Ontario Energy Board | Commission de l'énergie de l'Ontario

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Activity and Program-based Benchmarking (APB) – 2023 Unit Cost Report

EB-2018-0278

2300 Yonge Street, 27th floor, P.O. Box 2319, Toronto, ON, M4P 1E4
2300, rue Yonge, 27e étage, C.P. 2319, Toronto (Ontario) M4P 1E4

T 416-481-1967 1-888-632-6273
F 416-440-7656 **OEB.ca**

Table of Contents

1. Introduction

In 2018, the Ontario Energy Board (OEB) launched an initiative (EB-2018-0278) to develop Activity and Program-based Benchmarking (APB), encouraging continuous improvement by rate-regulated electricity distributors (distributors) and increased regulatory efficiency.

In February 2019, following input from a working group made up of stakeholders representing consumers and utilities, and consultation with Pacific Economics Group LLC (PEG), the OEB published an APB Staff Discussion Paper (the Discussion Paper) for electricity distributors. The Discussion Paper identified ten programs that were selected for APB. Six of these programs are Operation and Maintenance (O&M) Expenditures, four are Capital Expenditures (CapEx), and three report both aspects of the expenditures (See table).

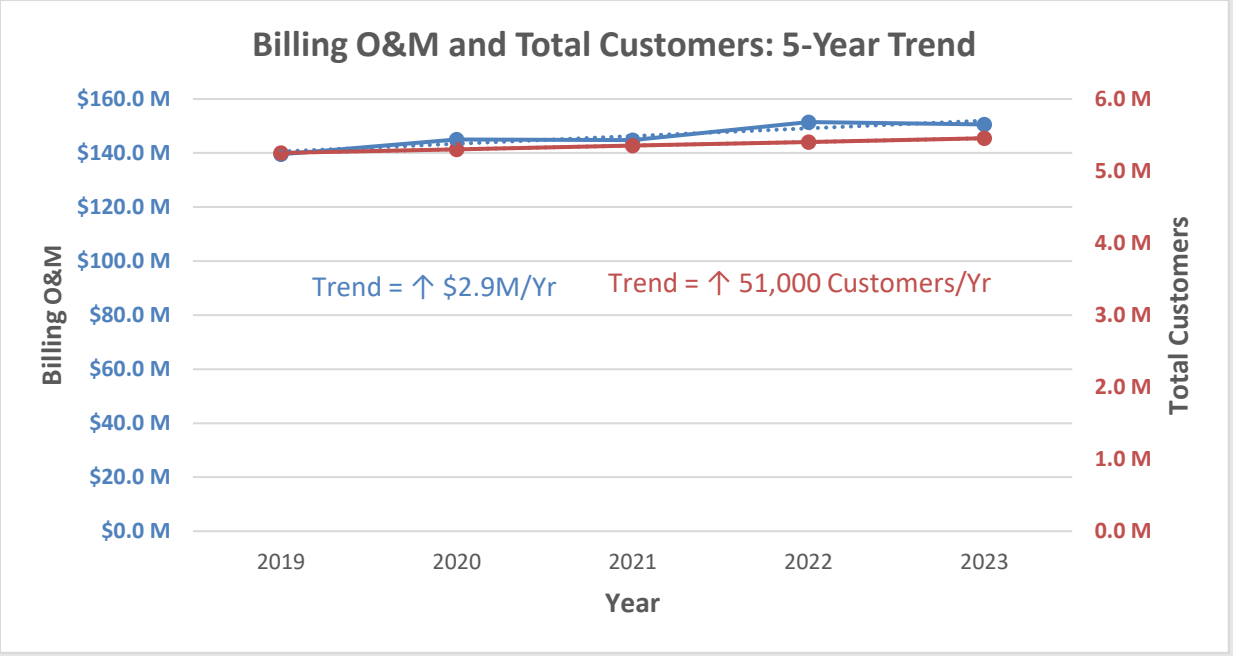
Programs	Operation and Maintenance (O&M) Expenditures	Capital Expenditures (CapEx)
Meters	x	x
Distribution Station Equipment	x	x
Poles, Towers and Fixtures	x	x
Billing	x	
Lines	x	
Vegetation Management	x	
Line Transformers		x

A portion of the historical data, required to calculate the unit costs of the above-mentioned programs, was collected through limited data surveys. The data required to calculate the unit costs from fiscal year 2021 onward, is available through the annual Reporting and Record keeping Requirements (RRR) filings submitted by electricity distributors. For all ten programs, this report summarizes the unit costs for fiscal year 2023 and a five-year trend for years 2019 to 2023.

2. Unit Cost Benchmarking Results

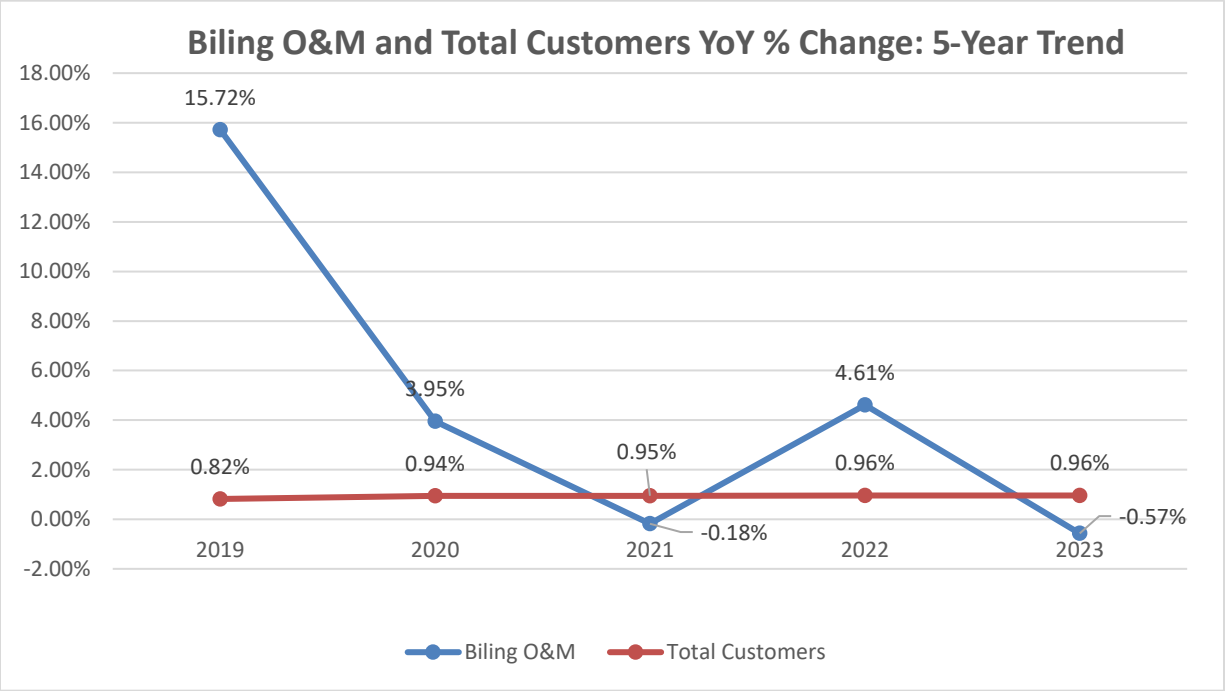
2.1 Billing O&M

During the five-year period 2019 to 2023, the overall industry trend[1] for billing O&M costs[2], as measured by standardized linear regression, increased by approximately $2.9 million per year, and the overall total number of customers[3] increased by approximately 51,000 per year. The chart below shows the five-year trend.



[1] Combined for all 54 distributors.
[2] Account 5315 as per Accounting Procedures Handbook for Electricity Distributors.
[3] Excludes street lighting, sentinel lighting, and unmetered scattered load (USL) connections.

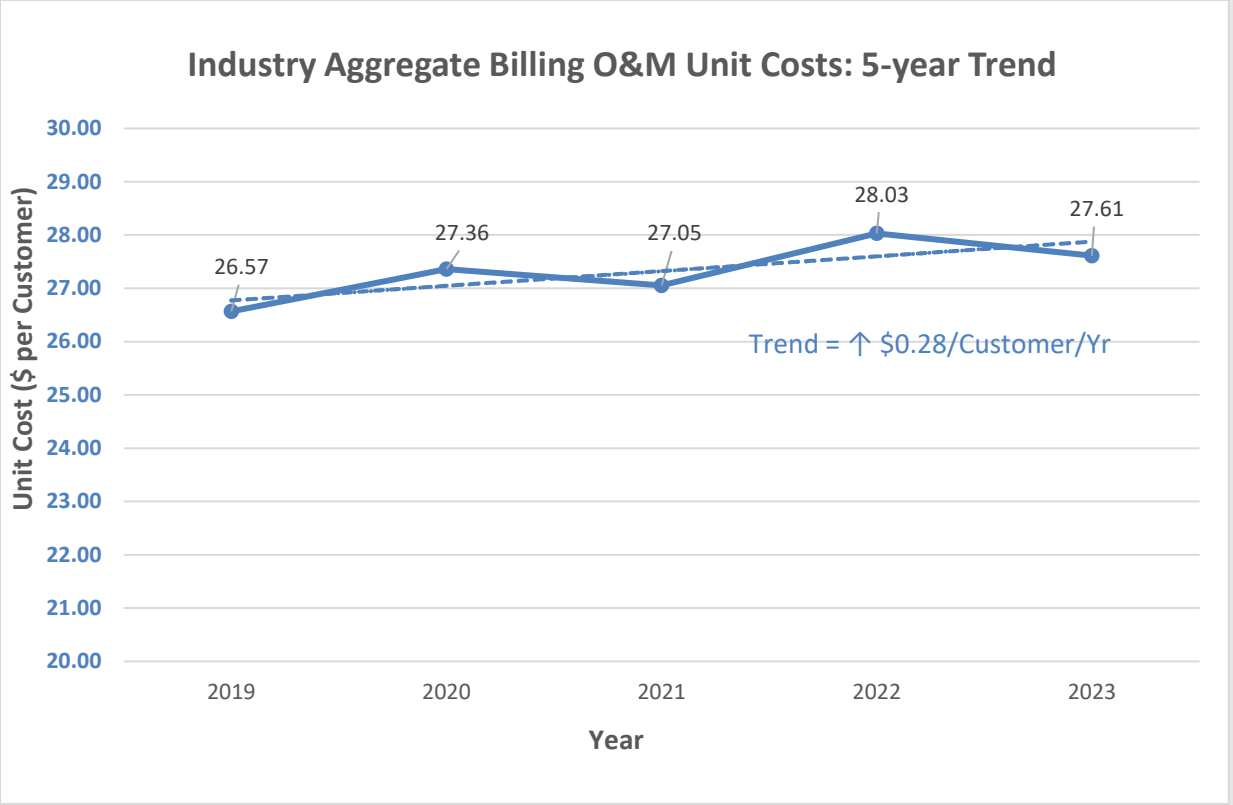
From 2022 to 2023, contrary to the five-year uptrend, the combined total billing O&M costs for all 54 distributors decreased by 0.57%. Aligned with the five-year uptrend, the total number of customers increased by 0.96%.

