Operations Project Authorization Form

Approved at May 15, 2019 EPAC
Link to Meeting Minutes

Date Prepared: 05/08/2019	**Project Title: [redacted] OCB Replacement**
Company/ies: Eversource CT	**Project ID Number: CS00127**
Organization: Asset Management	**Class(es) of Plant: [redacted]**
Project Initiator: [redacted]	**Project Category: [redacted] – Breakers**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Project Purpose: Replace aging oil circuit breakers**
Estimated In-Service Date: 12/31/2019	**If Transmission Project: PTF? N/A**
Eng. /Constr. Resources Budgeted? Y	**Capital Investment Part of Original Operating Plan? Y**
Authorization Type: Full Funding	**O&M Expenses Part of the Original Operating Plan? N**
Total Request: $2,595K	

Financial Requirements:

Project Authorization

ERM: _____

FP&A: _____

Executive Summary

This project is seeking full funding of $2,595K to replace [redacted] 23kV Oil Circuit Breakers (OCBs) at [redacted] This substation has been identified as having [redacted] OCBs that require replacement with [redacted] Eversource CT had a PURA initiative within docket number 14-05-06 to replace all OCBs at distribution substations to minimize environmental impacts from leaking and failed equipment. This project was initiated per this PURA initiative.

This project was previously approved in PowerPlan on November 3, 2016 for preliminary engineering in the amount of $150K. Materials ([redacted]) have been purchased & preliminary engineering work has been completed. As of May 8, 2019, approximately $1,411,400 has been spent to date.

Project Costs Summary

Note: Dollar values are in thousands

	Prior Authorized	Previous Spend (2016-2017)	2018	2019	Total
Capital Additions - Direct	$107	$9	$241	$893	$1,143
Less Customer Contribution	$0	$0	$0	$0	$0
Removals Net of Salvage 0%	$0	$0	$0	$36	$36
Total - Direct Spending	$107	$9	$241	$929	$1,179
Capital Additions - Indirect	$41	$11	$116	$1,205	$1,332
Subtotal Request	$148	$20	$357	$2,134	$2,511
AFUDC	$2	$0	$11	$73	$84
Total Capital Request	**$150**	**$20**	**$368**	**$2,207**	**$2,595**
O&M	$0	$0	$0	$0	$0
Total Request	**$150**	**$20**	**$368**	**$2,207**	**$2,595**

Financial Evaluation

Note: Dollar values are in thousands

Direct Capital Costs	Previous Spend (2016 – 2017)	2018	2019	Total
Straight Time Labor	$9	$36	$752	$797
Overtime Labor	$0	$0	$0	$0
Outside Services	$0	$27	$164	$191
Materials	$0	$178	$13	$191
Other, including contingency amounts	$0	$0	$0	$0
Total	**$9**	**$241**	**$929**	**$1,179**

Indirect Capital Costs	Previous Spend (2016 – 2017)	2018	2019	Total
Indirects/Overheads (including benefits)	$11	$116	$1,205	$1,332
Capitalized interest or AFUDC, if any	$0	$11	$73	$84
Total	**$11**	**$127**	**$1,278**	**$1,416**

Total Capital Costs	**$20**	**$368**	**$2,207**	**$2,595**
Less Total Customer Contribution	$0	$0	$0	$0
Total Capital Project Costs	**$20**	**$368**	**$2,207**	**$2,595**
Total O&M Project Costs	**$0**	**$0**	**$0**	**$0**

Note: Explain unique payment provisions, if applicable

Future Financial Impacts:

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

Future Costs	Year 20__	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: N/A

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

There are no additional future costs associated with this project. The existing circuit breakers will be replaced on a one for one basis. There are no additional circuit breakers being added under this program.

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:
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

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

Is there an ARO associated with this project? No.

Are there other environmental cleanup costs associated with this project? Yes, all environmental cleanup costs have been accounted for within the requested project cost. The cleanup costs include the drainage, removal & disposal of the oil. The oil footprint has been reduced as a result of this project. The SPCC plan was reviewed and will be modified accordingly once all Oil circuit breaker equipment has been removed from the site.

