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Operations Project Authorization Form

Approved on February 29, 2024 EPAC

Link to Meeting Minutes

Project Title: [redacted] **Transformers 4X & 5X Replacement**	**Project Number: CS00286**
Date Prepared: 02/15/2024	**Company: Eversource CT**
Organization: Asset Management	**Class(es) of Plant: D SS**
Project Initiator: [redacted]	**Project Category: Stations - Transformer**
Managing Organization: Project Mgt and Construction	**Schedule ID#: 80158661**
Project Manager: [redacted]	**Project Type: Specific**
Project Sponsor: [redacted]	**Capital Investment part of original Op Plan: Yes**
Estimated in service date: May 2025	**Emergency Related Request? No**
Eng./Constr. Resources Budgeted? Yes	**Facility Type** (check all that apply): ☐ PTF ☐ non-PTF ☐ local PTF ☒ Distribution ☐ N/A (General Plant)
EJ Community Impact: Yes	**Authorization Type: Full Funding**
Total Capital Request: $17,986K	

[1] Executive Summary

[redacted]

[redacted]

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[2] Project Costs Summary

Note: Dollar values are in thousands and rounded to nearest thousand

Line item Category	Prior Authorized	Actuals to Date	2024 to Go	2025	2026	Total Request
1. ROW / Easements / Land Acquisition	$				$	
2. Environmental Approvals / Permits	$7		$9		$	$9
3. Outreach	$10		$26	$20	$	$46
4. Siting Approvals / Permits	$27	$1	$69	$53	$	$122
5. Engineering / Design	$437	$140	$226	$177	$	$543
6. Materials (Eversource purchased)	$	$11	$4,929	$3,386	$	$8,326
7. Construction (incl materials by contractors)	$6	$45	$983	$983	$	$2,012
8. Testing / Commissioning	$	$8	$361	$379	$	$748
9. Project Mgmt. Team	$89	$59	$100	$92	$	$250
10. Removals	$		$56	$58	$	$114
11. Other	$				$	
12. Risks	$		$560	$543	$	$1,103
SUBTOTAL DIRECTS W/ RISKS	**$576**	**$263**	**$7,319**	**$5,692**	**$**	**$13,274**
13. Indirects/Overhead	$353	$170	$1,742	$1,591	$	$3,503
14. AFUDC	$50	$15	$348	$319	$	$683
PROJECT TOTAL – BASELINE BUDGET	**$979**	**$448**	**$9,409**	**$7,602**	**$**	**$17,460**
15. Contingency	$		$307	$220	$	$526
TOTAL CAPITAL REQUEST	**$979**	**$448**	**$9,716**	**$7,822**	**$**	**$17,986**
16. Reimbursables/Customer Contribution	$				$	
PROJECT TOTAL (LESS REIMBURSABLES)	**$979**	**$448**	**$9,716**	**$7,822**	**$**	**$17,986**
O&M	$				$	
TOTAL REQUEST	**$979**	**$448**	**$9,716**	**$7,822**	**$**	**$17,986**

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Detail other costs, project risk items and their allocations:

Risk	Allocation
Potential UG Obstructions	$228K
Severe Weather, Delays, OT	$114K
Design Development	$118K
Delay in Material Delivery	$118K
Project Acceleration	$130K
Outage Durations	$127K
Material commodity escalation	$118K
Remove Contaminated Foundations and Soil	$150K
Total	$1,103K

Explain unique payment provisions, if applicable:

[redacted]

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

N/A

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[3] Technical Justification

Project Need, Objective and Justification

[redacted]

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Project Scope

[redacted]

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[redacted]

Substation Equipment

Station	Device Position / Nomenclature	Device Removals	Device Additions
[redacted]			

See Attachment D for [redacted] Station One-line.

