

- 1 **Q. (Reference Application) Please provide a table identifying each project over**
2 **the past ten years that has been covered under the *Substation Replacements***
3 ***Due to In-Service Failures* program, the timing, the cost, and the percentage**
4 **of the cost relative to the cost approved for the program in that year.**
5
6 A. See Attachment A for the requested information from 2014 to 2023.

ATTACHMENT A:

Substation Replacements Due to In-Service Failures Expenditures
(2014 – 2023)

Table 1a:
Substation Replacements Due to In-Service Failure Projects^{1,2}
(2014 – 2017)

Year	2014		2015		2016		2017	
Budget (\$000s)	2,859		3,110		3,771		3,851	
Project Type	Cost (\$)	%	Cost (\$)	%	Cost (\$)	%	Cost (\$)	%
Corporate Spares	1,662,920	58.2	1,631,741	52.5	1,379,628	36.6	532,990	13.8
Switch Replacements	751,229	26.3	199,248	6.4	15,483	0.4	130,501	3.4
Breaker Replacements & Refurbishments	400,386	14.0	211,987	6.8	284,811	7.6	331,658	8.6
Transformer Replacements & Refurbishments	1,449,764	50.7	396,549	12.8	275,193	7.3	688,400	17.9
Instrument Transformer Replacements	29,647	1.0	68,844	2.2	57,745	1.5	22,002	0.6
Battery Bank/Charger Replacements	0	0.0	0	0.0	24,454	0.6	8,858	0.2
Voltage Regulator Replacements	35,301	1.2	22,034	0.7	142,810	3.8	29,495	0.8
Bus Replacements & Refurbishments	0	0.0	0	0.0	0	0.0	128,901	3.3
Protection & Control Replacements	76,213	2.7	262,136	8.4	39,722	1.1	51,142	1.3
Lightning Arrestor Replacements	0	0.0	12,580	0.4	101,964	2.7	13,173	0.3
Recloser Replacements & Refurbishments	75,590	2.6	69,218	2.2	56,122	1.5	47,443	1.2
Ground Grid Repairs	4,288	0.1	54,532	1.8	56,091	1.5	17,565	0.5
Metering Tank Replacements	134,070	4.7	2,075	0.1	0	0.0	158,633	4.1
Communication Equipment Replacements	0	0.0	10,956	0.4	36,477	1.0	0	0.0
Miscellaneous	177,258	6.2	173,720	5.6	90,357	2.4	69,139	1.8

¹ Percentages do not total 100% of budget as actual costs for each year included variances from the approved budget.

² The timing for each project is dependent on the customer impact, availability of corporate spares, the amount of engineering design required and the delivery times of new equipment required.

Table 1b: Substation Replacements Due to In-Service Failure Projects ^{3,4} (2018 – 2020)						
Year	2018		2019		2020	
Budget (\$000s)	3,814		3,547		3,269	
Project Type	Cost (\$)	%	Cost (\$)	%	Cost (\$)	%
Corporate Spares	1,086,174	28.5	889,081	25.1	1,059,750	32.4
Switch Replacements	867,021	22.7	176,692	5.0	21,469	0.7
Breaker Replacements & Refurbishments	310,588	8.1	472,460	13.3	306,477	9.4
Transformer Replacements & Refurbishments	931,684	24.4	2,259,554	63.7	1,456,359	44.6
Instrument Transformer Replacements	47,838	1.3	26,899	0.8	36,942	1.1
Battery Bank/Charger Replacements	19,812	0.5	2,562	0.1	1,406	0.0
Voltage Regulator Replacements	133,538	3.5	19,979	0.6	109,750	3.4
Bus Replacements & Refurbishments	3,566	0.1	278,518	7.9	0	0.0
Protection & Control Replacements	94,629	2.5	84,560	2.4	285,201	8.7
Lightning Arrestor Replacements	25,448	0.7	23,613	0.7	0	0.0
Recloser Replacements & Refurbishments	81,253	2.1	74,849	2.1	107,570	3.3
Ground Grid Repairs	0	0.0	49,608	1.4	117,406	3.6
Metering Tank Replacements	3,114	0.1	112,376	3.2	9,643	0.3
Communication Equipment Replacements	3,308	0.1	0	0.0	8,606	0.3
Miscellaneous	253,394	6.6	61,365	1.7	164,200	5.0

³ Percentages do not total 100% of budget as actual costs for each year included variances from the approved budget.

⁴ The timing for each project is dependent on the customer impact, availability of corporate spares, the amount of engineering design required and the delivery times of new equipment required.

Table 1c: Substation Replacements Due to In-Service Failure Projects ^{5,6} (2021 – 2023)						
Year	2021		2022		2023	
Budget (\$000s)	3,413		3,691		4,422	
Project Type	Cost (\$)	%	Cost (\$)	%	Cost (\$)	%
Corporate Spares	800,127	23.4	1,440,937	39.0	2,241,670	50.7
Switch Replacements	408,885	12.0	740,825	20.1	396,271	9.0
Breaker Replacements & Refurbishments	365,342	10.7	565,982	15.3	310,445	7.0
Transformer Replacements & Refurbishments	1,210,940	35.5	1,246,305	33.8	1,470,219	33.2
Instrument Transformer Replacements	290,133	8.5	1,978	0.1	0	0
Battery Bank/Charger Replacements	0	0.0	60,654	1.6	183,043	4.1
Voltage Regulator Replacements	149,085	4.4	24,473	0.7	38,949	0.9
Bus Replacements & Refurbishments	143,130	4.2	13,074	0.4	26,552	0.6
Protection & Control Replacements	136,015	4.0	269,249	7.3	38,311	0.9
Lightning Arrestor Replacements	0	0.0	3,927	0.1	5,022	0.1
Recloser Replacements & Refurbishments	110,786	3.2	119,425	3.2	42,963	1.0
Ground Grid Repairs	40,093	1.2	0	0.0	3,951	0.1
Metering Tank Replacements	185,618	5.4	20,025	0.5	228,899	5.2
Communication Equipment Replacements	2,000	0.1	0	0.0	0	0
Miscellaneous	271,249	7.9	55,235	1.5	114,249	2.6

⁵ Percentages do not total 100% of budget as actual costs for each year included variances from the approved budget.

⁶ The timing for each project is dependent on the customer impact, availability of corporate spares, the amount of engineering design required and the delivery times of new equipment required.