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Operations Project Authorization Form

Approved at July 07, 2021 EPAC
Link to Meeting Minutes

Date Prepared: 07/01/2021	**Project Title: [redacted] Failed Transformer Replacement**
Company: Eversource CT	**Project Number: CS00427**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformers**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Project Purpose: Replace Failed 17R-1X Transformer**
Estimated completion date: December 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: $3.082M	**☐ PTF ☐ non-PTF ☒ Distribution**

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This Project is seeking full funding of $3.082M to perform Civil engineering and construction activities to complete the [redacted] Replacement project CS00427.

The Project objective is to [redacted]

Work Order #80038165 is currently being used for work related to this Project. This project had an Initial Funding Request of $250K approved in PowerPlan on 1/12/2021 to perform preliminary

engineering activities. A Partial Funding request of $1.262M was presented and approved during the May 26, 2021 EPAC meeting and is pending final approval. The following has been completed to date: performed constructability walkdowns and prepared project scope; preliminary engineering; [redacted]

This Full Funding PAF is required to provide funding for purchasing the new HICO transformer and to complete construction activities including connection and testing of the new transformer, disconnection and removal of the failed transformer and disconnecting the mobile transformer unit.

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Project Costs Summary

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 To Go	2022	2023	2024	2025	2026	Total
1. ROW / Easements / Land Acquisition					$	$	$	$	
2. Environmental Approvals / Permits					$	$	$	$	
3. Outreach		$1	$3		$	$	$	$	$4
4. Siting Approvals / Permits		$0	$8		$	$	$	$	$8
5. Engineering / Design		$22	$48	$2	$	$	$	$	$72
6. Materials (Eversource purchased)		$9	$858		$	$	$	$	$867
7. Construction (incl matl's by contractors)		$173	$561		$	$	$	$	$734
8. Testing / Commissioning		$34	$55		$	$	$	$	$90
9. Project Mgmt Team		$15	$13	$1	$	$	$	$	$29
10. Removals			$18		$	$	$	$	$18
11. Other					$	$	$	$	
12. Risks			$155		$	$	$	$	$155
SUBTOTAL DIRECTS W/ RISKS		**$254**	**$1,720**	**$3**	**$**	**$**	**$**	**$**	**$1,977**
13. Indirects/Overhead		$261	$690	$3	$	$	$	$	$954
14. AFUDC		$2	$76		$	$	$	$	$78
PROJECT TOTAL – BASELINE BUDGET		**$517**	**$2,486**	**$6**	**$**	**$**	**$**	**$**	**$3,009**
15. Contingency			$73	$0	$	$	$	$	$73
TOTAL CAPITAL REQUEST		**$517**	**$2,559**	**$6**	**$**	**$**	**$**	**$**	**$3,082**
16. Reimbursables/Customer Contribution					$	$	$	$	
PROJECT TOTAL (LESS REIMBURSABLES)		**$517**	**$2,559**	**$6**	**$**	**$**	**$**	**$**	**$3,082**
O&M					$	$	$	$	
TOTAL REQUEST	**$250**	**$517**	**$2,559**	**$6**	**$**	**$**	**$**	**$**	**$3,082**

Note: The costs above reflect the estimated costs for partial funding as described in the executive summary. $155K of risk is included for the following:

Risk	Funded Amount
Potential UG Obstructions for new foundation and conduits.	$25K
Severe Weather, Delays	$25K
Design development not completed in time for civil construction.	$10K
Complications of mobile transformer connections when transferring to alternate bus.	$25K
Environmental soil contamination disposal may be required.	$50K
Material cost inflation risk	$5K
Construction cost increase	$15K
Total	**$155K**

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Breakout Costs

Note: Dollar values are in thousands

Line item Category	Prior Authorized	Actuals to Date	2021 to Go	2021	2022	2023	2024	2025	Total
ST Labor		$184	$99	$1	$	$	$	$	$283
OT Labor					$	$	$	$	
Outside Services Labor		$61	$583	$2	$	$	$	$	$646
Materials*		$9	$858		$	$	$	$	$867
Removals			$18		$	$	$	$	$18
Other			$237	$0	$	$	$	$	$237
Indirects		$261	$690	$3	$	$	$	$	$954
AFUDC		$2	$76		$	$	$	$	$78
TOTAL CAPITAL REQUEST - W/O REIMBURSABLES	**$250**	**$517**	**$2,559**	**$6**	**$**	**$**	**$**	**$**	**$3,082**

*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:

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

A representative from the respective functional area is required to be included as a project approver.

Provide below the estimated future 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? Equipment was disposed of in accordance with most current Eversource Asset Guidelines.

If yes, please provide details: N/A

Are there other environmental cleanup costs associated with this project? Yes.
If yes, please provide details:

- There is the potential for contaminated soil /foundation materials during the construction of the underground work for the 2X transformer foundation. Risk allocation for this potential is included in the request for full funding.
- Underground oil containment for the new transformer will be determined based on project environmental team recommendations.

Technical Justification

Project Need Statement

[redacted]

[redacted]

Eversource document RF-AS-9001, Rev. 8 outlines Asset Management Strategy for the operation, maintenance, and replacement of autotransformers on its transmission system. An asset management strategy for the operation, maintenance, and replacement of power transformers does not exist, but the methodology for replacement consideration applies. As stated on page 12 within RF-AS-9001 is the following, "…six parameters: age, loading, corrective maintenance work order activity, DGA carbon monoxide, water in the oil and key maintenance notes. Replacement of the transformer was recommended when two (2) of the six (6) parameters are categorized in the high-risk RED level."

Based on the assessment criteria provided in the reference document, the [redacted]

Project Objectives

[redacted]

Project Scope

[redacted]

- [redacted]
- [redacted]

[redacted]

A constructability review was performed on 2/26/2021 (see Attachment D).

Background / Justification

[redacted]

- [redacted]

Business Process and / or Technical Improvements

The replacement of the failed transformer with a new transformer, including gas monitoring and protective relaying, will improve system reliability.

Alternatives Considered with Cost Estimates

[redacted]

The following options were considered to supply a permanent replacement transformer:

Alternative 1: Do Nothing

This option does not address the reliability concerns related to aging transformers approaching the end of useful life. This option was not selected nor estimated.

Alternative 2: Wait for an Existing Replacement Transformer

Wait for the [redacted] was not considered a viable alternative and was not estimated.

Alternative 3: E-Spare Form Request (Chosen Alternative)

[redacted]

[redacted] he planning-grade estimate for full funding is $3.082M.

Project Schedule

Milestone/Phase Name	Estimated Date
Project Full Funding Approval	July 2021
Detailed Design Complete	July 30, 2021
Construction Start	August 2021
In Service Date	December 2021
Project Close-Out	May 2022

See Attachment E for the P6 schedule.

Regulatory Approvals

Oversize transport road permit obtained by vendor for transformer relocation.

Risks and Risk Mitigation Plans

The full funding estimate includes the following risks identified to date and their mitigation plans as shown in the table below.

Risk Event	Risk Mitigation
Potential UG Obstructions for new foundation and conduits.	Will require review during construction if obstructions observed by civil contractor. Risk allocation is included in the estimate.
Severe Weather, Delays	Review scheduling and forecasts and may require extended labor and overtime. Risk allocation is included in the estimate.
Design development not completed in time for civil construction.	Engage internal and vendor resources to modify design to meet schedules. Risk allocation is included in the estimate.
Complications of mobile transformer connections when transferring to alternate bus.	May require redistribution of loads on the energized transformer. Risk allocation is included in the estimate.
Environmental soil Contamination disposal may be required.	Provide disposal services as required. May require removal of contaminated soil and provide new soil as replacement. Risk allocation is included in the estimate.
Material cost inflation risk	Order material in a timely manner. Risk allocation is included in the estimate.
Construction costs increase due to unforeseen circumstances.	Will require review during construction if obstructions observed by civil contractor. Risk allocation is included in the estimate.

Contingency

Contingency of $73K is allocated for this project to address any unidentified risks that do not have mitigation plans.

References

- RF-AS-9001 Rev.8 Management Strategy for Operation, Maintenance, and Replacement of Autotransformers

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

- Figure 1 - Site Photographs
- Attachment A: East Rocks
- Attachment B: East Rocks
- Attachment C: East Rocks
- Attachment D: East Rocks
- Attachment E: East Rocks



Figure 1 - Site Photographs

Photograph 1: [redacted] *Substation – View looking Northeast*



Project Checklist - Transmission & Substation Capital Project					
Project Name: [redacted] **Transformer Replacement**			**Project Number: CS00427**		
Facility Type: ☐ BPS ☐ BES ☐ PTF ☐ non-PTF ☐ CIP ☒ Distribution					
PLANNING					
Is a NX-9 required?			Yes		
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?			Yes		
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			Yes		
Is preliminary short circuit/ breaker duty analysis required?			Yes		
Are there any changes to the baseline audible noise?			Yes		
Is there an impact to the existing ground grid?			Yes		
Is a Transient Over Voltage (TOV) analysis required?			No		

Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] **Failed Transformer Replacement**	**Project Number: CS00427**
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)*	Yes
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?	Other (specify below)
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 details.