Technical Justification:

Project Need Statement

[redacted] has been identified as having [redacted] oil circuit breakers (OCBs) that [redacted]. As part of a past PURA initiative within docket number 14-05-06 the [redacted] OCBs will be replaced with [redacted] The need is driven by obsolescence and environmental concerns. It is driven by the oil filled circuit breaker design being obsolete. The replacement of the OCBs with vacuum breakers provides significantly less environmental risk.

[redacted] Eversource CT had a PURA initiative within docket number 14-05-06 to replace all OCBs at [redacted] to minimize environmental impacts from possible leaking and failed equipment.

Project Objectives

- Replace identified oil circuit breakers in the [redacted]
- Increase employee safety
- Increase system reliability
- Reduce maintenance intervals

Project Scope

Replace [redacted] 23kV oil circuit breakers with [redacted] at [redacted].

[redacted] The following OCBs are slated for replacement:

Nom	Age	Tank Style	Mfg.	Model	Load Rating	V Class	Interrupt kA
[redacted]							

[redacted]

Replacing the OCBs will require [redacted]

[redacted] will replace obsolete OCBs:

[redacted]

A [redacted].

Background / Justification

The overall capital initiative to eliminate oil filled circuit breakers was presented to PURA within docket number 14-05-06. This initiative was created to decrease Eversource's environmental exposure to oil spills and leaks as well as replace a vital component of aging substation infrastructure. The initiative started by targeting OCBs with PCB bushings. In 2012, the initiative increased in scope to include all substation OCBs. The initial justification was based on the anticipated risk of potential environmental damage in case of an PCB bushing/breaker catastrophic failure.

Business Process and / or Technical Improvements:

The benefit to customers is improved reliability and reduced environmental risk. This benefit will be realized by replacing aging oil filled equipment, which presents an environmental concern. The replacement of the OCB's will also increase employee safety, system reliability, and will reduce maintenance intervals. [redacted]

Alternatives Considered with Cost Estimates

1. Replace only the OCBs with PCB bushings. This option would minimize clean-up efforts in the case of a catastrophic failure of the circuit breaker bushings. The tank oil would still have an impact on the environment if leaked onto the ground.

2. It was considered to replace the OCB PCB bushing and keep the oil filled breaker in place. Replacement of the bushings would be categorized as an Expense project. The cost for this alternative could be as high as $40 to $50K per breaker. This alternative does not address the PURA initiative.

3. Do Nothing: This approach is not recommended as an alternative due to not addressing the environmental concerns or the replacement of obsolete equipment.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Engineering	January 2018
Construction start	February 2019
Construction finish	December 2019

**The construction phase of this project has already started*

Regulatory Approvals

N/A

Risks and Risk Mitigation Plans

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
[redacted]	2019	Medium Impact	[redacted]
[redacted]	2019	Medium Impact	[redacted]