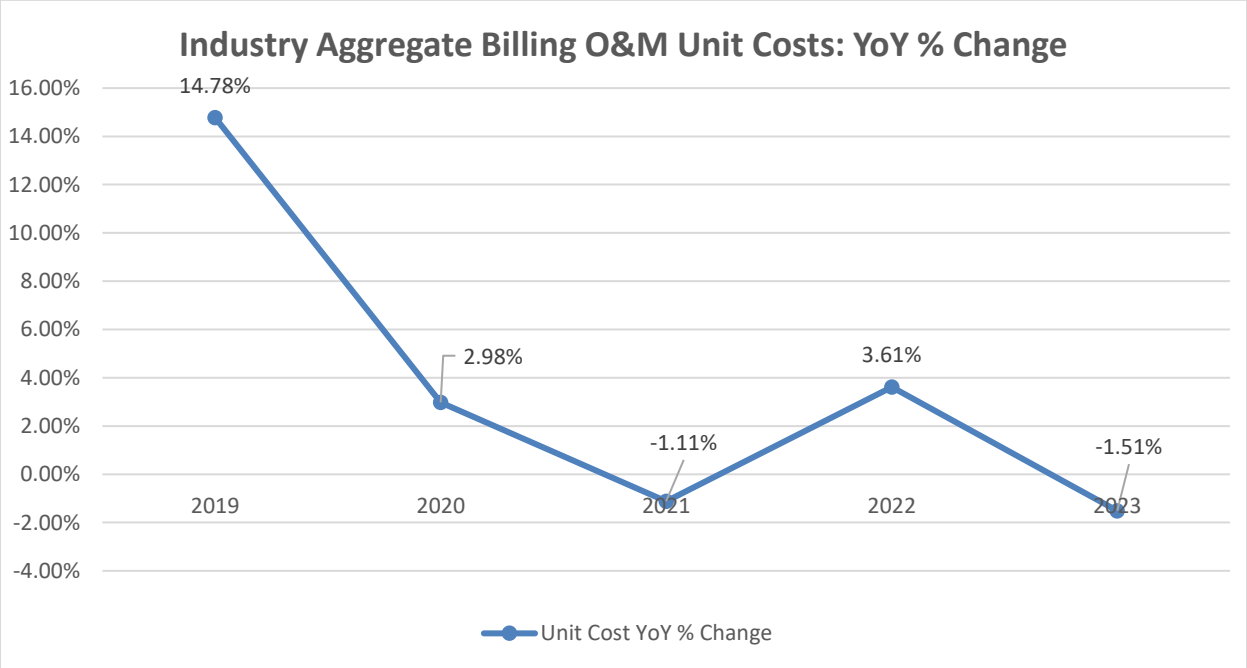


The unit cost for this metric is calculated by dividing the billing O&M cost incurred, by the total number of customers.

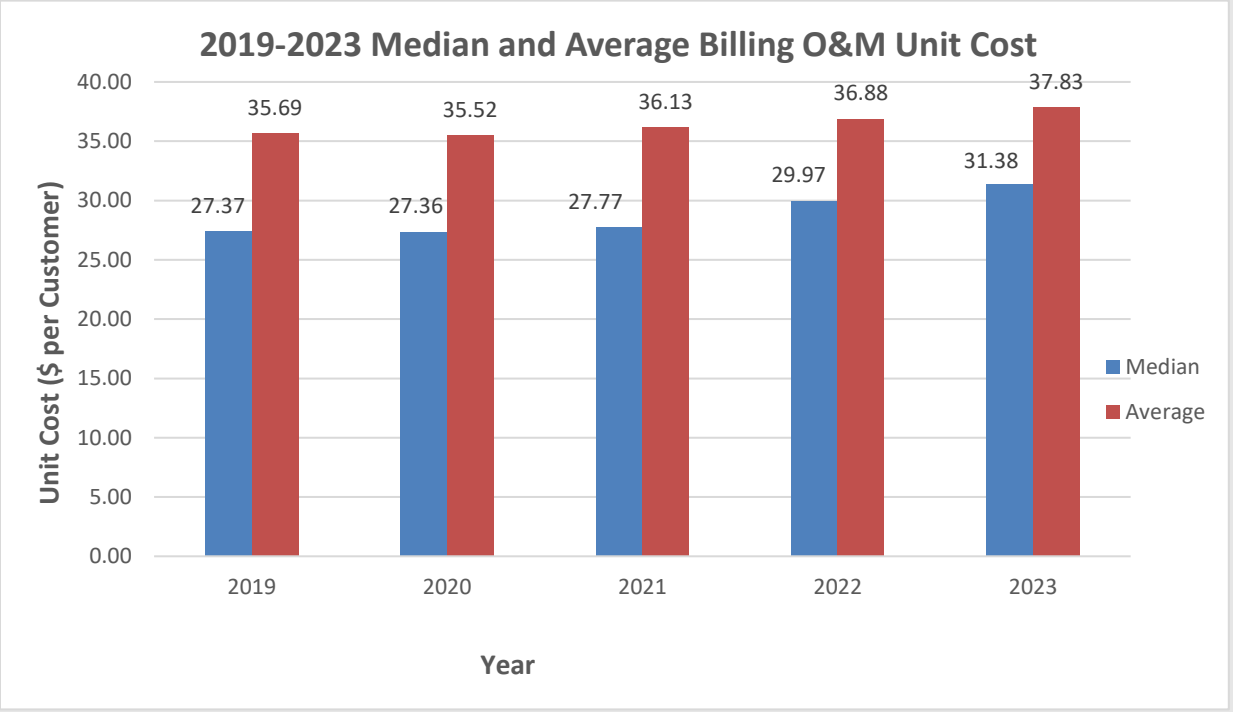
$$\text{Unit Cost (\$/Customer)} = \frac{\text{USoA 5315 (\$)}}{\text{Total Number of Customers}}$$

The industry aggregate unit cost shown in the following chart is derived by dividing the total billing O&M costs of all 54 distributors, by the total number of customers. Aggregated at the industry level, the unit cost increased by $0.28 per customer, per year.


Industry Aggregate Billing O&M Unit Costs: 5-year Trend
Unit Cost ($ per Customer)
30.00
29.00
28.00
27.00
26.00
25.00
24.00
23.00
22.00
21.00
20.00
26.57
27.36
27.05
28.03
27.61
Trend = ↑ $0.28/Customer/Yr
2019
2020
2021
2022
2023
Year

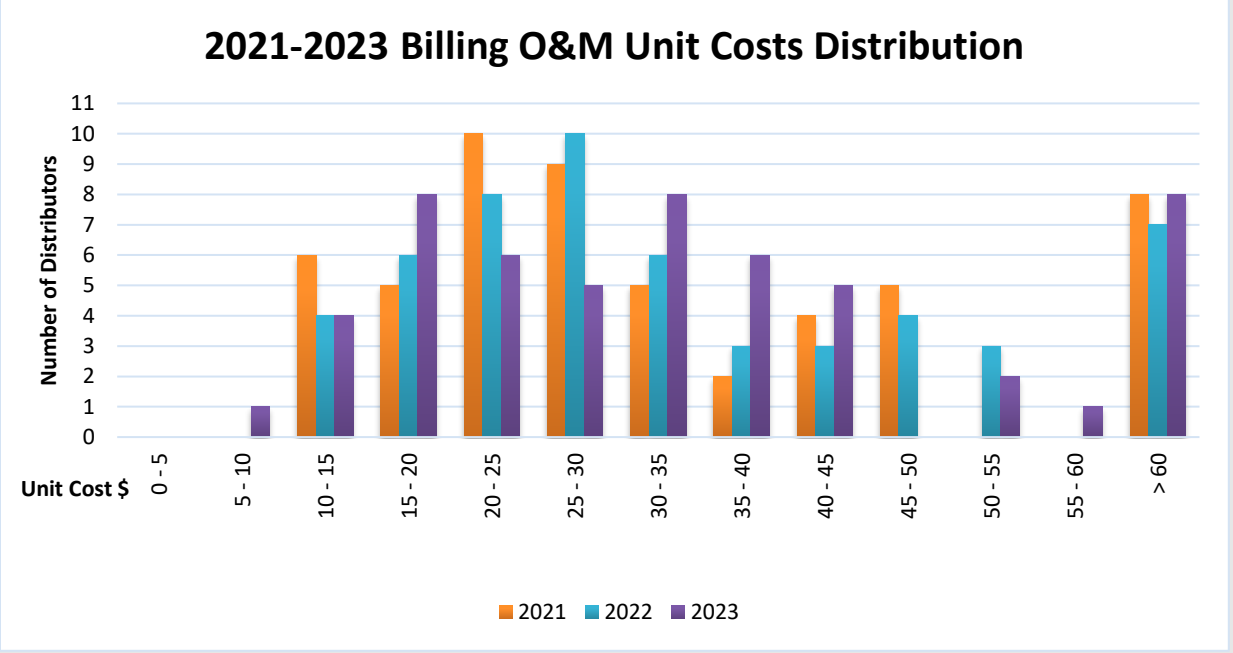

Industry Aggregate Billing O&M Unit Costs: YoY % Change
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
-4.00%
14.78%
2.98%
-1.11%
3.61%
-1.51%
2019
2020
2021
2022
2023
Unit Cost YoY % Change

The chart below summarizes the median and average[4] Billing O&M unit cost from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost per customer increased from $27.37 in 2019 to $31.38 in 2023. Similarly, the average cost rose from $35.69 in 2019 to $37.83 in 2023.