ESTIMATE SUMMARY

Project Title: [redacted] Failed Transformer Replacement
Project Mgr/Lead: [redacted]

Project Number: CS00427
WO & Task #: 80038165
Est. Revision # 2
Estimate Type - Station work

Estimate By: [redacted]
Date of Estimate: 6/16/2021

ISD:12/31/2021

Estimate # C-21-415

Template Revision # 01.65a

ESTIMATE SUMMARY

Estimate Type: Planning

WBS	Description	TOTAL	% of Directs	% of Total	Priors	2021	2022	2023	2024	2025	2026
1	ROW / Easements / Land purchases	$0	0.0%	0	$0	$0	$0	$0	$0	$0	$0
2	Environmental Approvals / Permits	$0	0.0%	0	$0	$0	$0	$0	$0	$0	$0
3	Outreach	$3,700	0.2%	0%	$600	$3,100	$0	$0	$0	$0	$0
4	Siting Approvals / Permits	$8,500	0.4%	0%	$100	$8,400	$0	$0	$0	$0	$0
5	Engineering / Design	$72,500	3.7%	2%	$21,700	$48,500	$2,300	$0	$0	$0	$0
6	Materials (Eversource purchased)	$866,600	43.8%	28%	$9,000	$857,600	$0	$0	$0	$0	$0
7	Construction (incl matl's by contractors)	$734,300	37.1%	24%	$173,200	$561,100	$0	$0	$0	$0	$0
8	Testing / Commissioning	$89,700	4.5%	3%	$34,300	$55,400	$0	$0	$0	$0	$0
9	PMT Project Mgmt Team	$28,700	1.5%	1%	$15,000	$13,100	$600	$0	$0	$0	$0
10	Removals	$18,100	0.9%	1%	$0	$18,100	$0	$0	$0	$0	$0
11	Other	$0	0.0%	0%	$0	$0	$0	$0	$0	$0	$0
12	Risks	$155,000	7.8%	5.0%	$0	$155,000	$0	$0	$0	$0	$0
	Project Directs Total w/Risks	**$1,977,100**	100.0%	64%	**$253,900**	**$1,720,300**	**$2,900**	**$0**	**$0**	**$0**	**$0**
13	Indirects/Overhead	$954,400		31%	$261,100	$689,800	$3,500	$0	$0	$0	$0
14	AFUDC	$77,700		3%	$1,800	$75,900	$0	$0	$0	$0	$0
	Project Total - Baseline Budget	**$3,009,200**		98%	**$516,800**	**$2,486,000**	**$6,400**	**$0**	**$0**	**$0**	**$0**
15	Contingency	$73,300		2.4%	$0	$73,200	$100	$0	$0	$0	$0
	Project Total - Funding Approval Level	**$3,082,500**		100%	**$516,800**	**$2,559,200**	**$6,500**	**$0**	**$0**	**$0**	**$0**
16	Reimbursables/Customer Contribution	$0			$0	$0	$0	$0	$0	$0	$0
	Project Total (less reimbursables)	**$3,082,500**			**$516,800**	**$2,559,200**	**$6,500**	**$0**	**$0**	**$0**	**$0**
		-									
	Amount of Escalation included above	$7,185			$6,985	$0	$200	$0	$0	$0	$0
6	Total materials - Eversource	$866,600			$9,000	$857,600	$0	$0	$0	$0	$0
	Total materials - Contractor	$45			$45	$0	$0	$0	$0	$0	$0
	Total materials	$866,645			$9,045	$857,600	$0	$0	$0	$0	$0

NOTE: Risk / Contingency is 8% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	**-25%**	-	**25%**
	$2,312,000	-	**$3,853,000**

0
0

COMMENTS:

[redacted]

Assumptions/Clarifications:

Indirect rates based on: 11 - CT . Station work

- This estimate assumes Engineering (P&C, Civil, Engineering) will be outsourced with in-house review, construction and testing to be out-sourced with external resources.
- This estimate was developed assuming the new 2X foundation, no other foundations were included in this estimate.
- This estimate was developed with the use of existing 2X(GE unit) in place of failed 1X transformer and new HICO unit on 2X foundation.
- Material estimate is based on existing material ordered and vendor quotes.
- All new equipment will be installed within the confines of the existing fenced yard.
- No additional allowances have been added for aggressive outage recall times.
- The estimate include manhours for contractor Lead Commission Engineer, contractor construction Representative, Electrical, Test and Civil.
- Estimate includes risk for all new reclsoer controls, old connectors and transformer bushings to be installed in the event of failure during megger testing. This estimate includes addition risk if some material items (transformer/controls etc.)

RISKS

Potential UG Obstructions for new foundation and conduits.	$ 25,000
Severe Weather, Delays	$ 25,000
Design development not completed in time for civil	$ 10,000
Complications of mobile transformer connections when transferring to alternate bus.	$ 25,000
Environmental soil Contamination disposal may be required.	$ 50,000
Material cost inflation risk	$ 5,000
Construction cost increase	$ 15,000

0
0

Transformer Condition Assessment: [redacted] – [redacted]

Summary: [redacted]

This document provides condition assessment of T334 to provide technical justification to Asset Management for replacement.

The technical justification will be assessed from information about the transformer from the following six parameters:

A. Dissolved Gas Analysis (DGA)
    a. Main Tank and LTC. The oil test data weighs the main tank and the LTC fluid, moisture and acidity test data to grant a condition score. The high alert/high warn/high alarm norms are defined from "Oil-immersed sealed power transformers up to 69 kV - IEEE norms" and "Default LTC norms - updated limits for everything & newer rules". The results are compared against the norms to see if any abnormalities exist.
B. Age
    a. In general, power transformers have an expected lifespan of 40 years.
C. Loading **- N/A**
    a. In general, the lifespan of a power transformer is impacted directly by the loading conditions. This parameter is N/A for this transformer as it is apparent that the storm events significantly deteriorated the condition of the transformer.
D. Maintenance History
    a. The maintenance history will be reviewed to find preventative and corrective maintenance tasks including preventative and corrective were completed to ensure a full-term operating life.
E. Transformer Test Data
    a. The transformer test data will be reviewed to gauge possible internal issues.
F. Inspection Findings – **N/A**
    a. The inspection findings for the LTC and/or main tank will be reviewed to assess damage. This parameter is N/A for this transformer as no internal inspections were performed.

A. DGA

Dissolved Gas Analysis (DGA) – Main tank

Table 1 shows concentration of gasses for the main tank for the five last samples.

[redacted]

Significant short-term average rate (+). High level (*). High-energy arcing.

Table 1: Main tank DGA – Concentration of Gasses

[redacted]

Table 2: Main tank DGA - Summary



Figure 1: Duval Triangle Fault Analysis

Moisture Analysis – Main tank

Fluid Quality - Main tank

Symbol legend: *: abnormal level

Table 4: Main tank DGA – Fluid Quality

Furans - Main tank

[redacted]

DGA – LTC

[redacted]

[redacted]

[redacted]

Table 7: LTC DGA - Summary

Diagnosis

[redacted]

Figure 2: Duval Triangle Fault Analysis

Moisture Analysis – LTC

[redacted]

[redacted]

The water content of the oil may be too high. Consider drying the oil.

Table 8: LTC DGA - Moisture

Fluid Quality – LTC

[redacted]

[redacted]

B. Age

[redacted]

C. Loading

[redacted]

D. Maintenance History

[redacted]

E. Transformer Test Data

There are two sets of transformer test data available for comparison between 2020 and 2011. It is

[redacted]

[redacted]

[redacted]

[redacted]

F. Inspection Findings

N/A

Conclusion

[redacted]

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Constructability Review Form: **Substation**

Project Title: [redacted] Failed Transformer Project	☐	Prior Constructability Review Performed?
	☐	Program Related Site Specific Review?
Project Numbers(s): CS00427	**Project Constructability Phase:**	
Date(s) of Constructability Review: 02/26/2021	☐ Conceptual Engineering Design	
02/26/2021	☒ Preliminary Engineering Design	
	☐ Detailed Engineering Design	
Project Scope Statement: Replace [redacted] Transformer		

Department Review/Walkdown Attendees*:

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

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

** Internal Eversource Substation Operations must be included in 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] *02/26/2021*_____*Name / Signature*

Date

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Constructability Review Form: **Substation**

Documents available for use on Constructability Review					
[X]	Deliverable	[X]	Deliverable	[X]	Deliverable
☐	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	☐	Previous Notes	☐	Identify Required Contractors
☐	Proposed Schedule	☐	Major Material List	☒	Replace / Reuse of equipment
☐	Construction Sequence/Timeline	☐	Major Equipment Items	☒	Pre-Walkdown Comments / Observations

Action Items and Resolutions:

Item No.	Const. Review Action Item/Concern	Design Resolution/Mitigation:
1	Removal and installation of the [redacted] and [redacted] TXF units.	[redacted]
2	67MX cable location	
3	New [redacted] installation requirements.	
4		
5		

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
A	**General**		
1	**Any safety hazards specific to the facility? i.e. Low Bus, Deterioration, etc.**	☒	The diagonal crossing of the transmission line above the substation may present issue.
2	**Prior known Site Specific Conditions - Common or Obvious station Issues**	☐	
3	**Scope Adequately Developed** Consider Physical Installation, P&C Scope, Civil Scope, Engineering studies, Design standard adherence	☐	
4	**Materials Identified/Ordered** Long Lead Equipment? Specialty material considerations? Review BOM lead times and project need dates Bids for Specialty Major Materials - Identify Specialty Equipment & Materials potentials - temporary/replacement Any Materials needed to facilitate construction access?	☐	
5	**Any impacts that would drive T-Line Eng Scope?**	☐	
6	**Any other known projects that could overlap or impact outage work?**	☐	
B	**Construction**		
1	**Site Plan / Access:** -Confirm maintenance access for proposed new or replaced equipment -Review station expansion areas (if needed) for structures, old foundations, etc. -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) -Site Development Plan (grading and drainage) with Cut/Fill -Existing Rock Conditions? Potential Impacts (rock quantity)? -Any Sanitary Civil Requirements? (Septic tanks, etc) -Assess condition of existing yard equipment foundations and viability for reuse (if proposed)	☐	