References

CL&P 2014 Operating Initiatives - Docket No.14-05-06 PURA-03 Dated 06/20/2014

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

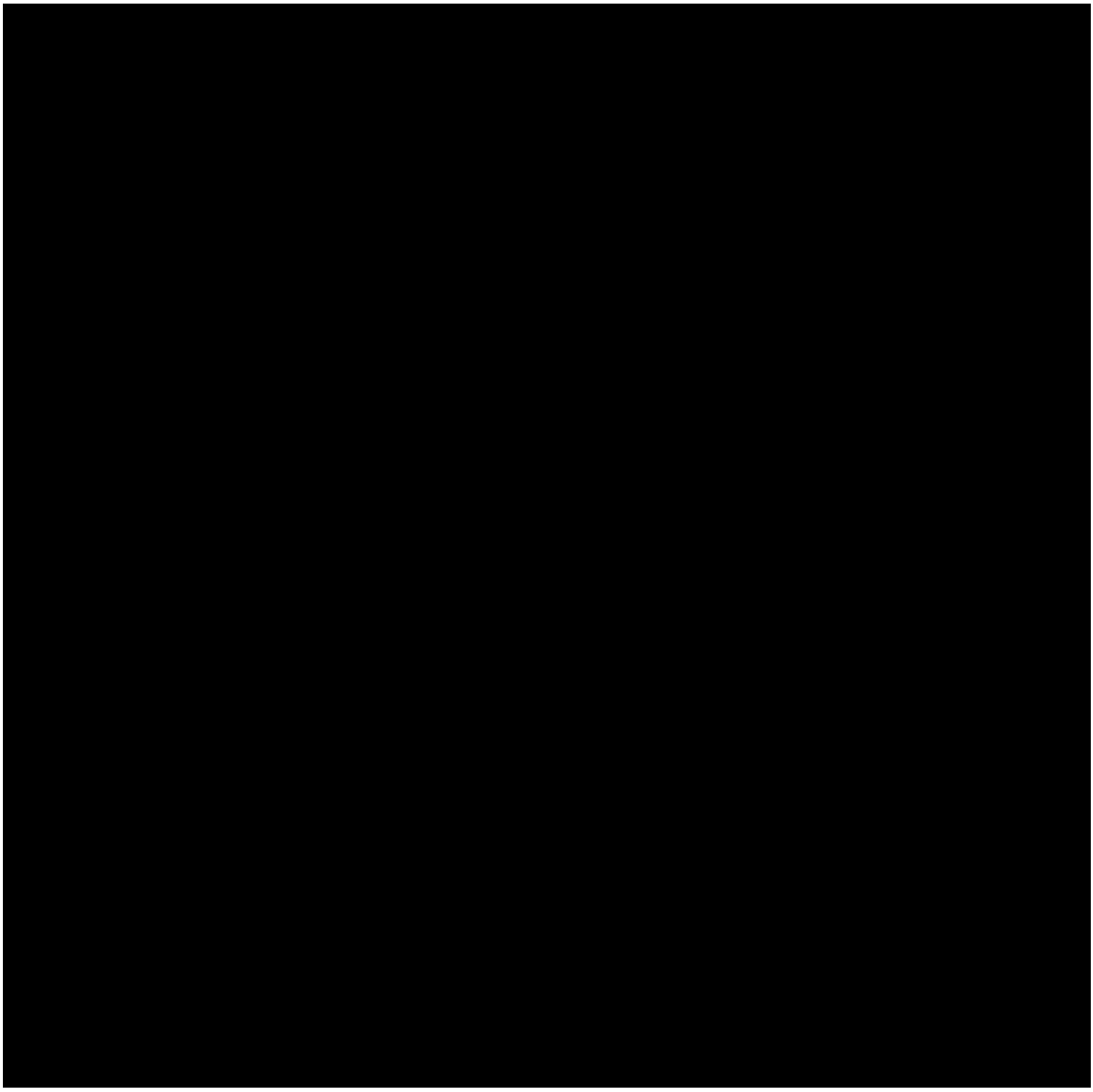

Diagram 1 - Nomenclature diagram indicating equipment upgrade locations



Figure 1 and Figure 2 – [redacted]