The chart that follows shows the distribution of Biling O&M unit cost from 2021 to 2023.

[4] An average of unit costs across the 54 distributors.

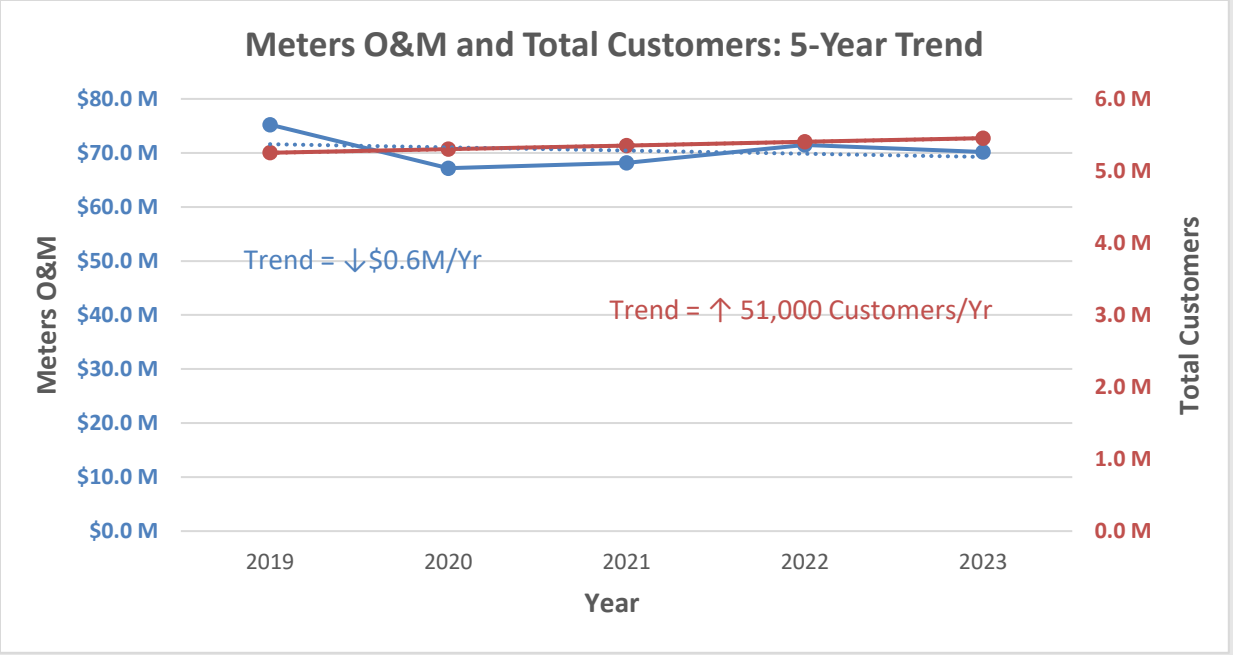


Unit Cost $	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	> 60
2021	0	0	6	5	10	9	5	2	4	5	0	0	8
2022	0	0	4	6	8	10	6	3	3	4	3	0	7
2023	0	1	4	8	6	5	8	6	5	0	2	1	8

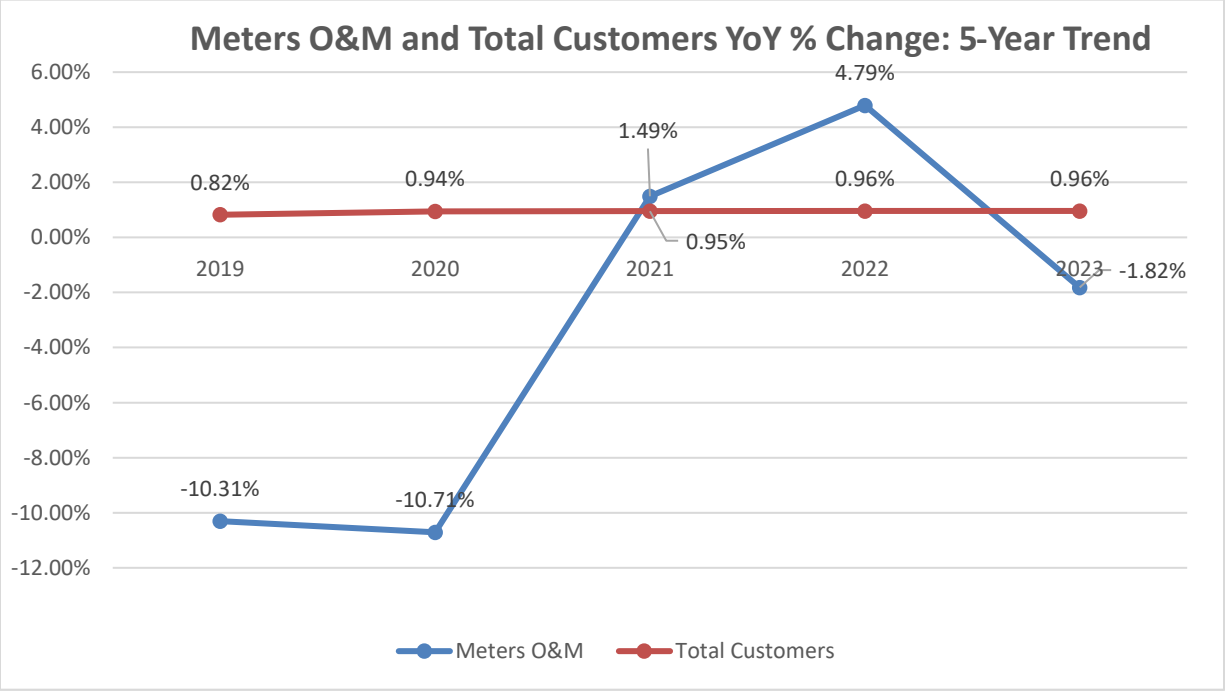
2.2 Meters O&M

During the five-year period from 2019 to 2023, the overall industry trend[5] for meters O&M costs[6], as measured by standardized linear regression, decreased by approximately $0.6 million per year, while the overall total number of customers[7] increased by approximately 51,000 per year. The chart below shows the five-year trend.

[5] Combined for all 54 distributors.
[6] Accounts 5065, 5175, 5310 as per Accounting Procedures Handbook for Electricity Distributors.
[7] Excludes street lighting, sentinel lighting, and USL connections.



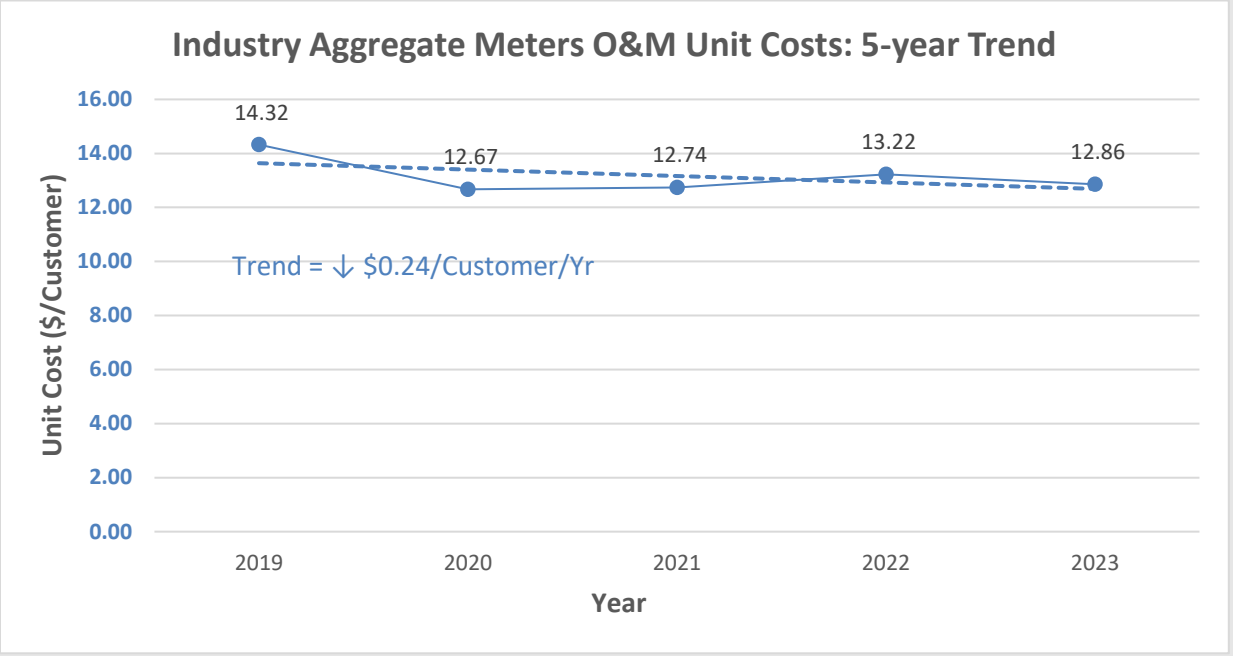
From 2022 to 2023, the combined total meters O&M costs for all 54 distributors decreased by 1.82%. Aligned with the five-year uptrend, the total number of customers increased by 0.96%.