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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	**Any Substation Access and site/yard access Limitations?** -Review turning radius for delivery trucks (if critical) -Identify Office Trailer / Container / Dumpster Space + source of utilities for construction trailer(s) if needed -Weather impacts to Site (Snow Placement) -Identify Material Laydown and Security -Construction permit for trailers outside substation fence?	☐	Tight clearances for TXF removal, may need additional outages to remove and relocate.
3	**Outage Planning & Construction Sequence** -Working Clearances - Review electrical clearances for equipment during construction – Approach Distances – Outage Requirements to maintain electrical clearances throughout proposed installation -As-Built drawing review (contacts and contributions) -Outage boundaries -Phased approach needs for additional mobilizations -Detail Design package align with schedule and outage sequence? -Lead Commissioning Engineer (LCE), Substation Operations, and Outage Planner - Review or give input to planned construction sequence to insure it is reasonable and scheduled outages associated with the sequence -Review or give input to planned construction sequence to insure it is reasonable -Verify outage sequence supports the planned construction sequence	☐	
4	**Need for mobile generator and where connected (if needed)**	☒	Generator cable relocation.
5	**Need for mobile battery and where connected (if needed)**	☐	
6	**Energization Plan** What outages are required, Detailed look at contributions to equipment, Detailed look at protection zone changes, Locked sequence or random outages, Outage durations minimized Mobile transformer, Additional outage requirements, Working clearance, Railroad Catenaries, Distribution overhead/underground/networks, Fiber outage, SCADA outage, Relay permissions	☐	
7	**Identify Required Oversite Needed - Estimated level of CR and LCE support needed**	☐	
8	**OT work required or Notable Permit Conditions (special hours)?**	☐	
9	**Seasonal or weather conditions impacts?**	☐	

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Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
10	**Identify Required Depts for Construction? (who is constructor ?)**	☐	
11	**Specialty Contractors Required?**	☐	
12	**Unique Equipment Considerations, Gas insulated substation, Gas insulated line, Gas insulated bus, Pass Breaker, Statcom, Sync Condenser**	☐	
13	**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.)	☐	Engineering to provide conduit prints and installation requirements to support the new foundation.
14	**Any other items missing in scope or could be underfunded?**	☐	
15	Coordination of boundaries/seams (Identification of point of demarcation for connection to existing equipment and/or for coordination with other municipalities)	☐	
C	**Environmental**		
1	Soil Pre-Characterization or Grab Sampling Completed/Planned	☒	Soil testing required at foundation are where new foundation pad will be installed.
2	Has Desktop investigation and EAD Review form been completed.	☐	
3	Dewatering requirements	☐	
4	Risk or presence of PCB's/Asbestos/Lead/SF6	☐	
5	Permit requirements (Wetlands, Rare Species, etc)	☐	
6	Stormwater Considerations	☐	
7	Transformer Spill Containment Recommended?	☐	
8	Expanding Footprint / New Buildings or future Expansion Plans? (Enviro Impact)	☐	
D	**Siting, S&CS, and T&D Real Estate**		
1	Expanding Footprint / New Buildings or future Expansion Plans?	☐	
2	Installation is within Eversource Rights? - Rights and Restrictions Review	☐	
3	Proposed Equipment on same property? - Any Encroachments	☐	
4	Identify existing lighting and determine if additional lighting is needed?	☐	

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
5	Review for roadway, gate access, trailers, equip height, noise, weekend/night work, or any potential public disturbance related to work	☐	
6	Visual mitigation screening considerations (feasibility or location)	☐	
7	Neighbor/Abutter impacts (noise, visual, sensitive abutters)	☐	
E	**Engineering**		
1	**Scope of Work** Identify if high level scope sufficiently detailed? Any remote station impacts? Does title match the project deliverable/intent?	☒	High level scope document is available.
2	**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	☐	
3	**Materials** Any concerns with BOM/Major Materials Review? Where will new vs removed equipment go? Review for OH and UG Items	☒	TXF unit scheduled for August delivery
4	**Control House** - Review: Unmapped equipment interferences, Control/Battery Enclosure Layout, HVAC System (if equipment added), space for new or modified equipment, AC / DC station service and loading, Panel Space, Expansion, one-line and/or riser type panelboard drawings, other..	☐	
5	Identification of Unique Requirements, i.e. (access bridges, station service, etc.)	☐	
6	**BPS Separation Requirements** Is this BPS Substation? Y/N (part of PAF) Changes to pre-existing BPS standards?	☐	
7	IEC 61850 Substation Automation and Communication Requirements - Any Impacts/Retrofit needed?	☐	
8	Any Upgrades to ES Standards - Is retrofit needed to bring up to ES standards? Can that be done?	☐	

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
9	**Wall, Fence, Gate, and Foundation Considerations** -Any permanent / temporary alterations or relocations required? -Take measurements for Foundation quantities, dimensions and concrete volumes -CIP Review/Ballistic needs. Any Physical Security Requirement Consideration? -Any impacts to construction plan?	☒	No fence modification required.
10	**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?	☐	
11	**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	☐	
12	Any Lighting Plan & Fixture Schedule Considerations?	☐	
13	Any Steel Structural Plan Considerations?	☐	
14	Sound Study Needed? Pre-Project Sound Measurements Needed? Sound Walls?	☐	
15	Engineering Estimates for Design and Technical Support? (EE and EOC) Total Project	☐	
16	Nomenclature / Switching One-Line Diagram -Any obvious deviations from diagrams provided?	☐	
17	Any design alterations or considerations to Eliminate SCLL Conditions, Reduce Recall Time, Reduce Outage durations, Special Conditions	☐	
F	**Protection & Controls**		
1	Panel Graphic additions and/or Modifications	☐	
2	Space on existing panels for new equipment? (front & rear of panel fronts)	☐	
3	Panel fronts conform to drawings	☐	
4	Access to bring new panels into control enclosure	☐	
5	Nameplate list and location of nameplates	☐	
6	Verifies that relays and meters that will be an interconnected project work are as shown on the drawings.	☐	

EVERSOURCE

Constructability Review Form: **Substation**

	Key Review Item Description	N/A or No Concern	Review Notes, Concerns, or Additional Info Needed
7	Verify auxiliary panels have breaker available or space for new breakers (if needed)	☐	
G	**Telecom Engineering**		
1	Review telecom equipment in existing control enclosure	☐	
2	Review path to get telecom circuits into the station and determine whether new underground duct bank is needed.	☐	
3	Review current or proposed Telecom equipment power connections and validate with P&C any need for system 1 and system 2 separation.	☐	
4	Review current Telecom fiber diversity and validate with P&C any fiber diversity requirements.	☐	
5	Confirm whether correct interface equipment is available (i.e.) for fiber termination or multiplexor termination	☐	
6	Confirm whether existing communications cabinets are enough to support additional telecommunications equipment installed	☐	
7	Review space for any required additional communications cabinets which may be required to support additional telecommunications equipment installed	☐	
8	Review third party Telecommunications at substation and confirm whether additional capacity or Ground Potential Rise protection is required	☐	