Figure 3 – [redacted] ***OCB***

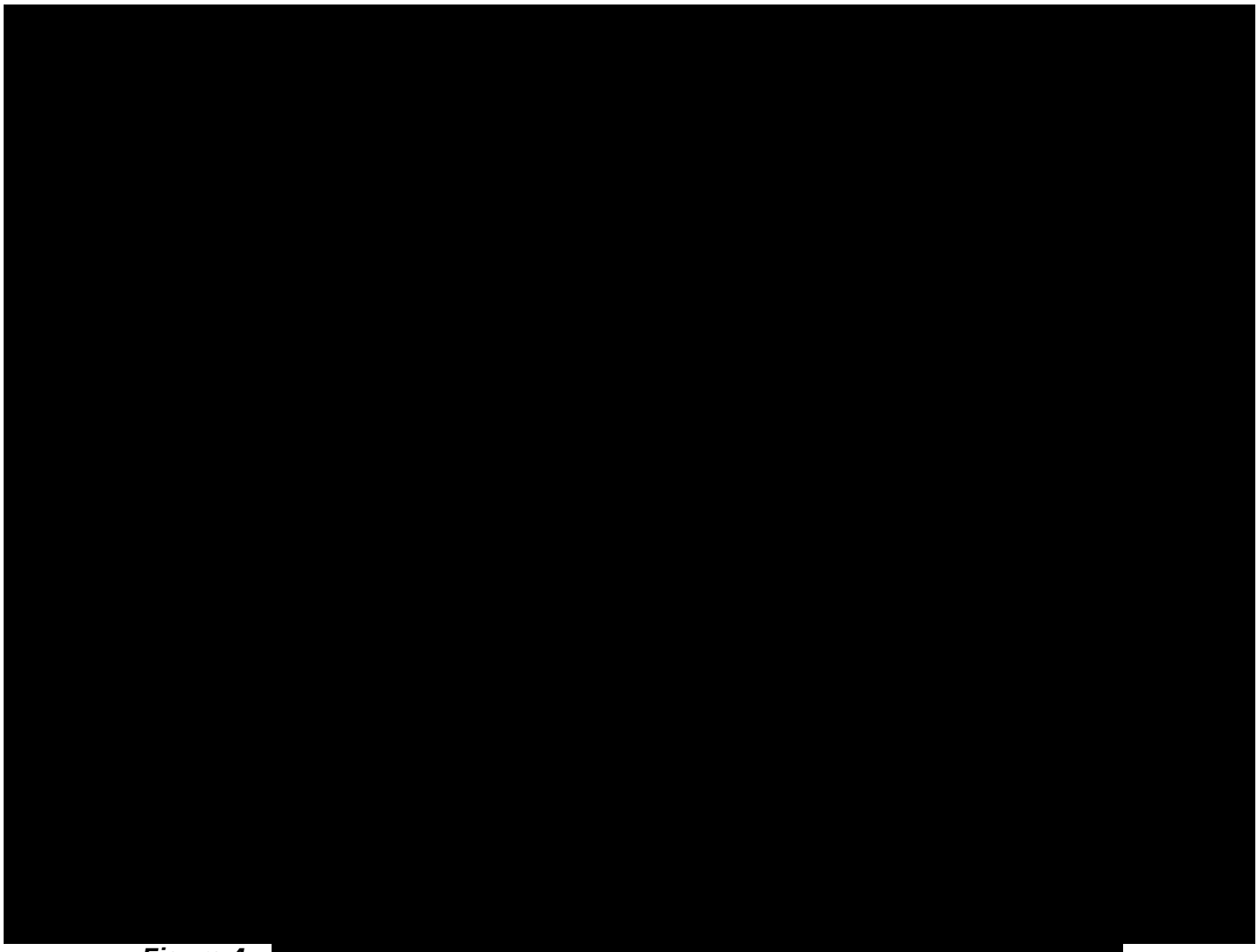

Figure 4 – **.**

Project Checklist – Transmission and Substation

INSTRUCTIONS:

It is the responsibility of the initiator to contact the 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.

Checklist for Studies and Processes of a Transmission & Substation Capital Project		
Project Name: [redacted]	**OCB Replacement**	**PAF No: CS00127**
Facility Type: ☐ BPS ☐ BES ☐ PTF ☒ non-PTF ☐ CIP ☒ Distribution		
PLANNING		
Is a NX-9 required?	No	
Is an ISO-NE PAC presentation required?	No	
Is a PPA required?	No	
Is a TCA Application Required?	No	
PLANNING/PROTECTION & CONTROLS		
Are RAS/SPS/UVLs affected?	No	
OPERATIONS		
Outage Required?	[redacted]	☐ 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?	Yes	
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	
P&C ENGINEERING		
OP-22 - Are PMUs and DDR required?	No	
If BPS, is an NPCC Directory #4 presentation required?	No	