Background

[redacted]

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[4] Alternatives Considered

[redacted]

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[redacted]

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[5] Project Schedule

Milestone	Scheduled Completion Date
IFR Approval	December 2021
SDC Approval (for applicable projects)	November 2022
Conversion of Tx development costs, 183 to 107 (applicable to projects that require SSF approval and/or ISO preferred alternative selection)	N/A
EPAC Partial Funding Approval (for applicable projects)	November 2022
Preliminary Design Completion (or latest pre-full funding design phase)	January 2024
EPAC Full Funding Approval	February 2024
Siting Approval (for applicable projects)	July 2024
Start of Construction	September 2024
Project In-Service Date (ISD)	May 2025
Project Need Date (for applicable projects)	N/A
ISO Related Milestones: (for applicable projects)	
• ISO Preferred Alternative Selected	N/A
• PAC Presentation	N/A
• TCA Submittal	N/A

The P6 schedule is included as Attachment B.

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[6] Regulatory Approvals

An Exempt Modification is required to be submitted to the Connecticut Siting Council (CSC) for approval. A building permit will be required from the Town of Torrington to replace the fence.

EJ Community Considerations:

The project is located in an EJ Community. Currently, Eversource does not have to consult with the Department of Energy & Environmental Protection (DEEP); however, additional reviews in the future may result in re-evaluation. Eversource will conduct the standard outreach of town notifications for project introduction and start of construction. Eversource will also provide translations in Spanish of all collateral. Introductions letters and door to door outreach will be conducted for start of construction for abutting neighbors.

[7] Risk and Risk Mitigation Plans

Contingency: A contingency amount of $526K has been included in the total project estimate to account for any unknowns.

Risk Mitigation:

Risk	Mitigation
Potential UG Obstructions	UG obstructions may be observed during civil excavations and will be addressed by hand excavations at that time. Additionally, alternative paths for conduits will be developed if necessary. Risk is allocated in the project estimate for unexpected rerouting needs.
Severe Weather, Delays, OT	Construction delays caused by weather and storm duty are possible. Try to be flexible with construction schedules. Risk allocation is also included in the estimate.
Design development	The design and review process will be done in detail as the project IFC design is being completed. Risk is allocated to the project budget for any changes in detailed design.
Delay in material delivery	Continuous communication with material vendors to ensure all required materials are on site prior to construction start. Risk allocation is also included in the estimate.
Project Acceleration	Engineering progress delayed by on-going drawing conflicts & need for engineering vendor to assign additional resource, work OT to submit IFC engineering packages in time. Construction teams having to work OT, assign additional resources to meet outage start/finish dates. Risk is allocated to the project budget for project acceleration.
Outage Durations	This is being monitored during bi-weekly project team meetings with engineering vendor. Outage planning has begun, current conflicts will

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	be identified and addressed during planning. Risk allocation is also included in the estimate.
Material commodity escalation	Material Exemption Forms have been filled out when necessary. Continuous communication with material vendors to ensure all required materials are on site prior to construction start. Risk funds are included in the estimate.
Remove Contaminated Foundations and Soil	Provide disposal services as required. May require removal of contaminated soil and provide new soil as replacement. Risk allocation is also included in the estimate.
Single Contingency Line Loss	The team has confirmed with Engineering and Operations that a 30 MVA mobile transformer is needed for the duration of construction. The team will continue to work with Station Ops and Engineering leading up to work start.

[8] References

References
1. CS00286 [redacted] Transf Replacement Initial Funding; approved on 11-16-2021
2. CS00286 – [redacted] Transformer 1B-4X - 1B-5X Replacement – SSF; approved on 11-22-2022
3. CS00286 [redacted] ransf Replacement Partial Funding; approved on 11-22-2022
4. CS00533 – [redacted] Transformer 1X Replacement – PAF, approved 6/8/2023
5. 405662 - [redacted] MCRU Program Release - PF PAF, approved 7/6/2022
6. Eversource SUB 022.1 Relay and Control Enclosure
7. IEEE 979 - Guide for Substation Fire Protection
8. Eversource SUB 013 - System 1 and System 2 Wiring Separation

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

Attachment	Included in Submittal?
A. Cost Estimate – C-24-16	*YES*
B. P6 Schedule	*YES*
C. Constructability Review	*YES*
D. System and Station One-Lines	*YES*