Photos

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

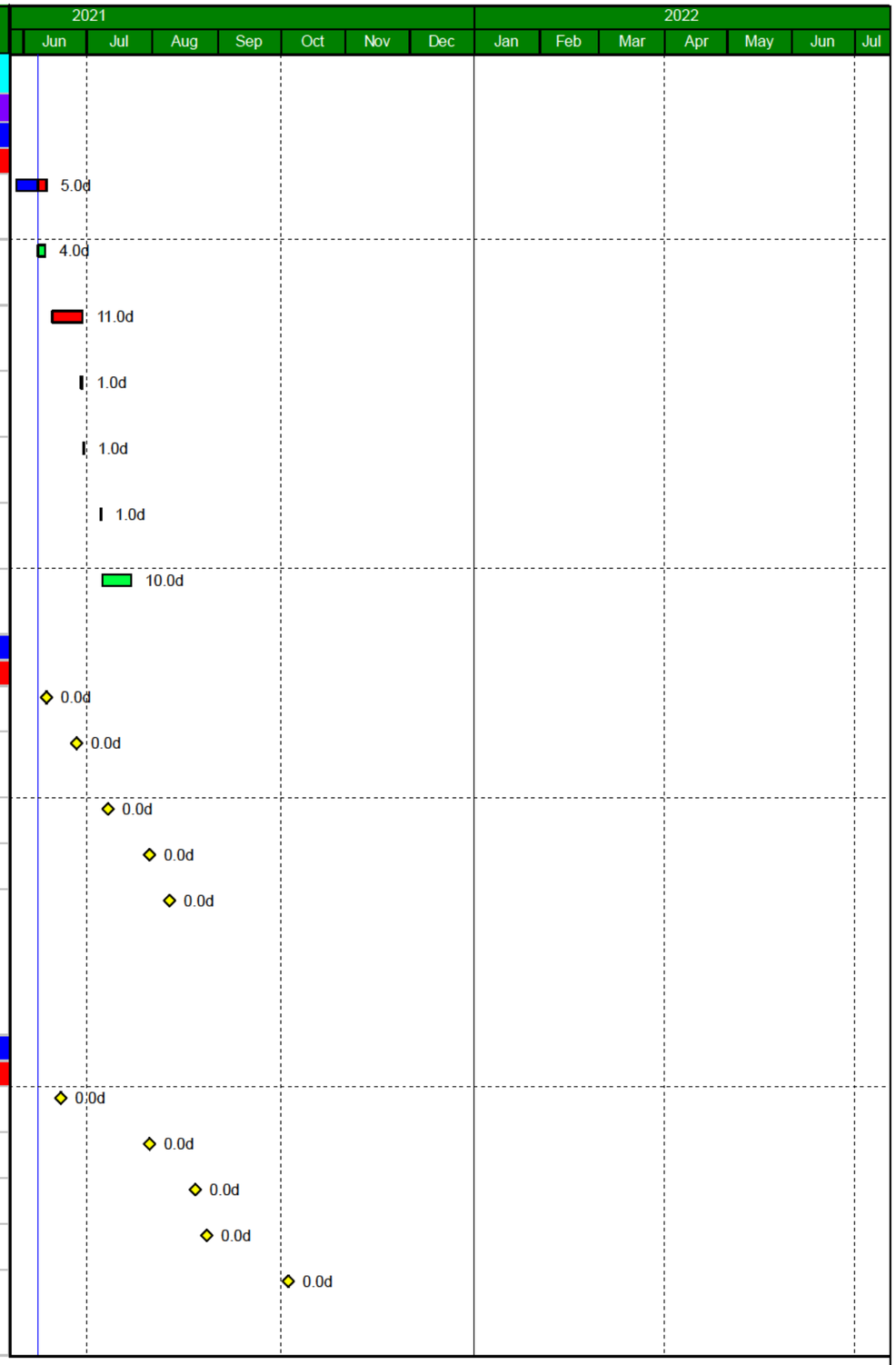
EVERSOURCE

Constructability Review Form: **Substation**





Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
CS00427	[redacted] **Failed Transformer Replacement (CS00427)**							
INITIALIZATION AND SCOPE DEVELOPEMENT								
EPAC Full Funding								
EPAC Full Funding								
DE2010	Review Planning Grade Estimate (+/-25% Full Funding)	5.0d	[redacted]	28-May-21 A	11-Jun-21*	-2.0d	DE2000: FS, DE1600: FS	PAFF2000: FS, A1170: FS
DE2000	Project Constructability Review Complete	4.0d		07-Jun-21	10-Jun-21	240.0d	DE1700: FF, DE1900: FS	DE1600: FS, DE2010: FS
PAFF2000	Submit Full Funding PAF for Internal Review	11.0d		14-Jun-21	28-Jun-21	-2.0d	DE2010: FS	PAFF2100: FS
PAFF2200	Incorporate EPAC Full Funding PAF Review Comments	1.0d		28-Jun-21	28-Jun-21*	0.0d	PAFF2100: FS	FF1000: FS
PAFF2100	Incorporate Internal Review Comments & Submit Full Funding PAF to EPAC for Review	1.0d		29-Jun-21	29-Jun-21	-2.0d	PAFF2000: FS	PAFF2200: FS
FF1000	EPAC Full Funding Approval	1.0d	Eversource Project Approval Committee	07-Jul-21	07-Jul-21*	0.0d	PAFF2200: FS	FF1010: FS
FF1010	Full Funding PowerPlan Approval	10.0d	Eversource Project Approval Committee	08-Jul-21	21-Jul-21	212.0d	FF1000: FS	
Civil T-Minus Milestones								
Civil T-Minus Milestones								
AT1811	70% Civil Design / Engineering Completed	0.0d			11-Jun-21	58.0d	DSSE-110: FS	AT00: FS
AT0203	CAN COMPLETE (CONSTRUCTION AUTHORIZATION NOTICE)	0.0d			25-Jun-21	44.0d	A1230: FF, A1220: FF, A1170: FS	AT00: FS
AT0401	ALL CIVIL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED	0.0d			10-Jul-21	29.0d	DSSE-560: FS	AT00: FS
AT0805C	Civil IFC - Civil (BG) w/BOM	0.0d			30-Jul-21	9.0d	DSSE-120: FS	AT00: FS
AT00	T-00 START OF CIVIL CONSTRUCTION	0.0d		09-Aug-21*		0.0d	AT0203: FS, AT0401: FS, AT0805C: FS, AT1801: FS, AT1811: FS, A3420: FS, BT0801: FS	TOA-Const10: FS
Electrical T-Milestones 2X XFMR Pad								
Electrical T-Milestones 2X XFMR Pad								
DT1301	Commissioning Plan Complete	0.0d			18-Jun-21	107.0d	A9230: FS	DT00: FS
DT0805E	Elect IFC - Electrical (AG) w/Final BOM for the Second Transformer	0.0d			30-Jul-21	65.0d	DSSE-1230: FS	DT00: FS
DT0401	ALL MATERIAL RECEIVED, STAGED, INVENTORIED, REVIEWED	0.0d			21-Aug-21	43.0d	DSSE-1010: FS, DSSE-1250: FS	DT00: FS
DT0404	ALL FINAL RELAY PROTECTIVE SETTING ISSUED	0.0d			26-Aug-21	38.0d	A7440: FS	DT00: FS
DT00	T-00 START OF CONSTRUCTION - Electrical	0.0d		04-Oct-21*		0.0d	DT0401: FS, DT1301: FS, DT0805E: FS, DT0404: FS	CSM10: FS



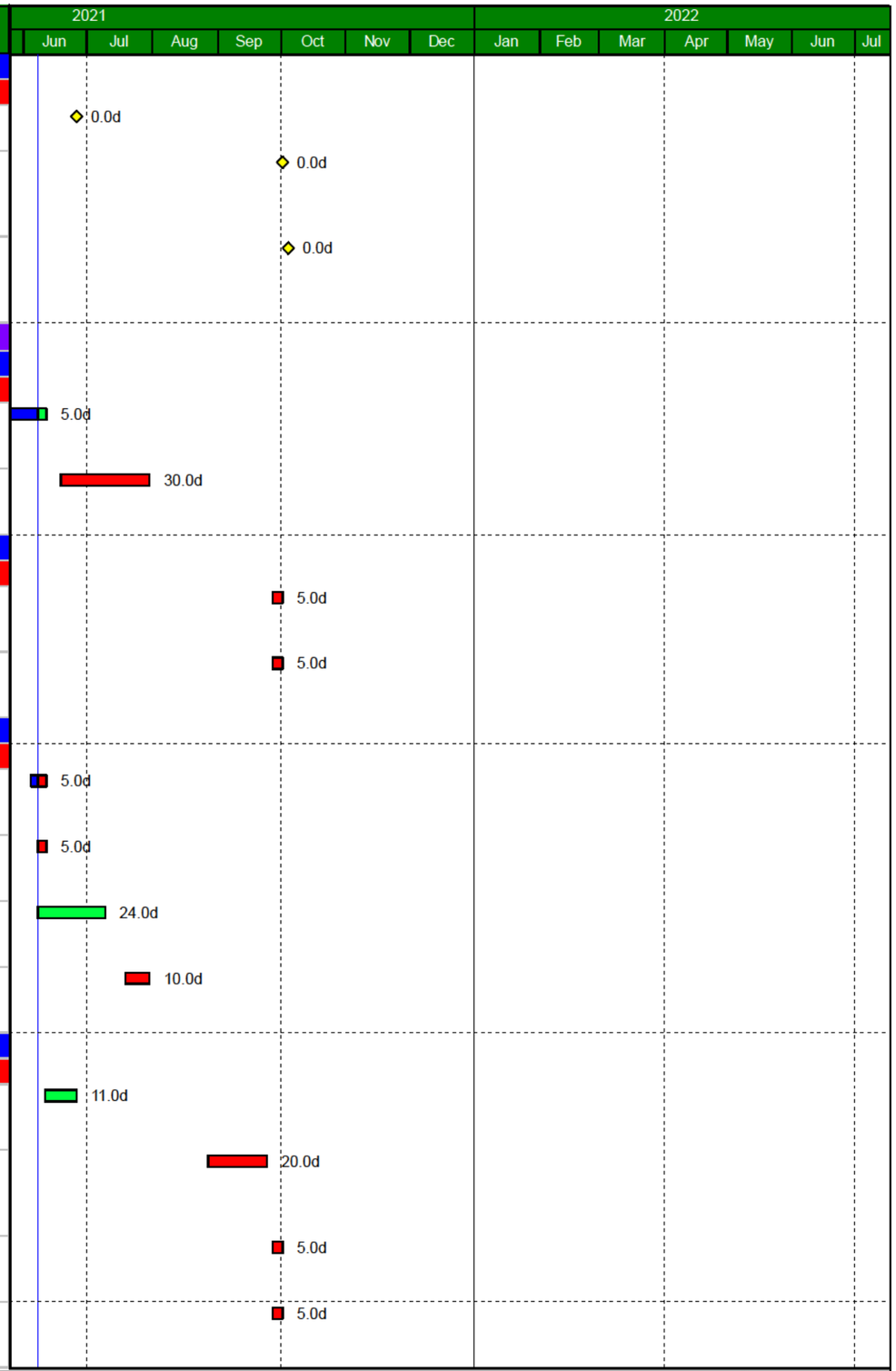
Remaining Work | Vendor Acts | Const Acts | Milestone | Actual Milestone
Critical Remaining Work | Nu Deliverables | Actual Work | Critical Milestones