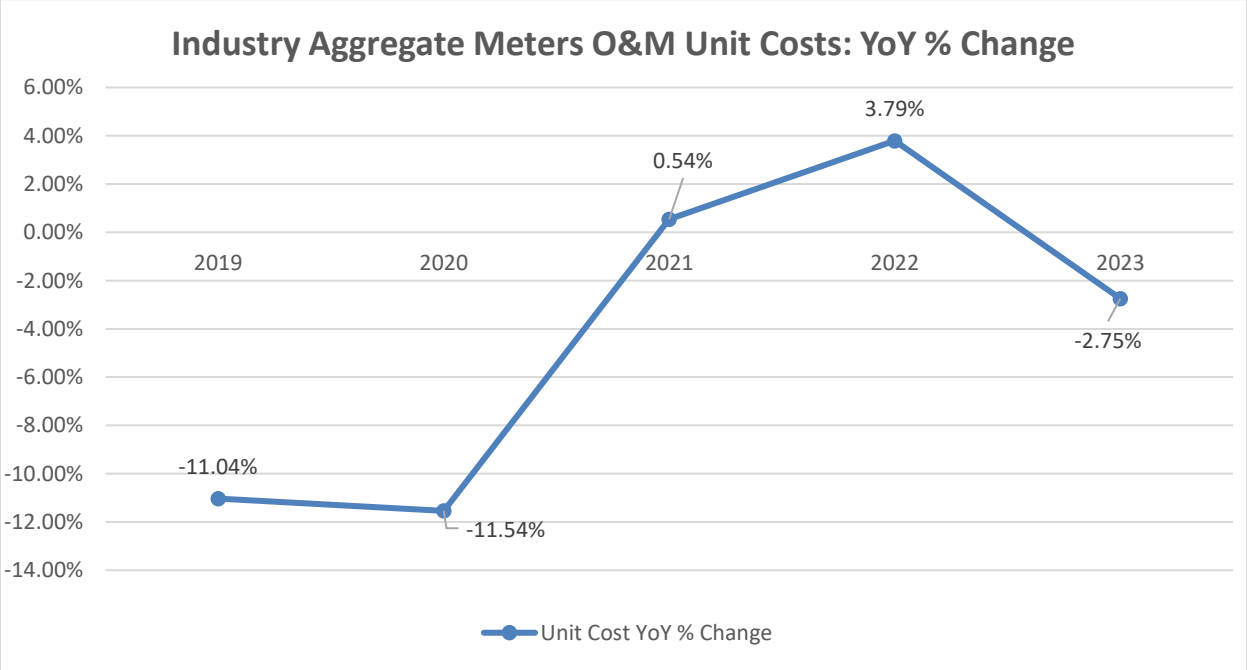


The unit cost for this metric is calculated by dividing the meters O&M cost, by the total number of customers.

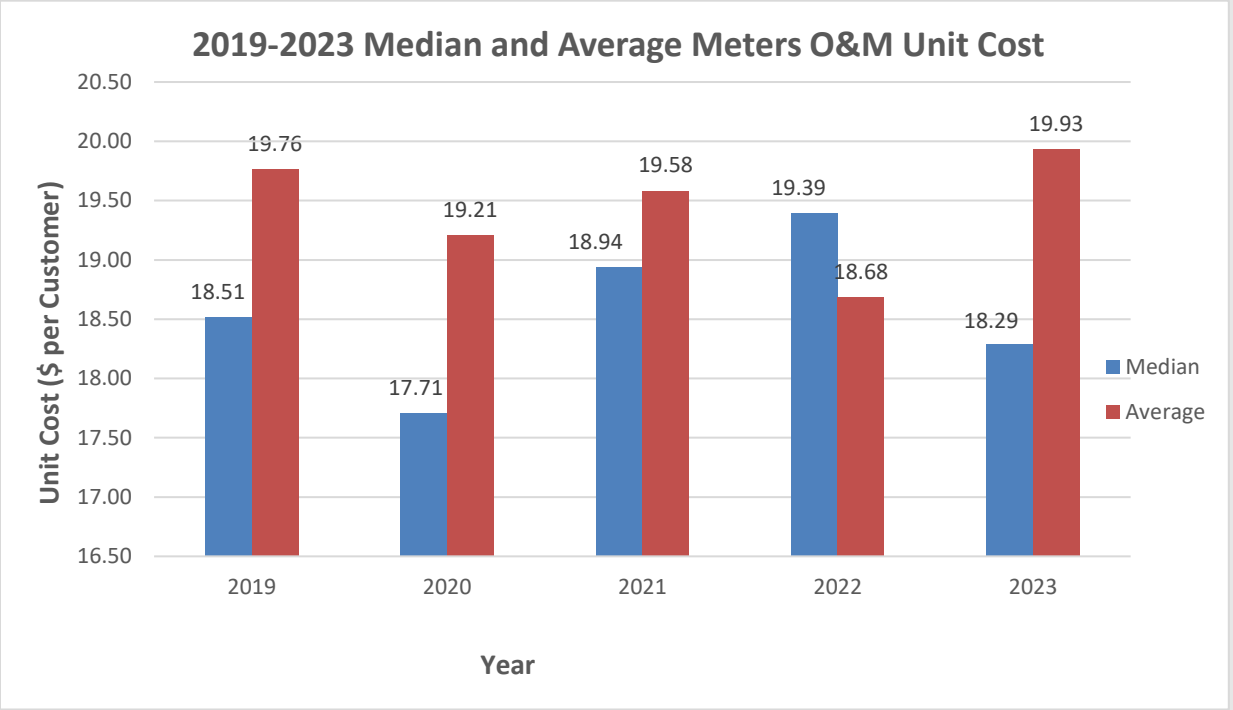
$$\text{Unit Cost (\$/Customer)} = \frac{\text{UsoA [5065+5175+5310] (\$)}}{\text{Total Number of Customers}}$$

The industry aggregate unit cost shown in the following chart is derived by dividing the total meters O&M costs of all 54 distributors, by the total number of customers. Aggregated at the industry level, the unit cost declined by $0.24 per customer, per year.

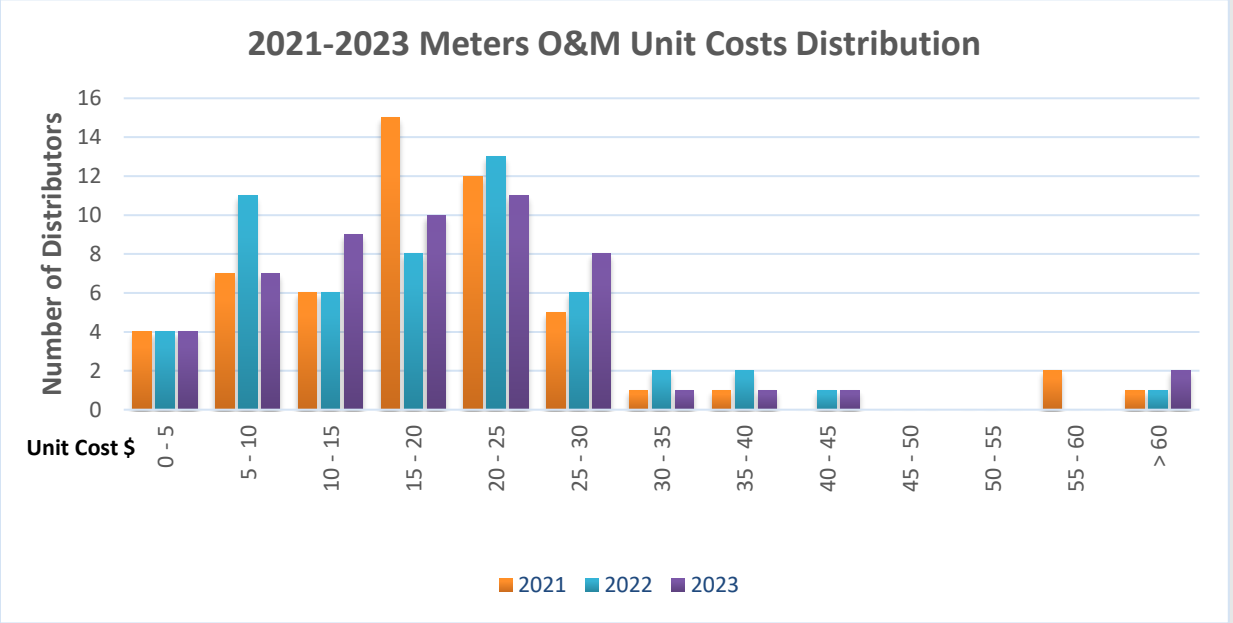




The chart below summarizes the median and average[8] Meters O&M unit cost from 2019 to 2023. The median unit cost for 2023 is $18.29 per customer and the average unit cost is $19.93 per customer.



The chart below shows the distribution of Meters O&M unit cost from 2021 to 2023.

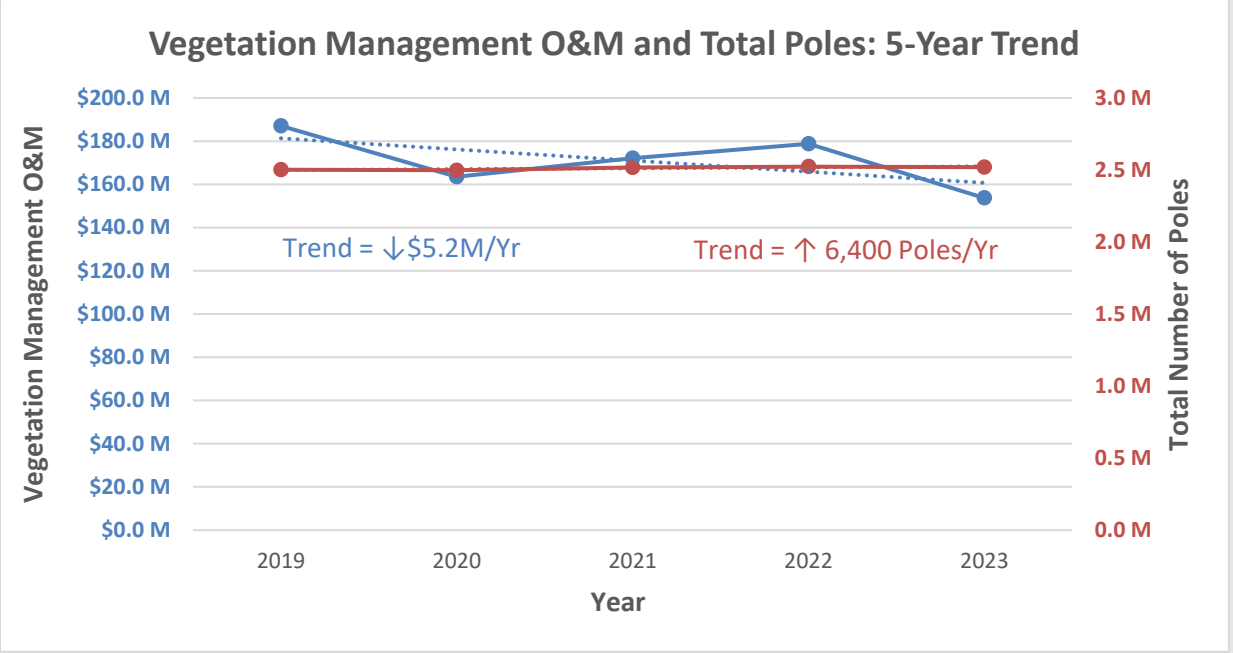


[8] An average of unit costs across the 54 distributors.