Checklist for Studies and Processes of a Transmission & Substation Capital Project	
Project Name: [redacted] **OCB Replacement**	**PAF No: CS00127**
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?	No
PERMITTING	
Is there any permitting required?	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	
How was the cost estimate prepared?	Estimate was prepared by Eversource Engineering
Who prepared the estimate?	[redacted]
Was the estimate reviewed by Eversource Estimating?	Yes - Full Review

Cost Estimate Backup Details

Project Title: [redacted]/S- OCB Replacement	Prior Yrs	2019	N/A	2020	1	2021	2	2022	3	2023	4	TOTAL	N/A		Escalation
Project #: CS00127	$	Mdays	$	MDays	$	MDays	$	MDays	$	MDays	$	MDays	$	%	3.0%
ENRXX-TG ENG / DESIGN															Avg ENG Rate
Project Services & Drafting	$0	30	$11,100	0	$0	0	$0	0	$0	0	$0	30	$11,100		370
Trans Eng & Design	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Civil Engineering	$0	5	$1,850	0	$0	0	$0	0	$0	0	$0	5	$1,850		
Civil Design	$0	20	$7,400	0	$0	0	$0	0	$0	0	$0	20	$7,400		
Elect Eng & Design	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Dist. SS Eng & Design	$0	20	$7,400	0	$0	0	$0	0	$0	0	$0	20	$7,400		
Protection & Control	$0	25	$9,250	0	$0	0	$0	0	$0	0	$0	25	$9,250		
Surveying	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Permitting	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Telecom	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
SS Technical Engineer	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Apparatus Speciallist	$0	5	$1,850	0	$0	0	$0	0	$0	0	$0	5	$1,850		
Escalation					$0		$0		$0		$0		$0		
LT Subtotal	$0	105	$38,850	0	$0	0	$0	0	$0	0	$0	105	$38,850	$38,850	=If Crossfoot Verification
Distribution Contractor Engineering	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		370
Eng Contractor = W19 x Material & Construction Cost	$0		$0		$0		$0		$0		$0		$0	0.0%	
Contingency			$0		$0		$0		$0		$0		$0	0.0%	
Escalation					$0		$0		$0		$0		$0		
ENRXX TOTAL	$0		$38,850		$0		$0		$0		$0		$38,850	$38,850	=If Crossfoot Verification
PSMXX-PROJECT MGR & SUPPORT															
Project Planning	$0	5	$1,850	0	$0	0	$0	0	$0	0	$0	5	$1,850		
Project Management/Engineer	$0	5	$1,850	0	$0	0	$0	0	$0	0	$0	5	$1,850		
Legal	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		
Escalation					$0		$0		$0		$0		$0		
LT Subtotal	$0	10	3,700	0	$0	0	$0	0	$0	0	$0	10	$3,700	$3,700	=If Crossfoot Verification
Employee Expenses	$0		$37		$0		$0		$0		$0		$37	1%	
Contractors - Includes Sales Tax & Esc.	$0		$0		$0		$0		$0		$0		$0		
Environmental (Identifiable Tax Credit)	$0		$50,000		$0		$0		$0		$0		$50,000		
Legal - Contractors - Includes Sales Tax	$0		$0		$0		$0		$0		$0		$0		
Property Tax (Large Projects & Town Expectations)	$0		$0		$0		$0		$0		$0		$0		
Fees & Payments	$0		$0		$0		$0		$0		$0		$0		
Contingency			$0		$0		$0		$0		$0		$0	0.0%	
Escalation					$0		$0		$0		$0		$0		
PSMXX-PROJECT MGR & SUPPORT TOTAL	$0		$53,737		$0		$0		$0		$0		$53,737	$53,737	=If Crossfoot Verification
CSTXX-CONSTRUCTION - Additions %														100.0%	In House MDay Rate
Civil	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		$466
Electrical	$0	525	$248,850	0	$0	0	$0	0	$0	0	$0	525	$248,850		$474
Test	$0	975	$462,150	0	$0	0	$0	0	$0	0	$0	975	$462,150		$474
Other - Switch / Tag Support	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		$474
Construct. Reps	$0		$0	0	$0	0	$0	0	$0	0	$0	0	$0		$370
Escalation					$0		$0		$0		$0		$0		
LT Subtotal	$0	1,500	$711,000	0	$0	0	$0	0	$0	0	$0	1,500	$711,000	$711,000	=If Crossfoot Verification
Employee Expenses	$0		$7,110		$0		$0		$0		$0		$7,110	1%	Contractor MDay Rate