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Project Authorization Form

Project Checklist - Transmission & Substation Capital Project			
Project Name: [redacted] **Transformers 4X & 5X Replacement**		**Project Number: CS00286**	
Facility Type: ☐BPS ☐BES ☐PTF ☐local PTF ☐non-PTF ☐CIP ☒ Distribution ☐General Plant ☐CONVEX ☐SCADA			
PLANNING			
Is a NX-9 required?		Yes	
Is an ISO-NE PAC presentation required?		No	
ISO-NE Presentation Date (if completed):		N/A	
Cost in ISO-NE Presentation ($M) (if completed):		N/A	
Is a PPA required?		Yes	
ISO-NE Approval Date (if completed):		**03/21/2024**	
Is a TCA Application Required?		No	
TCA Submittal Date (if submitted):		N/A	
Cost in TCA Submittal ($M) (if submitted):		N/A	
Enter ISO-NE RSP / Asset Condition ID, if assigned:		ES-25-LSP-111	
PLANNING/PROTECTION & CONTROLS			
Are RAS/SPS/UVLs affected?		No	
OPERATIONS			
Outage Required?	☒ Primary Equipment (Power Transfer)	☐ Secondary Equipment (P&C only)	☐ Outage Not Required
Do SCLL Conditions Exist?		Yes	
Has an outage schedule been approved?		No	
Are Operations & Maintenance procedures/training required?		No	
STANDARDS			
Does the project include standard equipment and designs?		Yes	
SUBSTATION ENGINEERING			
Does this impact Revenue Metering		No	
Is preliminary short circuit/ breaker duty analysis required?		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	

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Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] **Transformers 4X & 5X Replacement**	**Project Number: CS00286**
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	
Has Siting reviewed this project?	Yes
Name of Siting contact:	[redacted]
Is a Siting filing required? *(If yes, list in regulatory approvals section)*	Yes
PERMITTING	
Is there any permitting required? *(If yes, list in regulatory approvals section)*	Yes
PROJECT SERVICES (OUTREACH) and ROW WORK COORDINATION	
Has Project Services reviewed this project?	Yes Choose an item
Name of Project Services contact:	[redacted]
What is the level of outreach expected?	Medium
Has ROW Coordination reviewed this project?	No
Is this project coordinating with other existing scheduled work?	Yes
ENVIRONMENTAL JUSTICE COMMUNITIES	
Has the Equity and Environmental Justice team reviewed this project?	Yes
Name of Equity and Environmental Justice contact:	[redacted]
Is any part of this project in an Environmental Justice Community?	Yes
Was the Equity Framework Checklist completed?	No
Has enhanced outreach required per State Regulatory requirements been completed?	No
INITIATOR	
Has a field constructability review been completed?	Yes

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Project Checklist - Transmission & Substation Capital Project	
Project Name: [redacted] Transformers 4X & 5X Replacement	**Project Number: CS00286**
INVESTMENT RECOVERY	
Does the project require development of an Investment Recovery plan?	Yes
COST ESTIMATING	
What team/firm prepared the cost estimate?	Estimate was prepared by the Eversource Estimating Team
Name of the person who prepared the estimate:	[redacted]
Was the estimate reviewed by Eversource Estimating?	Yes - Full Review