Unit Cost $	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	> 60
2021	4	7	6	15	12	5	1	1	0	0	0	2	1
2022	4	11	6	8	13	6	2	2	1	0	0	0	1
2023	4	7	9	10	11	8	1	1	1	0	0	0	2

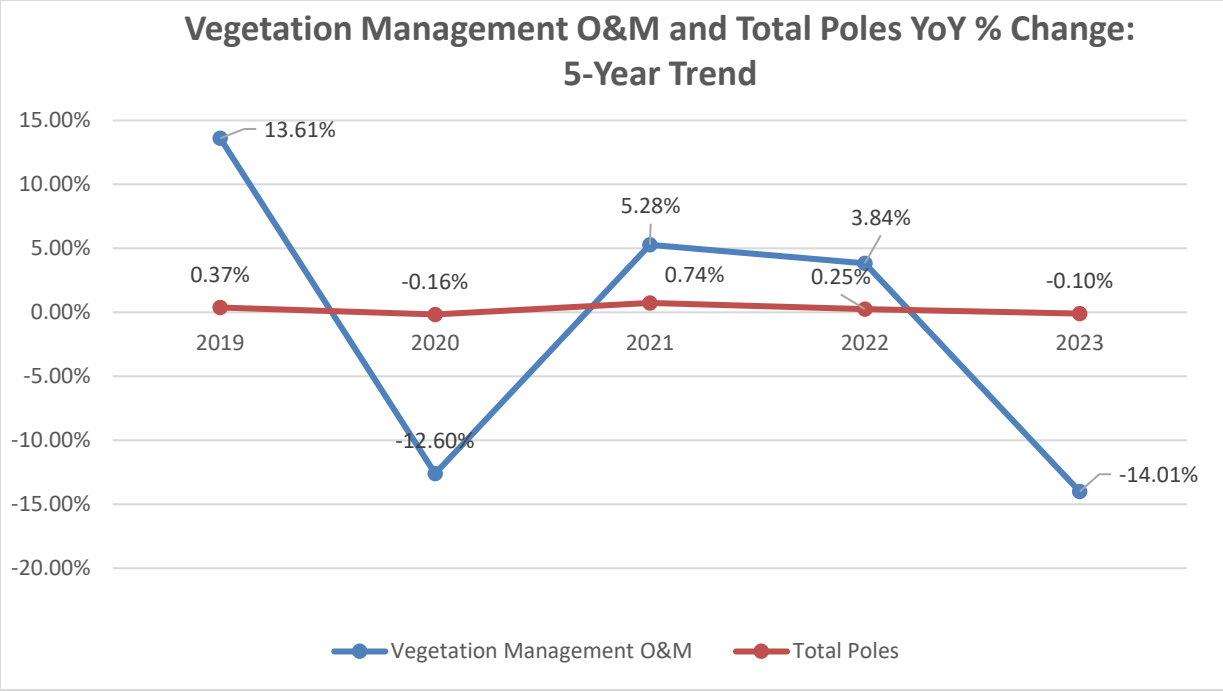
2.3 Vegetation Management O&M

During the five-year period 2019 to 2023, the overall industry trend[9] of vegetation management O&M costs[10], as measured by standardized linear regression, decreased by approximately $5.2 million per year, and the overall total number of poles increased by approximately 6,400 per year. The chart below shows the five-year trend.



From 2022 to 2023, the combined total cost of vegetation management O&M costs for all 54 distributors decreased by 14.01%, and the total number of poles in the system decreased by 0.10%.

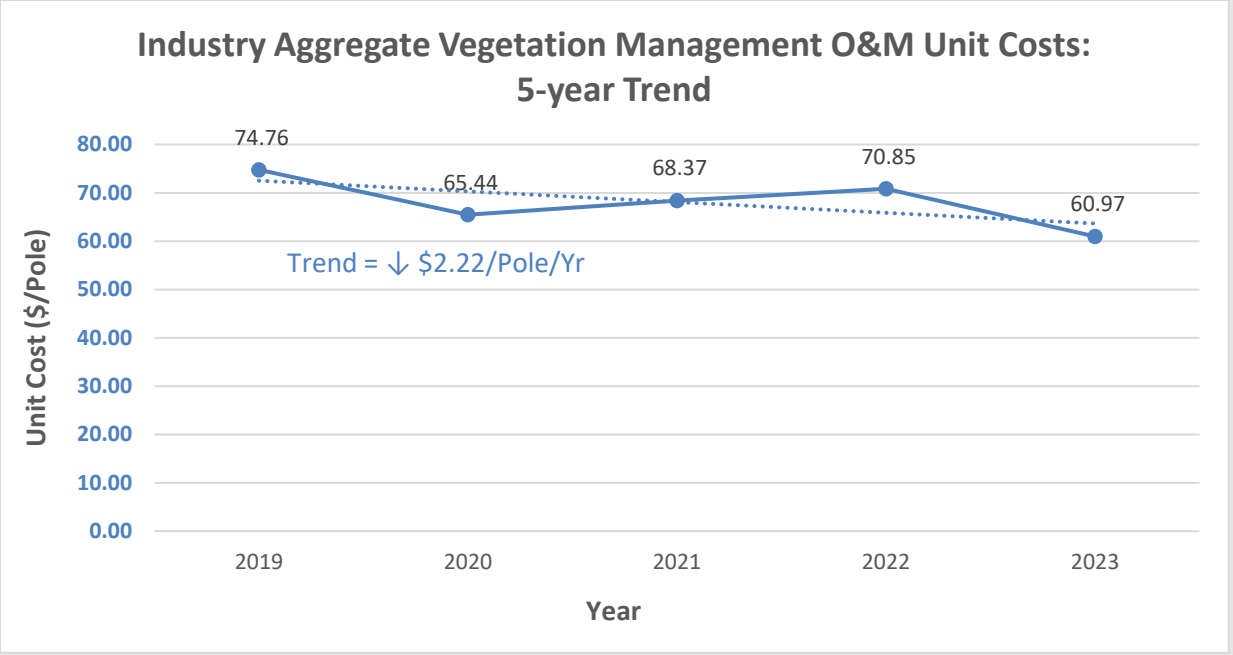
[9] Combined for all 54 distributors.
[10] Account 5135 as per Accounting Procedures Handbook for Electricity Distributors.

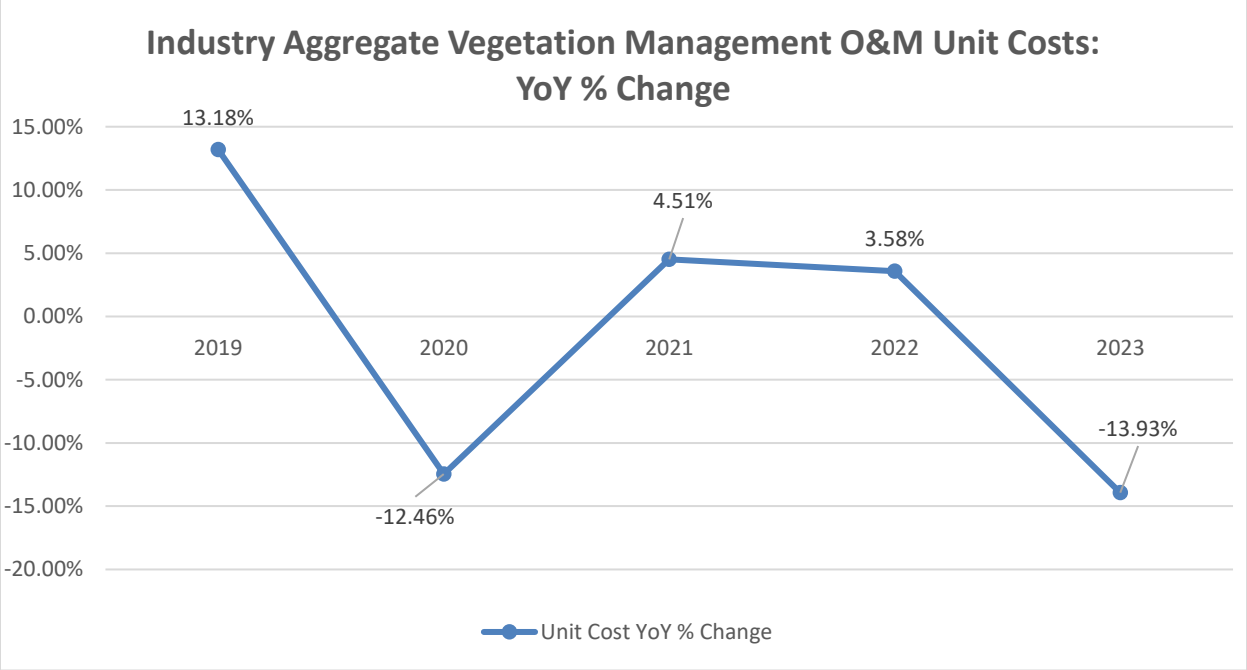


The unit cost for this metric is calculated by dividing the vegetation management O&M cost, by the total number of poles.

$$\text{Unit Cost (\$/Pole)} = \frac{\text{UsoA 5135 (\$)}}{\text{Total Number of Poles}}$$