Contractor Civil	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$880
Contractor Electrical	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$1,120
Contractor Test	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$1,200
Contractor Other - Switch / Tag Support	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$1,120
Contractor Equipment = % of Total Construction Labor	$0		$142,200		$0		$0		$0		$0	0	$142,200	20.0%	
Additional Test & Commissioning Labor Inc sales tax	$0		$0		$0		$0		$0		$0		$0		
Fees & Payments	$0		$0		$0		$0		$0		$0		$0		
Rents & Leases	$0		$0		$0		$0		$0		$0		$0		
Contingency			$0		$0		$0		$0		$0		$0	0.0%	
Escalation					$0		$0		$0		$0		$0		
CSTXX TOTAL	$0		$860,310		$0		$0		$0		$0		$860,310	$860,310	=If Crossfoot Verification
REMXX-TG REMOVAL - %														16.5%	In House MDay Rate
Civil	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		$466
Electrical	$0	75	$35,550	0	$0	0	$0	0	$0	0	$0	75	$35,550		$474
Escalation					$0		$0		$0		$0		$0		
LT Subtotal	$0	75	$35,550	0	$0	0	$0	0	$0	0	$0	75	$35,550	$35,550	=If Crossfoot Verification
Employee Expenses	$0		$356		$0		$0		$0		$0		$356	1%	Contractor MDay Rate
Contractor Civil	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$880
Contractor Electrical	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	3.9%	$1,120
Contractors - Include Sales Tax	$0		$0		$0		$0		$0		$0		$0		
Contingency			$0		$0		$0		$0		$0		$0	0.0%	
Escalation					$0		$0		$0		$0		$0		
REMXX TOTAL	$0		$35,906		$0		$0		$0		$0		$35,906	$35,906	=If Crossfoot Verification
MATXX-TG MATERIAL (Includes Tax)															
Misc Purchases (Credit Card Etc.)	$0		$8,603		$0		$0		$0		$0		$8,603	1%	1% Constuction Labor
Stock	$0		$10,022		$0		$0	$0	$0		$0		$10,022		
Direct	$0		$171,958		$0		$0		$0		$0		$171,958		
Contingency Excluding Big Ticket Items			$0		$0		$0		$0		$0		$0	0.0%	
Escalation					$0		$0		$0		$0		$0		
MATXX TOTAL	$0		$190,583		$0		$0		$0		$0		$190,583	$190,583	=If Crossfoot Verification
Contingency Excludes Large Items	$0		$156,113		$0		$0		$0		$0		$156,113		Note Only - Large Items
LNDXX-TG LAND															ENG Blended Rate
Real Estate	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0		$370
Escalation					$0		$0		$0		$0		$0		
LT Subtotal	$0		$0		$0		$0		$0		$0		$0		=If Crossfoot Verification
Purchase Land	$0		$0		$0		$0		$0		$0		$0		
Fees & Payments	$0		$0		$0		$0		$0		$0		$0		
Contingency			$0		$0		$0		$0		$0		$0	1.0%	
Escalation					$0		$0		$0		$0		$0		
LNDXX TOTAL	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	$0	=If Crossfoot Verification
DIRECT COST TOTAL	$0		$1,179,386		$0		$0		$0		$0		$1,179,386		
INDIRECTS															
Non-Productive Allocation (ZB-TM1-ZNP)	$0		$98,638		$0		$0		$0		$0		$98,638	12.5%	
Payroll Benefits Allocation (ZE-TM1-Z93)	$0		$358,114		$0		$0		$0		$0		$358,114	40.3%	
Material Stores Allocation (Stock) <25k (ZC-TM1-Z91)	$0		$12,065		$0		$0		$0		$0		$12,065	35.0%	Excludes Big Ticket Tabs
Gen Service Co. OH Allocation (ZF-TM1-Z94)	$0		$0		$0		$0		$0		$0		$0	0.0%	
E&S Allocation (25%<20M<3%) - (ZI-TM1-Z96)	$0		$575,221		$0		$0		$0		$0		$575,221	40.0%	
Misc. Dist. Exp. Cap. Allocation (ZH-TM1-Z92)	$0		$71,903		$0		$0		$0		$0		$71,903	5.0%	
AS&E Allocations (ZJ-TM1-Z90)	$0		$8,241		$0		$0		$0		$0		$8,241	0.5%	
Vehicle Allocations (ZV-TM1-Z98)	$0		$206,981		$0		$0		$0		$0		$206,981	26.2%	
INDIRECT Subtotal	$0		$1,331,163		$0		$0		$0		$0		$1,331,163	$1,331,163	=If Crossfoot Verification
AFUDC (ZK - TM1-Z95)	$0		$84,229		$0		$0		$0		$0		$84,229	6.71000%	Annual Rate
PROJECT COST TOTAL	$0		$2,594,778		$0		$0		$0		$0		$2,594,778		=If Crossfoot Verification
															$2,594,778

