**				
	Amount of Escalation included above	$5,000				$5,000				
6	Total materials - Eversource	$18,400				$18,400				
	Total materials - Contractor	$3,900				$3,900				
	Total materials	$22,300				$22,300				

NOTE: Risk / Contingency is 38% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	**-25%**	-	**25%**
	$220,000	-	**$367,000**

COMMENTS:

Project Scope:

This project will add two 6" Power conduits each to feeders [redacted]. These additional power conduits will be exiting the substation east, to [redacted] where they will rise on three riser poles which are not included in this estimate. One manhole will be installed about half way between the switchgear and the riser poles. Power conduits from the switchgear to the manhole and from the manhole to the riser poles, including the manhole are included in the estimate. Power cables are not included in the estimate

Assumptions/Clarifications:

Indirect rates based on: 11 - CT . Station work

Assumptions:
- In-house engineering
- Contractor construction and test

RISKS

Potential UG Obstructions	$	50,000
Environmental remediation	$	20,000
Design development	$	-

Project Number:
WO & Task #:
Date of Estimate: 6/29/20
Est. Revision # 1

Template Revision # 01.4

Date of Estimate: 6/29/20

	Current Estimate		Previous Estimate				Delta, Current - Previous Estimate	
	MHRS	DOLLARS	MHRS	DOLLARS	MHRS	DOLLARS	MHRS	DOLLARS
CSTXX-CONSTRUCTION								
Electrical Construction								
General Construction								
SCADA / Automation								
Telecom - Field								
Construction Reps (internal)								
Support Switch/Tag								
Other (specify)								
Other (specify)								
Other (specify)								
LT Total								
Employee Expenses								
Construction Purchased Material								
Outside Construction Vendor								
Sales tax on Constr. Vendor								
Vehicles (now in indirects section)								
Inspection services (Outside Vendor)								
Construction Rep (Outside vendor)								
Rents and Leases								
CSTXX Subtotal								
Escalation								
CSTXX Total								
ENRXX-TG ENGINEERING/DESIGN								
Project Services/Drafting								
T- Line Engineering/Design								
D- Street Engineering/Design								
Civil Engineering/Design								
Substation (T) Engineering/Design								
Substation (D) Engineering/Design								
Protection & Controls Engineering								
Survey Engineering								
SCADA / Automation Engineering								
Telecom Engineering								
Other - specify								
Other - specify								
LT Total								
Employee Expenses								
Contractor Engineering - T-Lines								
Contractor Engineering - D-Street								
Contractor Engineering - T -Station								
Contractor Engineering - D-Station								
Contractor Engineering - P&C								
Contractor Engineering - Survey								
Contractor Engineering - SCADA / Automation								
Contractor Engineering - Telecom								
Contractor Engineering - Specify								
Contractor Engineering - Specify								
Contractor Engineering - Specify								
Vehicles (now in indirects section)								
ENRXX Subtotal								
Escalation								
ENRXX Total								
LNDXX-TG LAND								
Real Estate								
Employee Expenses								
Purchase Land								
Vehicles (now in indirects section)								
Fees and Payments								
LNDXX Subtotal								
Escalation								
LNDXX Total								
MATXX-TG MATERIAL								
Eversource								
Outside Services								
Freight								
Sales Tax Eversouce/outside services								
Other								
MATXX Subtotal								
Escalation								
MATXX Total								
PSMXX-PROJECT MANAGER & SUPPORT								
Project Management (PM)								
Project Planning/Cost (IP)								
Contracts/Purchasing (C/P)								
System Planning								
Environmental								
SCS - None								
Legal								
Estimating								
Siting - None								
Asset Management								
Other -								
Other -								
Other -								
Other -								
LT Total								
Employee Expenses								
Project Support Vendor - PM								
Project Support Vendor - IP								
Project Support Vendor - C/P								
Project Support Vendor - System Planning								
Project Support Vendor - Enviromental								
Project Support Vendor - SCS - None								
Project Support Vendor - Legal								
Project Support Vendor - Estimating								
Project Support Vendor - Siting - None								
Project Support Vendor - Asset Management								
Project Support Vendor - Other								
Project Support Vendor - Other								
Project Support Vendor - Other								
Project Support Vendor - Other								
Vehicles (now in indirects section)								
Property or CWIP tax large proj. allowance								
Fees and Payments - Enviromental								
Fees and Payments - Siting								
Fees and Payments - Other								
PSMXX Subtotal								
Escalation								
PSMXX Total								
REMXX-TG REMOVAL								
Engineering/Design								
Internal Construction								
LT Total								
Employee Expenses								
Outside Services								
Contractor Labor								
Vehicles (now in indirects section)								
Rents and Leases								
REMXX Subtotal								
Escalation								
REMXX Total								
TSTXX-TG TEST								
Test / Field Engr. Labor (In House)								
Lead Commissioning Engr. (LCE) (internal)								
Employee Expense								
Test / Field Engr. Labor (contractor)								
Lead Commissioning Engr. (LCE) (contactor)								
Vehicles (now in indirects section)								
TSTXX Subtotal								
Escalation								
TSTXX Total								
SUBTOTAL PROJECT DIRECT COST								
Risk								
Risk								
Risk Total								
TOTAL PROJECT DIRECT COST								
INDIRECTS								
Non-Productive Time Allocation (ZB)								
Payroll Benefits Allocation (ZE) incl NPT								
Gen SVC CO Overhead (ZF) incl NPT								
E&S Allocations (ZI)								
AS&E Allocations (ZJ)								
Stores Expense Allocation (ZC)								
Lobby Stock								
MDEC								
Vehicles								
Indirects Subtotal								
CT COST - Direct & Indirect (excl AFUDC)								
AFUDC								
AFUDC (ZK)								
AFUDC Subtotal								
TOTAL PROJECT COST - Baseline Budget								
Contingecy								
Contingency								
Other								
Contingency SubTotal								
TOTAL PROJECT COST - Approved Funding								
Reimbursables / Customer Contribution								
Reimbursables / Customer Contribution (ente								
TOTAL PROJECT COST								

EVERSOURCE
Constructability Review Form

Submit a PDF copy of this signed form to TranEPAC@eversource.com along with the PAF

Project Number(s): N/A	**Project Title:** Rockville 14W – Add Power Conduits
Date of Constructability Review: 03/12/2020	

Constructability Review Team: *list below the department and names of all who participated in the constructability review walkdown*

Lead*	Department**	Name and Title
☒	Project Management	[redacted] Project Engineering Manager
☐	Operations	[redacted] Supervisor
☐	Construction	
☐	Engineering	[redacted] Senior Engineering Designer
	Distribution Engineering	[redacted] Senior Distribution Design Engineer
	Siting & Construction Services	
	Environmental	
	Rights & Survey	
	Other:	
	Other:	
	Other:	

*Check the box of the individual who coordinated/led the constructability review

**List names from any other departments who attended the constructability review, add additional rows to the table if necessary

Observations/Findings/Scope Review/Risks Identified:

- New manhole will be 8 x 14 feet and located between the inner outer substation fences.
- General construction will need 4 work weeks for a 3-man crew.
- New riser poles will be set prior to installation of the new power conduits.
- There is enough room in the switchgear cubicles to add two 6" power conduits to each of the cubicles without having to remove the existing 5" power conduits.

If required, each of the two active feeders can be removed from service, one at a time, for several weeks outside peak load periods.

The Construction Services Supervisor, Engineer lead, or Project Manager must sign below.

[redacted] 3/27/2020