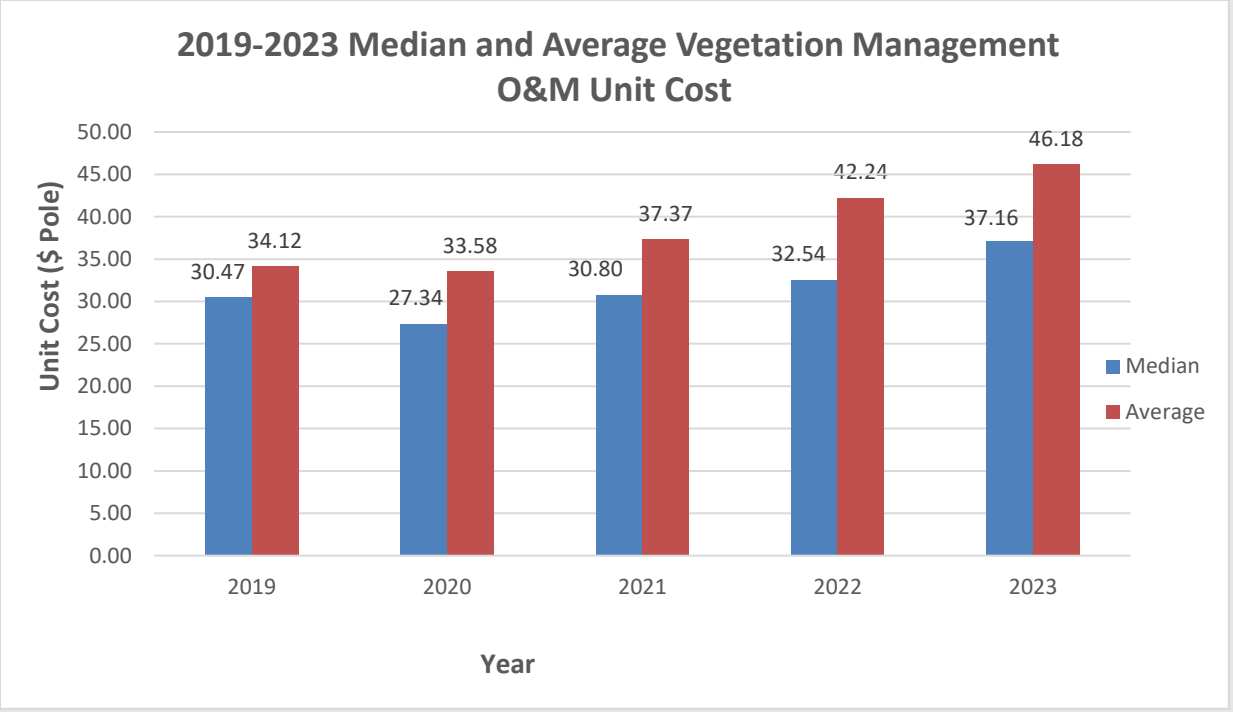
The industry aggregate unit cost shown in the following chart is derived by dividing the total vegetation management O&M costs of all 54 distributors, by the total number of poles in the system. Aggregated at the industry level, the unit cost decreased by $2.22 per pole, per year.



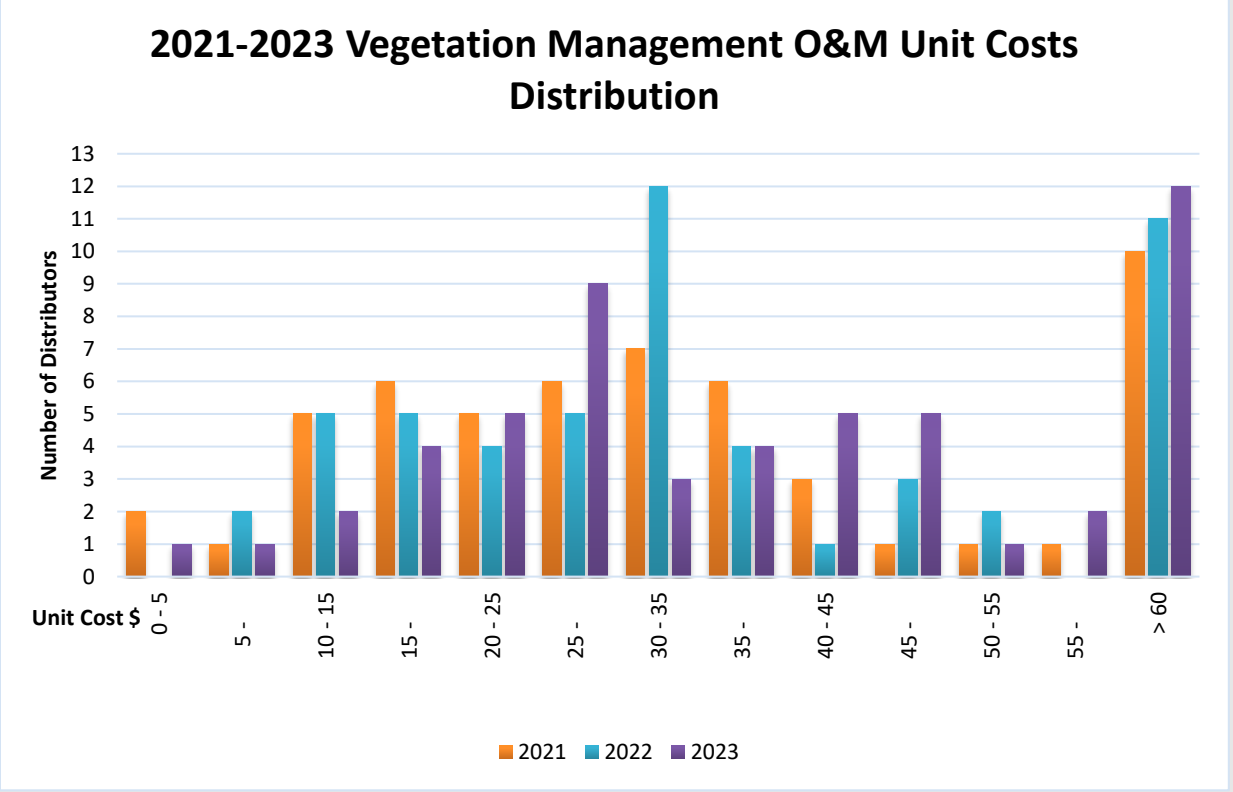


The chart summarizes the median and average[11] Vegetation Management O&M unit cost from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost per customer increased from $30.47 in 2019 to $37.16 in 2023. Similarly, the average cost rose from $34.12 in 2019 to $46.18 in 2023.

[11] An average of unit costs across the 54 distributors



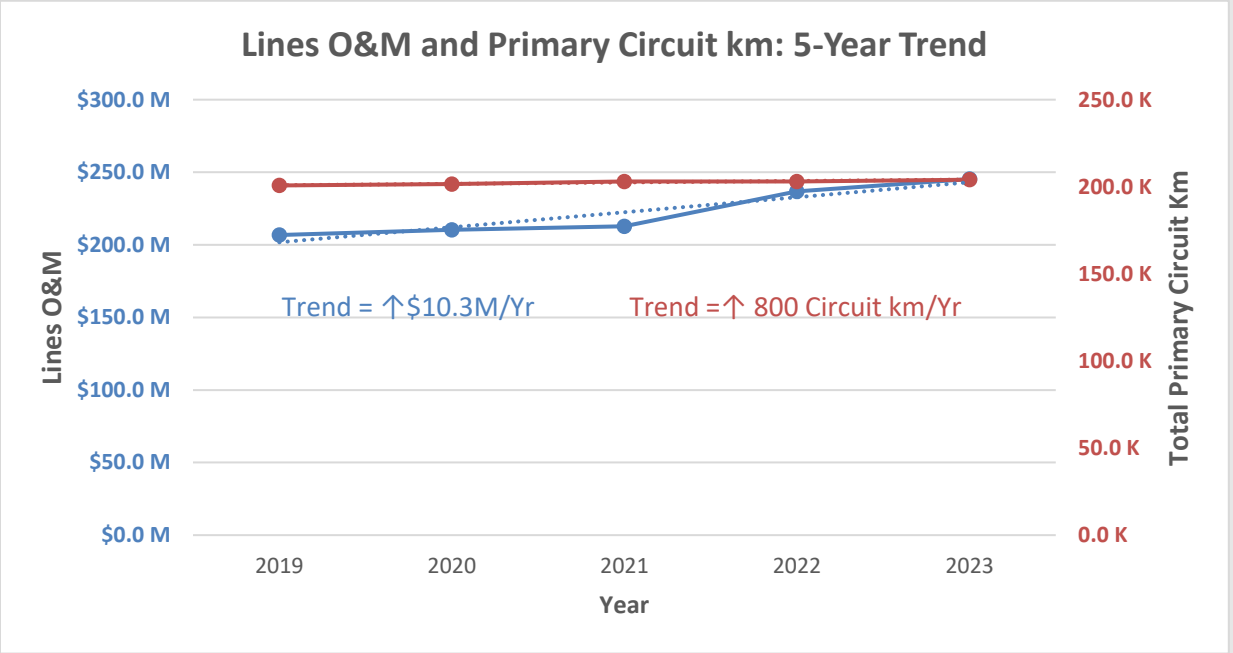
The chart below shows the distribution of vegetation management O&M unit cost from 2021 to 2023.



Unit Cost $	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	> 60
2021	2	1	5	6	5	6	7	6	3	1	1	1	10
2022	0	2	5	5	4	5	12	4	1	3	2	0	11
2023	1	1	2	4	5	9	3	4	5	5	1	2	12

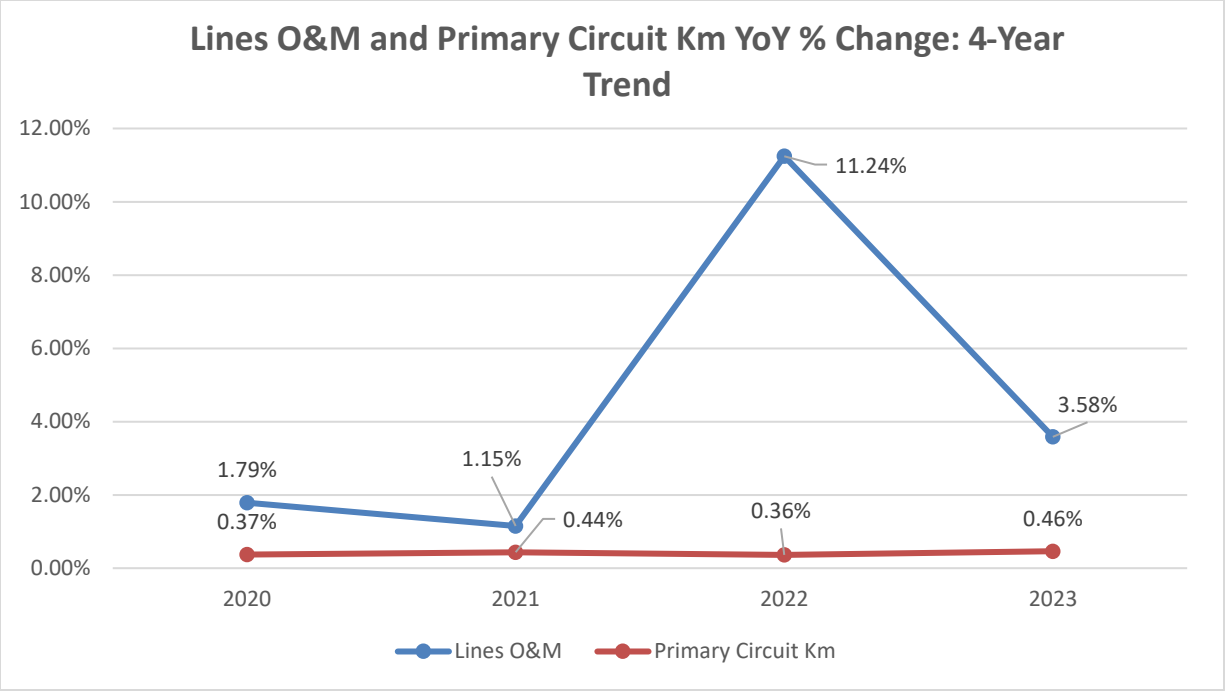
2.4 Lines O&M

During the five-year period from 2019 to 2023, the overall industry trend[12] of lines O&M costs[13], as measured by standardized linear regression, increased by approximately $10.3 million per year, and the overall trend of total number of primary circuit kilometers increased by approximately 800 circuit kilometers per year. The chart below shows the five-year trend.