Data Date
07-Jun-21

16-Jun-21

Project Lead: [redacted]

Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
P&C T-Minus Milestones								
P&C T-Minus Milestones								
ET1201	SCADA Date (Tab) Sheets/Signal List Sent to LCC	0.0d			25-Jun-21	100.0d	DSSE-990: FS	ET00: FS
ET1202	P/C Description / Draft OI Issued To LCC	0.0d			01-Oct-21	2.0d	DSSE-460: FS, DSSE-930: FS, DSSE-920: FS, DSSE-470: FS	ET00: FS
ET00	T-00 START OF CONSTRUCTION - WO#	0.0d		04-Oct-21*		0.0d	ET0805P: FS, ET1201: FS, ET1202: FS, CT0203: FS	A1140: FS
ENGINEERING & DESIGN								
Civil Engineering								
Civil Engineering								
DSSE-110	Civil Package to Design Engineer and Internal Review	5.0d	[redacted]	12-Apr-21 A	11-Jun-21*	1.0d	DSSE-100: FS, PE1700: FS, DSSE-1160: FS	DSSE-500: FF, DSSE-120: FS, AT1811: FS
DSSE-120	Civil Package IFC Engineer & Internal Review	30.0d		18-Jun-21	30-Jul-21*	0.0d	DSSE-110: FS	AT0805C: FS
Electrical Engineering Transformer 1X								
Electrical Engineering Transformer 1X								
DSSE-460	Operating Instructions - SSED Review Draft Distribution OI	5.0d		27-Sep-21	01-Oct-21	0.0d	DSSE-450: FS, A7440: FS	ET1202: FS
DSSE-920	Operating Instructions - SSED Review Draft Convex OI	5.0d		27-Sep-21	01-Oct-21	0.0d	DSSE-450: FS, A7440: FS	ET1202: FS
Electrical Engineering Transformer 2X								
Electrical Engineering Transformer 2X								
DSSE-1210	Detail Electrical Design Package Drafting	5.0d	CT- Substation Design Drafter Generic	04-Jun-21 A	11-Jun-21*	-1.0d	DSSE-1200: FS	A9220: FS, DSSE-1230: FF, DSSE-1240: FF
DSSE-1240	Electrical Engineering - BOM Complete	5.0d	[redacted]	07-Jun-21 A	11-Jun-21	-1.0d	DSSE-1210: FF	DSSE-1230: FF, DSSE-1260: FS
DSSE-1200	Detail Electrical Design Package Design to Drafting	24.0d		07-Jun-21 A	09-Jul-21	220.0d	DSSE-1190: FS	DSSE-1210: FS
DSSE-1230	Electrical Engineering - Electrical Package IFC (Physical & Electrical)	10.0d		19-Jul-21	30-Jul-21*	0.0d	DSSE-1240: FF, DSSE-1210: FF	DT0805E: FS, DSSE-480: FS
P&C Engineering								
P&C Engineering								
DSSE-990	P&C INITIATE SCADA Data Sheets	11.0d	[redacted]	11-Jun-21*	25-Jun-21	68.0d	DSSE-220: FS, DSSE-240: FS	ET1201: FS
DSSE-450	Operating Instructions - Prepare and Issue Draft Distribution OI to Engineering	20.0d	Procedure Writing Group	27-Aug-21	24-Sep-21	0.0d	A7440: FS	DSSE-920: FS, DSSE-460: FS, DSSE-930: FS, DSSE-470: FS
DSSE-470	Operating Instructions - P&C Review Draft Distribution OI	5.0d		27-Sep-21	01-Oct-21	0.0d	A7440: FS, DSSE-450: FS	ET1202: FS
DSSE-930	Operating Instructions - P&C Review Draft Convex OI	5.0d		27-Sep-21	01-Oct-21	0.0d	A7440: FS, DSSE-450: FS	ET1202: FS



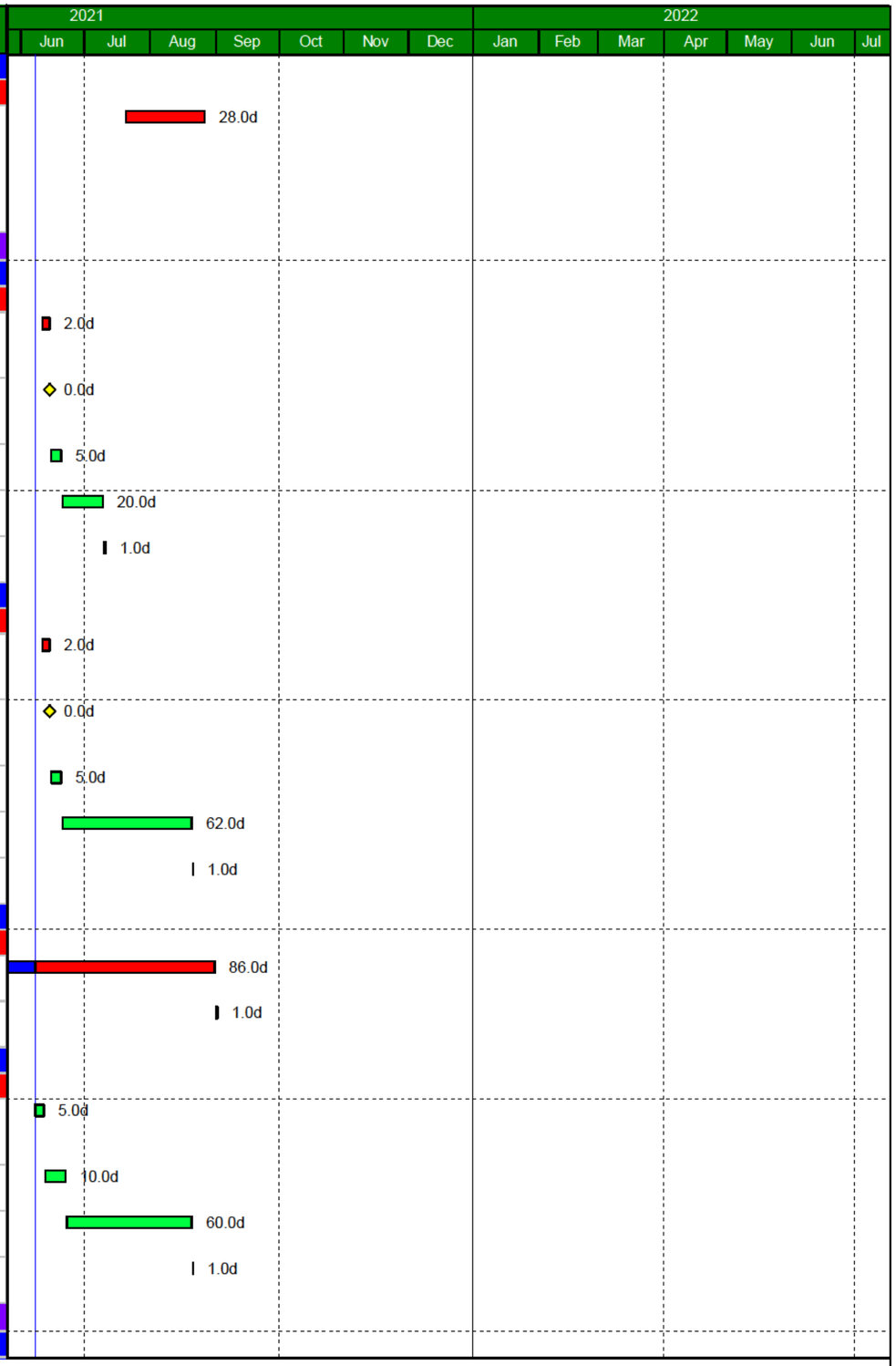
Remaining Work | Vendor Acts | Const Acts | Milestone | Actual Milestone
Critical Remaining Work | Nu Deliverables | Actual Work | Critical Milestones

Data Date
07-Jun-21

16-Jun-21

Project Lead: [redacted]

Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
Relay Settings								
Relay Settings								
A7440	P&C Prepare and Issue Relay Settings to Field (Prior to Line going into Service)	28.0d	[redacted]	20-Jul-21*	26-Aug-21	0.0d	A7560: FS	DSSE-930: FS, DSSE-470: FS, DSSE-450: FS, DSSE-920: FS, DSSE-460: FS, DT0404: FS
MATERIAL PROCUREMENT								
MATERIAL FOR CIVIL								
MATERIAL FOR CIVIL								
DSSE-500	MATERIAL - CIVIL - Prepare & Issue DR	2.0d		11-Jun-21	14-Jun-21*	0.0d	DSSE-110: FF, PF1000: FS	DSSE-600: FF, DSSE-1040: FS
DSSE-600	Civil (BG) Material Ordered	0.0d			14-Jun-21	20.0d	DSSE-500: FF	DSSE-1040: FS
DSSE-1040	MATERIAL - CIVIL - Procurement Issue PO	5.0d	Purchasing Department	15-Jun-21	19-Jun-21	29.0d	DSSE-500: FS, DSSE-600: FS	DSSE-1050: FS
DSSE-1050	MATERIAL - CIVIL - Material Vendor Delivery Leadtime	20.0d		20-Jun-21	09-Jul-21	29.0d	DSSE-1040: FS	DSSE-560: FS
DSSE-560	MATERIAL - CIVIL - Material Coordinator Confirm Material Delivery to Site	1.0d		10-Jul-21	10-Jul-21	29.0d	DSSE-1050: FS	AT0401: FS
Material - Electrical 2X								
Material - Electrical 2X								
DSSE-1260	MATERIAL - Electrical - Prepare & Issue DR	2.0d	[redacted]	11-Jun-21	14-Jun-21*	0.0d	PF1000: FS, DSSE-1240: FS	DSSE-1340: FF, DSSE-1270: FS
DSSE-1340	Electrical (AG) Material Ordered	0.0d			14-Jun-21	30.0d	DSSE-1260: FF	DSSE-1270: FS
DSSE-1270	MATERIAL - Electrical - Procurement Issue PO	5.0d	Purchasing Department	15-Jun-21	19-Jun-21	43.0d	DSSE-1260: FS, DSSE-1340: FS	DSSE-1280: FS
DSSE-1280	MATERIAL - Electrical - Material Vendor Delivery Leadtime	62.0d	Purchasing Department	20-Jun-21	20-Aug-21	43.0d	DSSE-1270: FS	DSSE-1250: FS
DSSE-1250	MATERIAL - Electrical - Material Coordinator Material Delivery to Site	1.0d		21-Aug-21	21-Aug-21	43.0d	DSSE-1280: FS	DT0401: FS
Material - Transformer 2X								
Material - Transformer 2X								
DSSE-1070	MATERIAL - Transformer - Material Vendor Delivery Leadtime	86.0d	[redacted]	18-Jan-21 A	31-Aug-21*	0.0d	DSSE-1060: FS	DSSE-570: FS
DSSE-570	MATERIAL - Transformer - Engineering Confirm Material Delivery to Site	1.0d		01-Sep-21	01-Sep-21	266.0d	DSSE-1070: FS	
MATERIAL FOR P&C								
MATERIAL FOR P&C								
DSSE-510	MATERIAL - P&C - Prepare & Issue DR	5.0d		07-Jun-21	11-Jun-21	29.0d	A3380: FF, PF1000: FS	DSSE-980: FS
DSSE-980	MATERIAL - P&C - Procurement Issue PO	10.0d	Purchasing Department	12-Jun-21	21-Jun-21	43.0d	DSSE-510: FS	DSSE-1000: FS
DSSE-1000	MATERIAL - P&C - Material Vendor Delivery Leadtime	60.0d		22-Jun-21	20-Aug-21	43.0d	DSSE-980: FS	DSSE-1010: FS
DSSE-1010	MATERIAL - P&C - Material Coordinator Confirm Material Delivery to Site	1.0d		21-Aug-21	21-Aug-21	43.0d	DSSE-1000: FS	DT0401: FS
CONSTRUCTION								
CONSTRUCTION								



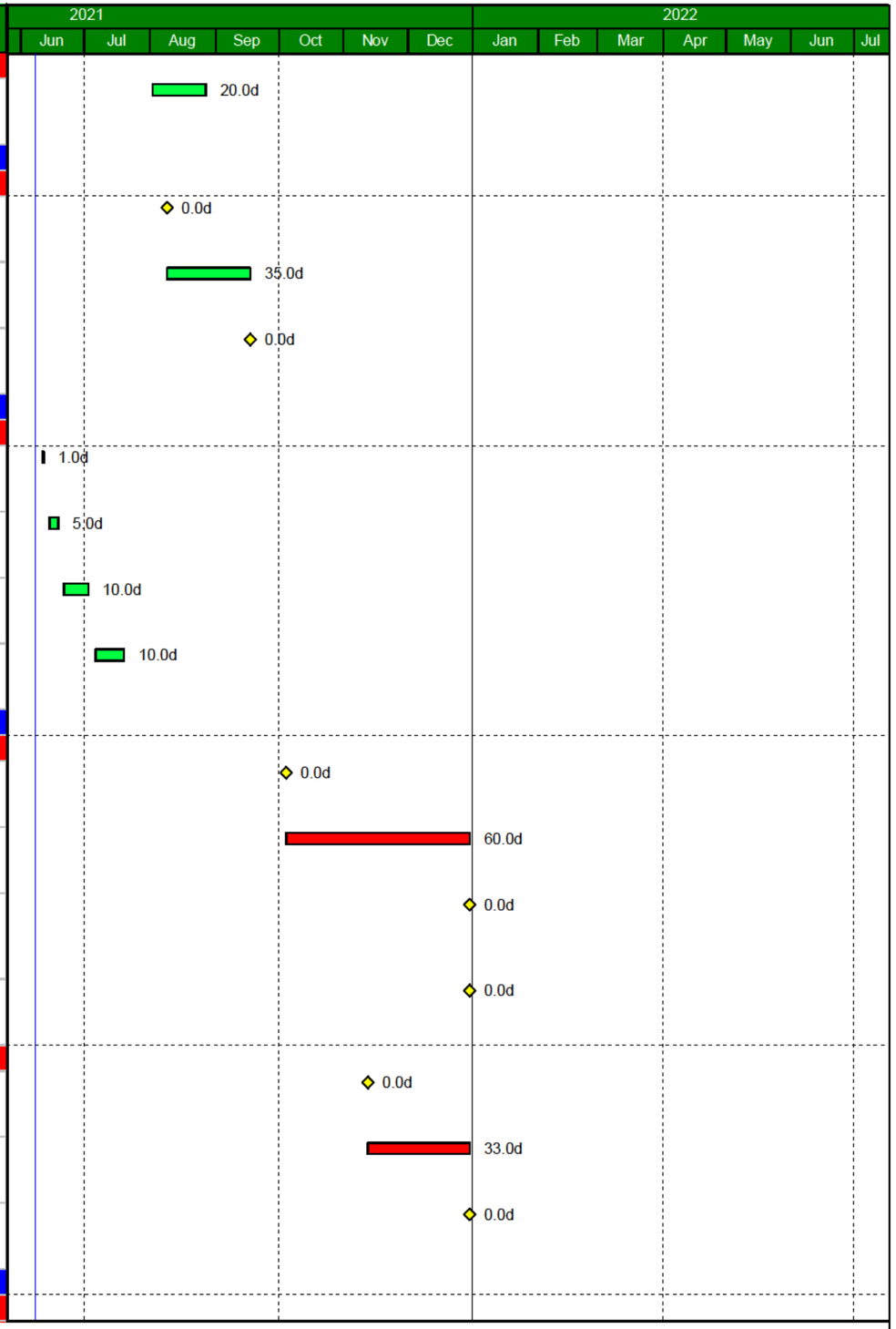
Remaining Work | Critical Remaining Work | Vendor Acts | Nu Deliverables | Const Acts | Actual Work | Milestone | Critical Milestones | Actual Milestone

Data Date
07-Jun-21

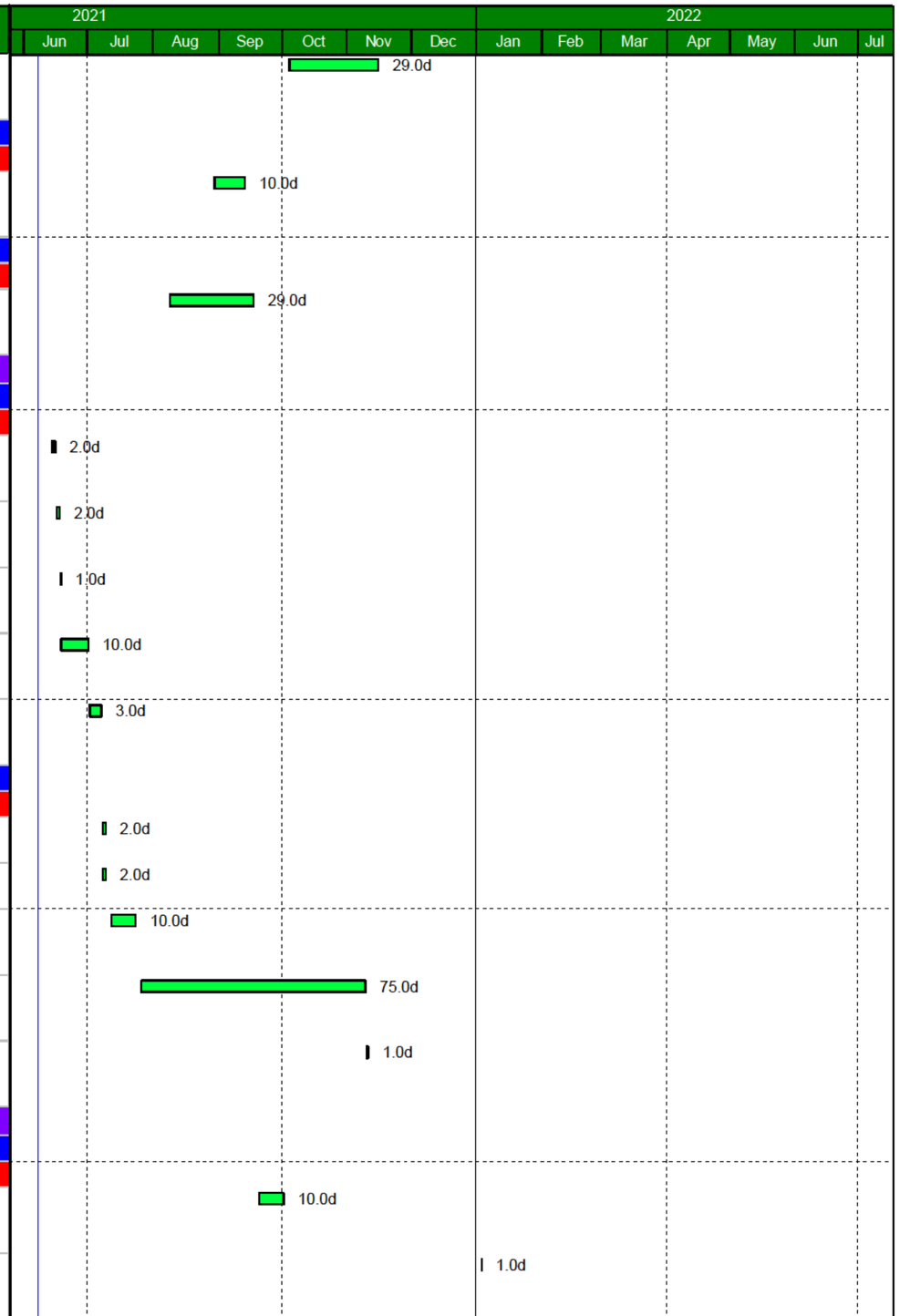
16-Jun-21

Project Lead: [redacted]