Calc OH's	Prior Years	2019	Subtotal	2020	Subtotal	2021	Subtotal	2022	Subtotal	2023	Subtotal	TOTAL	Subtotal	
Filter Label to Create Formulas - Should = Total	Costs	M-Days	Costs	M-Days	Costs	M-Days	Costs	M-Days	Costs	M-Days	Costs	M-Days	Costs	
Engineering	$0	105	$38,850	0	$0	0	$0	0	$0	0	$0	105	$38,850	
Civil	$0	0	$0	0	$0	0	$0	0	$0	0	$0	0	$0	
Electrical	$0	600	$284,400	0	$0	0	$0	0	$0	0	$0	600	$284,400	
Test	$0	975	$462,150	0	$0	0	$0	0	$0	0	$0	975	$462,150	
Other Support/Switc/Constr Rep/RE	$0	10	$3,700	0	$0	0	$0	0	$0	0	$0	10	$3,700	
LT Sub - Total	$0	1,690	789,100	0	0	0	0	0	0	0	0	1,690	$789,100	$789,100
Employee Expenses	$0		$7,503		$0		$0		$0		$0		$7,503	
Materials	$0		$190,583		$0		$0		$0		$0		$190,583	
Contractors	$0		$142,200		$0		$0		$0		$0		$142,200	
Envirionmental	$0		$50,000		$0		$0		$0		$0		$50,000	
Fees & Payments	$0		$0		$0		$0		$0		$0		$0	
Rents & Leases	$0		$0		$0		$0		$0		$0		$0	
Contingency	$0		$0		$0		$0		$0		$0		$0	
Escalation	$0		$0		$0		$0		$0		$0		$0	
Contingency & Escalation Subtotal	$0		$0		$0		$0		$0		$0		$0	
DIRECT TOTAL	$0		$1,179,386		$0		$0		$0		$0		$1,179,386	
Overhead Subtotal	$0		$1,415,392		$0		$0		$0		$0		$1,415,392	
PROJECT COST TOTAL	$0		$2,594,778		$0		$0		$0		$0		$2,594,778	$2,594,778

Summary by Activity														
Material	$0		$190,583		$0		$0		$0		$0		$190,583	
Labor & Equipment (Const,RMV,Test)	$0		$896,216		$0		$0		$0		$0		$896,216	
Engineering/Permitting/PM/Land/Ind	$0		$1,423,750		$0		$0		$0		$0		$1,423,750	
Escalation	$0		$0		$0		$0		$0		$0		$0	
AFUDC	$0		$84,229		$0		$0		$0		$0		$84,229	
Contingency	$0		$0		$0		$0		$0		$0		$0	
PROJECT COST TOTAL	$0		$2,594,778		$0		$0		$0		$0		$2,594,778	$2,594,778