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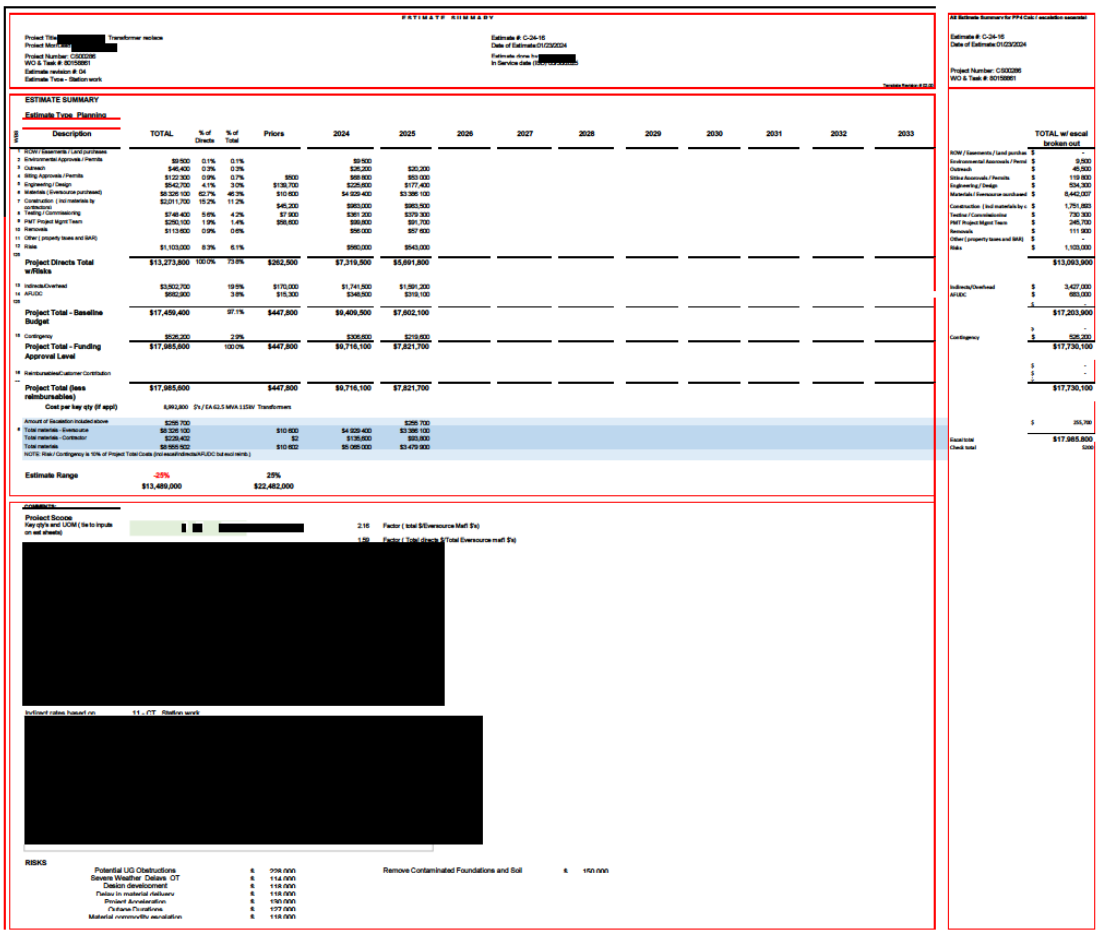

ESTIMATE SUMMARY

Estimate Type: Planning

	Description	TOTAL	% of Directs	% of Total	Priors	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
1	ROW / Easements / Land purchases														
2	Environmental Approvals / Permits	$9,500	0.1%	0.1%		$9,500									
3	Outreach	$46,400	0.3%	0.3%		$26,200	$20,200								
4	Siting Approvals / Permits	$122,900	0.9%	0.7%	$500	$68,800	$53,600								
5	Engineering / Design	$542,700	4.1%	3.0%	$138,700	$225,600	$177,400								
6	Materials (Eversource purchases)	$6,326,100	52.7%	46.3%	$10,600	$4,929,400	$3,386,100								
7	Construction (Incl materials by contractors)	$2,011,700	15.2%	11.2%	$45,200	$983,000	$983,500								
8	Testing / Commissioning	$748,400	5.6%	4.2%	$7,900	$361,200	$379,300								
9	PMT Project Mgmt Team	$250,100	1.9%	1.4%	$58,600	$99,800	$91,700								
10	Removals	$113,600	0.9%	0.6%		$56,000	$57,600								
11	Other (property taxes and BAR)														
12	Risks	$1,103,000	8.3%	6.1%		$560,000	$543,000								
13	**Project Directs Total w/Risks**	$13,273,600	100.0%	73.6%	$262,500	$7,319,500	$5,691,600								
14	Indirects/Overhead	$3,802,700	19.5%	19.5%	$170,000	$1,741,500	$1,891,200								
15	AFUDC	$682,900	3.8%	3.8%	$15,300	$348,500	$319,100								
16	**Project Total - Baseline Budget**	$17,459,400	97.1%	97.1%	$447,800	$9,409,500	$7,802,100								
17	Contingency	$526,200	2.9%	2.9%		$306,600	$219,600								
18	**Project Total - Funding Approval Level**	$17,985,600	100.0%	100.0%	$447,800	$9,716,100	$7,821,700								
19	Reimbursables/Customer Contribution														
20	**Project Total (less reimbursables)**	$17,985,600			$447,800	$9,716,100	$7,821,700								
	Cost per key qty (if appl)	8,992,800	$'s / EA 62.5 MVA 115kV Transformers												
	Amount of Escalation included above	$256,700					$256,700								
1	Total materials - Eversource	$6,326,100			$10,600	$4,929,400	$3,386,100								
	Total materials - Contractor	$228,402			$2	$135,600	$93,800								
	Total materials	$6,555,502			$10,602	$5,065,000	$3,479,900								