From 2022 to 2023, aligned with the four-year[14] uptrend, the combined total lines O&M costs for all 54 distributors increased by 3.58%. Aligned with the four-year uptrend, the total number of primary circuit kilometers increased by 0.46%.

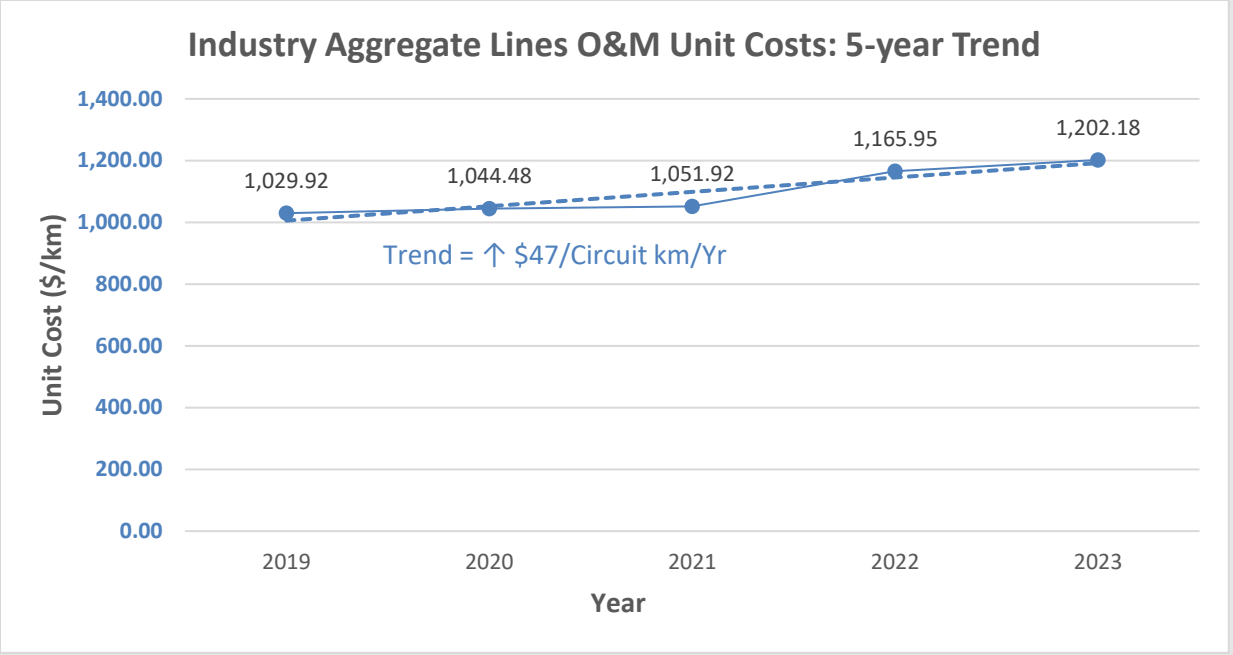
[12] Combined for all 54 distributors.
[13] Accounts 5020, 5025, 5040, 5045, 5090, 5125, 5130, 5145, 5150, and 5155 as per Accounting Procedures Handbook for Electricity Distributors.
[14] Primary and secondary circuit kilometers breakdown is unavailable for year 2018.

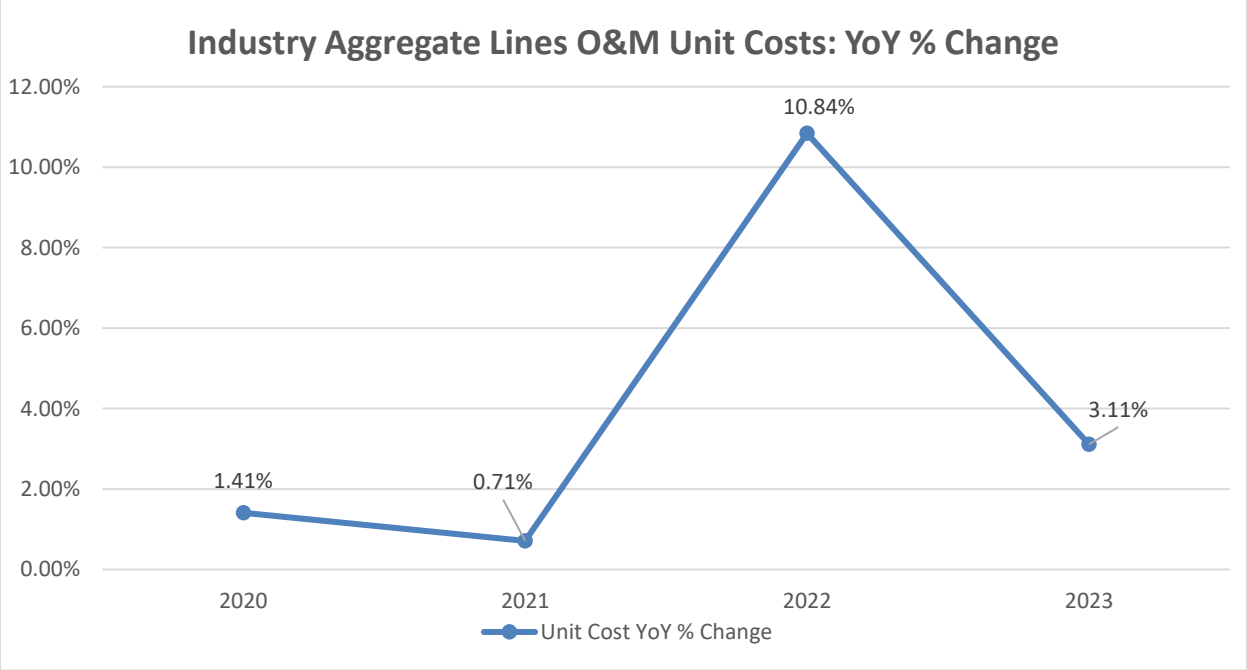


The unit cost for this metric is calculated by dividing the lines O&M cost, by the total number of primary circuit kilometers.

$$\text{Unit Cost (\$/Primary Circuit km)} = \frac{\text{USoA } [5020 + 5025 + 5040 + 5045 + 5090 + 5095 + 5125 + 5130 + 5145 + 5150 + 5155] \text{ (\$)}}{\text{Total Primiary Circuit Kilometers}}$$

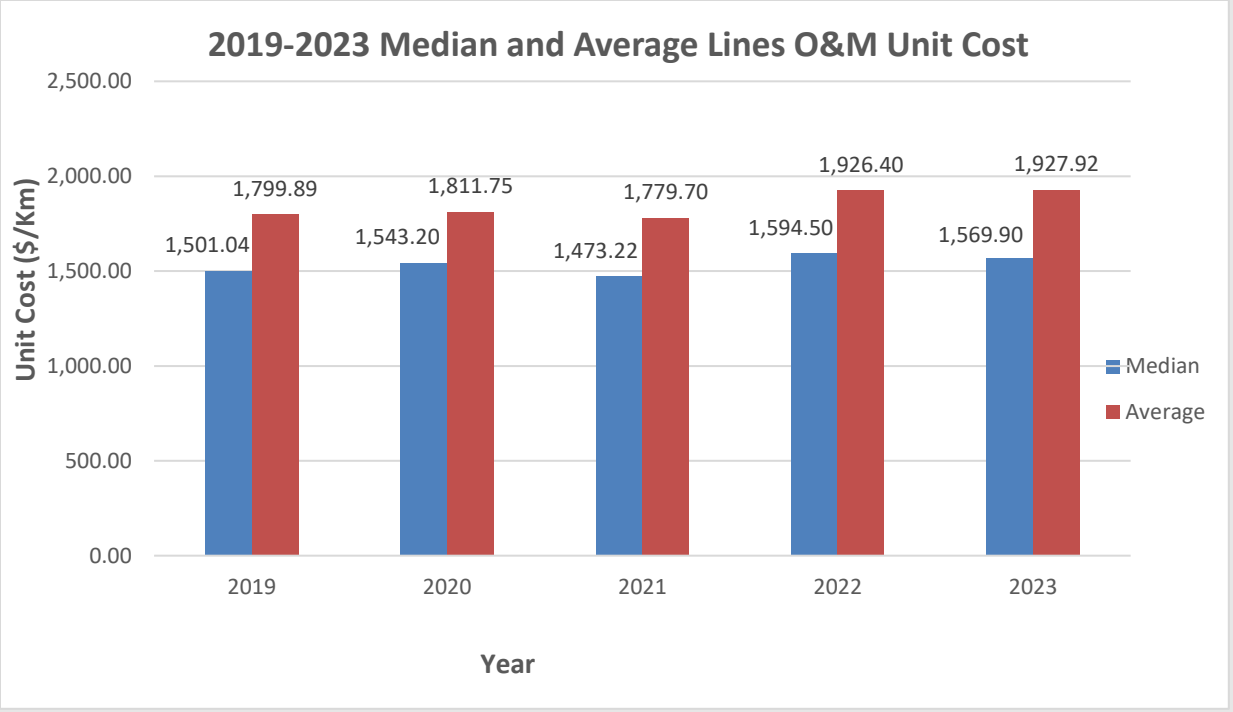
The industry aggregate unit cost shown in the following chart is derived by dividing the total lines O&M costs of all 54 distributors, by the total primary circuit kilometers of line. Aggregated at the industry level, the unit cost increased by $47 per circuit kilometers, per year.