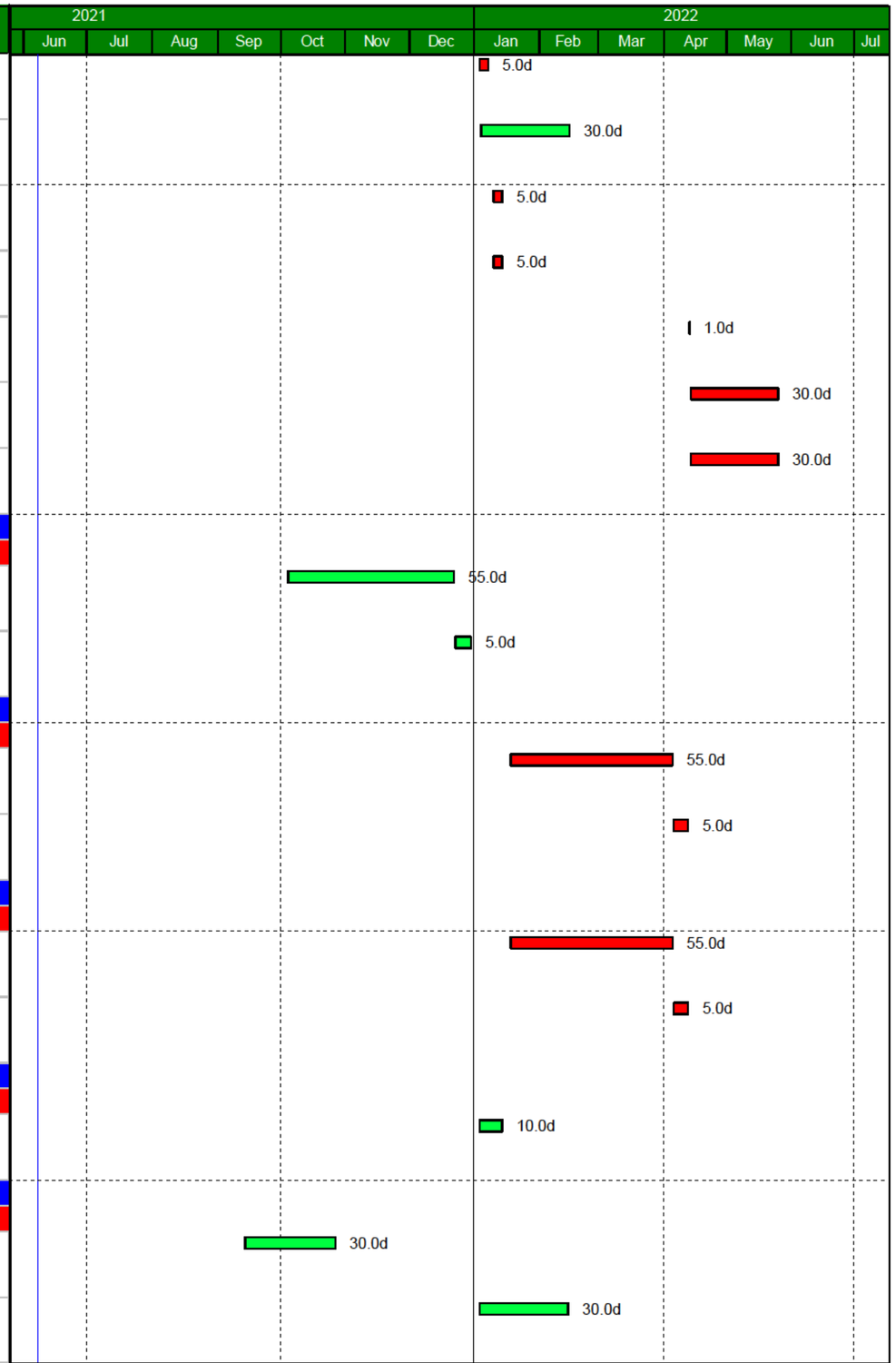
Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
CONSTRUCTION								
DSSE-480	PE INITIATES CASCADE FORMS (Apendix A) for Construction	20.0d	[redacted]	02-Aug-21	27-Aug-21	145.0d	DSSE-1230: FS	A1260: FS
CONSTRUCTION - CIVIL								
CONSTRUCTION - CIVIL								
TOA-Const10	Civil Construction Start Milestone	0.0d		09-Aug-21		91.0d	AT00: FS	ConRep-S: SS, 1050: FS
1050	Civil Construction - General Contruction work	35.0d		09-Aug-21	17-Sep-21	91.0d	TOA-Const10: FS	CFM20: FS
CFM20	Civil Construction Finish Milestone	0.0d			17-Sep-21	91.0d	1050: FS, ConRep-S: FS	ISD10: FS, A3620: FS
Civil Construction Service / Contracts								
CONSTRUCTION SERVICES - Civil Construction								
A3390	Bid For Construction - Eversource Provides Spec / RFP	1.0d	Purchasing Department	11-Jun-21*	11-Jun-21	14.0d	A3550: FS	A3400: FS
A3400	Bid For Construction - Issue Bid Package	5.0d	CT/WMA.Construction Contractor-GENERIC	14-Jun-21	18-Jun-21	14.0d	A3390: FS	A3410: FS
A3410	Bid For Construction - Prebid Meeting with Vendors	10.0d	[redacted]	21-Jun-21	02-Jul-21	14.0d	A3400: FS	A3420: FS
A3420	CONST.SERVICES - Eversource Awards Contract - PO Issued	10.0d	Purchasing Department	06-Jul-21	19-Jul-21	14.0d	A3410: FS	AT00: FS
Second Transformer Installation - [redacted]								
Second Transformer Installation - [redacted]								
CSM10	Electrical Construction Start Milestone	0.0d		04-Oct-21		0.0d	DT00: FS	1100: FS, A20180: FS
1100	Placement of 17R-2X GE transformer on 2X foundation and energize it	60.0d	Construction Resources	04-Oct-21	30-Dec-21	0.0d	CSM10: FS	CFM10: FS
CFM10	Electrical Construction Finish Milestone - 17R-2X XFMR	0.0d			30-Dec-21	2.0d	1100: FS, A1140: FS, CONSTelec: FS, LCE1010: FS	ISD10: FS, DSSE-1100: FS, A1110: FS, A1270: FS
ISD10	EQUIPMENT IN SERVICE DATE - 17R-2X	0.0d			30-Dec-21	89.0d	CFM10: FS, CFM20: FS, A20170: FS	A1040: FS, A1020: FS
Outage 1 - DCR-21-B-01								
A20160	Switch out of DCR-01	0.0d		12-Nov-21		109.0d	A20180: SS	A20170: FS
A20180	(DCR-21-B-01) Take the 17R-1X OOS, Disconnect the failed 17R-1X (electrically), Move the 1X out and replace with the 2X	33.0d		12-Nov-21*	30-Dec-21	0.0d	CSM10: FS	A20160: SS, A20170: FF
A20170	Switch in of DCR-01	0.0d			30-Dec-21	74.0d	A20180: FF, A20160: FS	ISD10: FS
CONSTRUCTION - P&C								
CONSTRUCTION - P&C								



Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
A1140	Construction - P&C Implement & Document Relay Settings	29.0d	Construction Rep Generic	04-Oct-21	15-Nov-21	31.0d	ET00: FS	CFM10: FS
CONSTRUCTION - CONST.REP TASKS								
CONSTRUCTION - CONST.REP TASKS								
A1260	Construction Rep Finalize CASCADE Forms (within 14 days folloiwng ISD)	10.0d	Construction Rep Generic	30-Aug-21	13-Sep-21	145.0d	DSSE-480: FS	A1030: FS
CONSTRUCTION RESOURCE TRACKING								
CONSTRUCTION RESOURCE TRACKING								
ConRep-S	RESOURCE ONLY ACTIVITY - CONSTRUCTION - CONSTRUCTION REP	29.0d	Construction Rep Generic	09-Aug-21	17-Sep-21	70.0d	TOA-Const10: SS	CFM20: FS
TEST AND COMMISSION								
Planning								
Planning								
A9220	PM Requests Lead Commissioning Engineer Makes Go/No-Go Decision	2.0d	[redacted]	14-Jun-21	15-Jun-21	34.0d	DSSE-1210: FS	A9410: FS
A9410	Assign Lead Commissioning Engineer	2.0d		16-Jun-21	17-Jun-21	34.0d	A9220: FS	A9240: FS, A9230: FS
A9230	Develop Test and Commissioning Plan	1.0d	CT/WMA Test Contractor-GENERIC	18-Jun-21	18-Jun-21	43.0d	A9410: FS	A9250: FS, DT1301: FS
A9240	Evaluate Drawings and Plan for Construction Outages	10.0d	CT/WMA.Construction Contractor-GENERIC	18-Jun-21	01-Jul-21	34.0d	A9410: FS	A9250: FS
A9250	LCE Review and Approve Test and Commissioning Plan	3.0d	[redacted]	02-Jul-21	07-Jul-21	34.0d	A9230: FS, A9240: FS	LCE1000: FS, LCE1030: FS
Testing								
Testing								
LCE1000	Mobilize LCE Prior to Construction	2.0d	CT/WMA Test Contractor-GENERIC	08-Jul-21	09-Jul-21	48.0d	A9250: FS	LCE1020: FS
LCE1030	Mobilize Testing Vendor Prior to Construction	2.0d	CT/WMA Test Contractor-GENERIC	08-Jul-21	09-Jul-21	48.0d	A9250: FS	LCE1020: FS
LCE1020	Execute Test and Commissioning Plan	10.0d	CT/WMA Test Contractor-GENERIC	12-Jul-21	23-Jul-21	34.0d	LCE1000: FS, LCE1030: FS	LCE1010: FS
LCE1010	LCE Oversee Execution of Test and Commissioning Plan	75.0d	CT - Lead Commissioning Engineer	26-Jul-21	09-Nov-21	34.0d	LCE1020: FS	LCE1040: FS, CFM10: FS
LCE1040	LCE Ensure Test Group Prepare Electrical Field Mark Ups	1.0d	CT - Lead Commissioning Engineer	10-Nov-21	10-Nov-21	38.0d	LCE1010: FS	A3640: FS, A3650: FS
PROJECT CLOSE OUT								
PROJECT CLOSE OUT								
PROJECT CLOSE OUT								
A3620	Prepare & Submit Civil Field Mark Ups (Tie after Last Civil Construction Activity)	10.0d		20-Sep-21	01-Oct-21	70.0d	CFM20: FS	A3730: FS
A3660	PM to Document Civil As-Built Drawings Complete	1.0d	[redacted]	03-Jan-22	03-Jan-22	70.0d	A3740: FS	A3670: FS



Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
DSSE-1100	Complete TD-707 Turnover Document / Forward to SOC & Mailing List	5.0d	Construction Rep Generic	03-Jan-22	07-Jan-22	0.0d	CFM10: FS	A3640: FS, A3650: FS
A3670	FE Files Civil Design Drawings at Station	30.0d		04-Jan-22	15-Feb-22	70.0d	A3660: FS	FINISH: FS
A3640	Field Prepares & Submit Electrical Field Mark Ups	5.0d	Tester Not Assigned	10-Jan-22	14-Jan-22	0.0d	LCE900: FS, DSSE-1100: FS, LCE1040: FS	A3750: FS
A3650	Field Prepares & Submit P&C Field Mark Ups	5.0d		10-Jan-22	14-Jan-22	0.0d	DSSE-1100: FS, LCE1040: FS	A3770: FS
A3680	PM to Document Electrical As-Built Drawings Complete (Electrical, P&C)	1.0d	[redacted]	13-Apr-22	13-Apr-22	0.0d	A3780: FS, A3760: FS	A3710: FS, A3690: FS
A3690	FE Files Substation Design Drawings at Station	30.0d		14-Apr-22	25-May-22	0.0d	A3680: FS	FINISH: FS
A3710	FE Files P&C Design Drawings at Station	30.0d		14-Apr-22	25-May-22	0.0d	A3680: FS	FINISH: FS
Civil As-Builts								
Civil As-Builts								
A3730	Eversource Engineering Verifies Civil Mark Ups and Updates As-Built Drawing Package	55.0d	Civil Engineering	04-Oct-21	22-Dec-21	70.0d	A3620: FS	A3740: FS
A3740	ES Create Civil Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5.0d	Civil Engineering	23-Dec-21	30-Dec-21	70.0d	A3730: FS	A3660: FS
Electrical As-Builts								
Electrical As-Builts								
A3750	Eversource Engineering Verifies Electrical Mark Ups and Updates As-Built Drawing Package	55.0d	[redacted]	18-Jan-22	05-Apr-22	0.0d	A3640: FS	A3760: FS
A3760	Electrical Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5.0d		06-Apr-22	12-Apr-22	0.0d	A3750: FS	A3680: FS
P&C As-Builts								
P&C As-Builts								
A3770	Eversource Engineering Verifies P&C Mark Ups and Updates As-Built Drawing Package	55.0d	CT- P&C Engineer Generic	18-Jan-22	05-Apr-22	0.0d	A3650: FS	A3780: FS
A3780	P&C Transmittal, Approve Final As-Built Package, and EDC Files and Issue Drawings to Field	5.0d	CT- P&C Engineer Generic	06-Apr-22	12-Apr-22	0.0d	A3770: FS	A3680: FS
SITE RESTORATION CLOSEOUT								
SITE RESTORATION CLOSEOUT								
A1110	Restore / Remediate Site	10.0d	CT/WMA.Construction Contractor-GENERIC	03-Jan-22	14-Jan-22	91.0d	CFM10: FS	FINISH: FS
MATERIAL, EQUIPMENT, COST, AND ASSET MANAGEMENT CLOSEOUT								
MATERIAL, EQUIPMENT, COST, AND ASSET MANAGEMENT CLOSEOUT								
A1030	Asset Management Complete Asset Update(s) in CASCADE	30.0d	[redacted]	14-Sep-21	26-Oct-21	145.0d	A1260: FS	FINISH: FS
A1020	Cost Analyst Prepares FINAL Units of Property	30.0d	CT- Cost Analyst Generic	03-Jan-22	14-Feb-22	71.0d	ISD10: FS	FINISH: FS



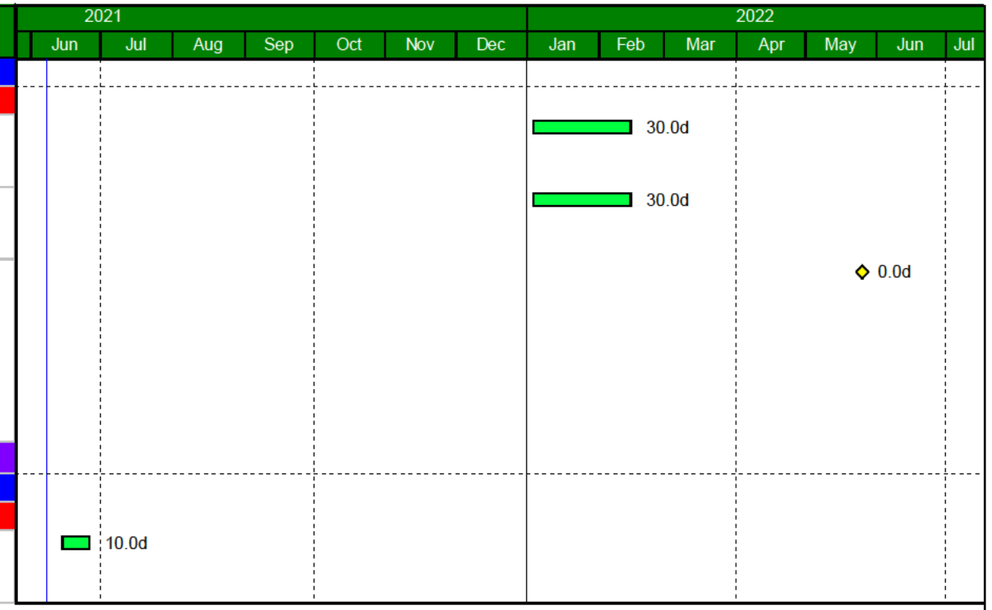
Remaining Work | Critical Remaining Work | Vendor Acts | Nu Deliverables | Const Acts | Actual Work | Milestone | Critical Milestones | Actual Milestone

Data Date
07-Jun-21

16-Jun-21

Project Lead: [redacted]

Activity ID	Activity Name	RD	Resources	Start	Finish	Total Float	Predecessor Details	Successor Details
PROJECT MANAGEMENT CLOSEOUT								
PROJECT MANAGEMENT CLOSEOUT								
A1040	PM Prepares Closeout Documentation, Lessons Learned Meeting, etc.	30.0d	[redacted]	03-Jan-22	14-Feb-22	71.0d	ISD10: FS	FINISH: FS
A1270	Prepare TD-707 Document	30.0d		03-Jan-22	14-Feb-22	71.0d	CFM10: FS	FINISH: FS
FINISH	Project / Work Order Complete (FINAL SCHEDULE TASK/MILESTONE)	0.0d			25-May-22	0.0d	A1020: FS, A1040: FS, A1110: FS, A1270: FS, A1030: FS, A3710: FS, A3690: FS, A3670: FS	
OVERHEAD / INDIRECTS								
PROJECT MANAGEMENT								
PROJECT MANAGEMENT								
A1170	Prepare CAN (Construction Authorization Notice) for civil	10.0d		14-Jun-21	25-Jun-21	29.0d	CGE1000: FS, DE1600: FS, DE2010: FS	AT0203: FS



Remaining Work
Critical Remaining Work
Vendor Acts
Nu Deliverables
Const Acts
Actual Work
Milestone
Critical Milestones
Actual Milestone

Data Date
07-Jun-21

16-Jun-21

Project Lead: [redacted]