NOTE: Risk / Contingency is 10% of Project Total Costs (incl escal/indirects/AFUDC but excl reimb.)

Estimate Range	-25%	25%
	$13,489,000	$22,482,000

COMMENTS

Project Scope

Key qty's and UOM (tie to inputs on set sheets)

[redacted]

2.16 Factor (total $/Eversource Mat'l $'s)

1.59 Factor (Total directs $/Total Eversource mat'l $'s)

[redacted]

Inclusion notes: Insert on 11 - CT - Station work

[redacted]

RISKS

Potential UG Obstructions	$	200,000	Remove Contaminated Foundations and Soil
Severe Weather Delays OT	$	114,000	
Design development	$	118,000	
Delay in material delivery	$	118,000	
Project Acceleration	$	150,000	
Outage Durations	$	177,000	
Material escalation	$	118,000	

All Estimate Summary for PP4 Calc / escalation essential

Estimate # C-24-16
Date of Estimate 01/23/2024

Project Number: CS00286
WO & Task #: 80156861

	TOTAL w/ escal broken out
ROW / Easements / Land purchases	$ -
Environmental Approvals / Permits	$ 9,500
Outreach	$ 46,500
Siting Approvals / Permits	$ 119,900
Engineering / Design	$ 534,300
Materials / Eversource purchases	$ 6,442,007
Construction (Incl materials by c	$ 1,751,883
Testing / Commissioning	$ 730,300
PMT Project Mgmt Team	$ 245,700
Removals	$ 111,900
Other (property taxes and BAR)	$ -
Risks	$ 1,103,000
	$13,093,900
Indirects/Overhead	$ 3,427,000
AFUDC	$ 683,000
	$ -
	$17,203,900
	$ -
Contingency	$ 526,200
	$17,730,100
	$ -
	$ -
	$ -
	$17,730,100
	$ 255,700
Excel total	$17,985,800
Check total	5,000

4/1/2024

Project Number: CS00286 Project Title: [redacted] Transformer replace

PAF (dollars in thousands) And on years

	Line item Category	Prior Authorized	Actuals to Date	2024 to Go	2025	2026	2027	2028	2029	Total
1	1. ROW / Easements / Land purchases									
2	2. Environmental Approvals / Permits			$9						$9
3	3. Outreach			$26	$20					$46
4	4. Siting Approvals / Permits		$1	$69	$53					$122
5	5. Engineering / Design		$140	$226	$177					$543
6	6. Materials (Eversource purchased)		$11	$4,929	$3,386					$8,326
7	7. Construction (incl materials by contractors)		$45	$983	$983					$2,012
8	8. Testing / Commissioning		$8	$361	$379					$748
9	9. PMT Project Mgmt Team		$59	$100	$92					$250
10	10. Removals			$56	$58					$114
11	11. Other (property taxes and BAR)									
12	12. Risks			$560	$543					$1,103
	Project Directs Total w/Risks		**$263**	**$7,319**	**$5,692**					**$13,274**
13	13. Indirects/Overhead		$170	$1,742	$1,591					$3,503
14	14. AFUDC		$15	$348	$319					$683
	Project Total - Baseline Budget		**$448**	**$9,409**	**$7,602**					**$17,460**
15	15. Contingency			$307	$220					$526
	#N/A									
	Project Total - Funding Approval Level		**$448**	**$9,716**	**$7,822**					**$17,986**
16	16. Reimbursables/Customer Contribution									
	#N/A									
	Project Total (less reimbursables)		**$448**	**$9,716**	**$7,822**					**$17,986**
	Total O&M									
	TOTAL REQUEST		**$448**	**$9,716**	**$7,822**					**$17,986**

Notes from EPAC Administrators: To copy and paste this **WBS Project Cost Summary** table into the PAF form, follow these steps:

1. Navigate to the worksheet "PAF Summary WBS" in the estimating workbook (this worksheet)
2. Select MS Excel cells C5:K28 (the entire table except for the row and column headers)
3. Click copy in MS Excel
4. in the MS Word PAF file, navigate to the Project Cost Summary table on page 2
5. Select all of the "$"s in the table (the entire table except for the row and column headers)
6. In the MS Word PAF file, click on the down arrow under the Paste button, then click on "Paste Special", then select "Unformatted Text", and then click "OK".

Breakout costs incl above PAF (dollars in thousands)

1	ST Labor		$90	$495	$497					$1,082
2	OT Labor									
3	Outside services - Labor		$162	$1,118	$1,090					$2,370
4	Materials (All materials incl. outside service purchased which is shown in constr. above)		$11	$5,065	$3,480					$8,555
5	Removals			$56	$58					$114
6	Other			$891	$787					$1,679
7	Indirects		$170	$1,742	$1,591					$3,503
8	AFUDC		$15	$348	$319					$683
	TOTAL CAPITAL REQUEST - with out Reimbursables		**$448**	**$9,716**	**$7,822**					**$17,986**

Notes from EPAC Administrators: To copy and paste this **Breakout Costs** table into the PAF form, follow these steps:

1. Navigate to the worksheet "PAF Summary WBS" in the estimating workbook (this worksheet)
2. Select MS Excel cells C31:K39 (the entire table except for the row and column headers)
3. Click copy in MS Excel
4. in the MS Word PAF file, navigate to the Breakout Costs table on page 3
5. Select all of the "$"s in the table (the entire table except for the row and column headers)
6. In the MS Word PAF file, click on the down arrow under the Paste button, then click on "Paste Special", then select "Unformatted Text", and then click "OK".

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PROJECT COST ESTIMATE & SCHEDULE SHEET

Transmission Owner: Eversource Energy
Project Number:
Project Name: [redacted] Transformer replace
In Service date (ISD): 05/30/2025
Estimate Grade: Planning

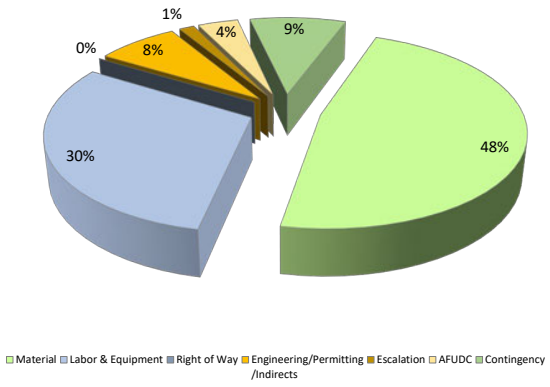
1. Project Scope Summary

2. Project Cost Summary

Prior Estimated Cost:

2.1. Project Cost Summary

	PTF	Non-PTF	Total
Material	$ 8,553		$ 8,553
Labor & Equipment	$ 5,489		$ 5,489
Right of Way	$ -		$ -
Engineering/Permitting /Indirects	$ 1,376		$ 1,376
Escalation	$ 256		$ 256
AFUDC	$ 683		$ 683
Contingency	$ 1,629		$ 1,629
Total Project Cost	$ 17,986	$ -	**$ 17,986**



2.2 Detailed Cost Summary By Project Element

	Material	Labor & Equip.	Right of Way	Engineering/ Permitting/ Indirects	Escalation	AFUDC	Contingency	Total
	$ 8,553	$ 5,489	$ -	$ 1,376	$ 256	$ 683	$ 1,629	**$ 17,986**
Total	**$ 8,553**	**$ 5,489**	**$ -**	**$ 1,376**	**$ 256**	**$ 683**	**$ 1,629**	**$ 17,986**

Note: Values expressed in $1k

3. Project Milestone Schedule