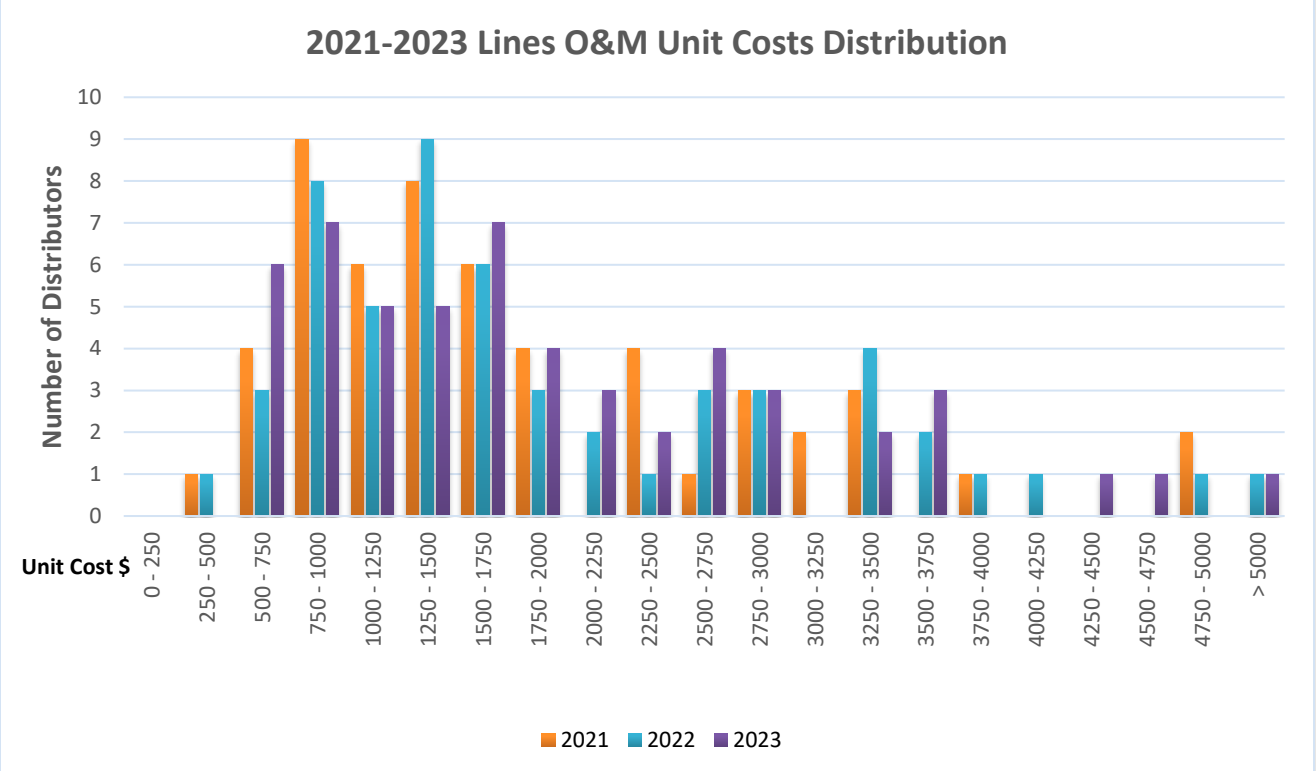


The chart below summarizes the median and average[15] lines O&M unit cost from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost per primary circuit kilometer increased from $1,501.04 in 2019 to $1,569.90 in 2023. Similarly, the average cost rose from $1,799.89 in 2019 to $1,927.92 in 2023.

[15] An average of unit costs across the 54 distributors.



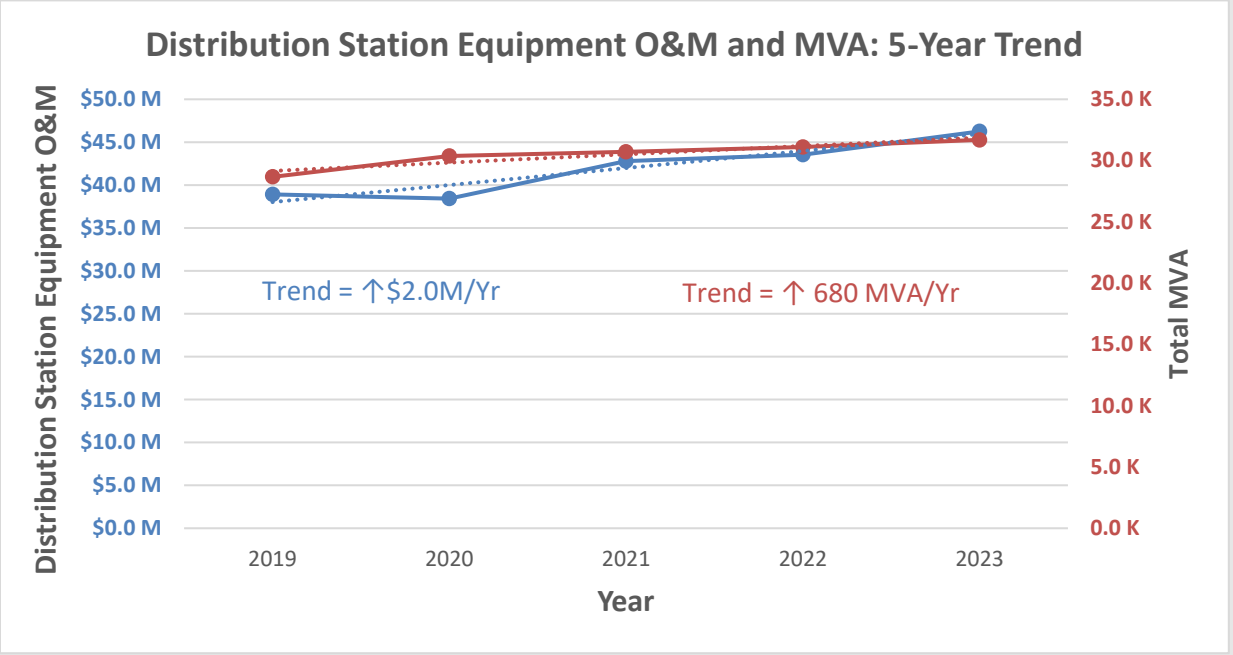
The chart below shows the distribution of lines O&M unit cost from 2021 to 2023.



Unit Cost $	0 - 250	250 - 500	500 - 750	750 - 1000	1000 - 1250	1250 - 1500	1500 - 1750	1750 - 2000	2000 - 2250	2250 - 2500	2500 - 2750	2750 - 3000	3000 - 3250	3250 - 3500	3500 - 3750	3750 - 4000	4000 - 4250	4250 - 4500	4500 - 4750	4750 - 5000	> 5000
2021	0	1	4	9	6	8	6	4	0	4	1	3	2	3	0	1	0	0	0	2	0
2022	0	1	3	8	5	9	6	3	2	1	3	3	0	4	2	1	1	0	0	1	1
2023	0	0	6	7	5	5	7	4	3	2	4	3	0	2	3	0	0	1	1	0	1

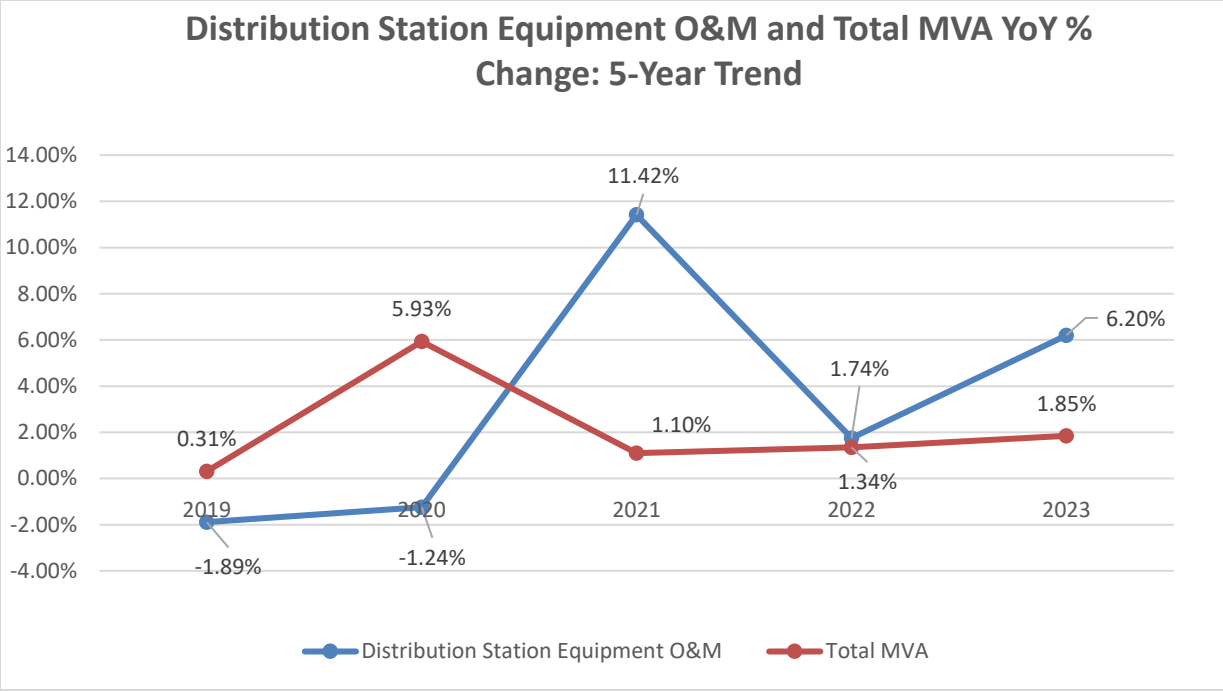
2.5 Distribution Station Equipment O&M

During the five-year period from 2019 to 2023, the overall industry trend[16] of distribution station equipment O&M costs[17], as measured by standardized linear regression, increased by approximately $2.0M per year, and the overall trend of the Total Mega Volt-Ampere (MVA) increased by approximately 680 MVA per year. The chart below shows the five-year trend.



From 2022 to 2023, the combined distribution station equipment O&M costs for all 43 distributors increased by 6.20%, and the total MVA increased by 1.85%.

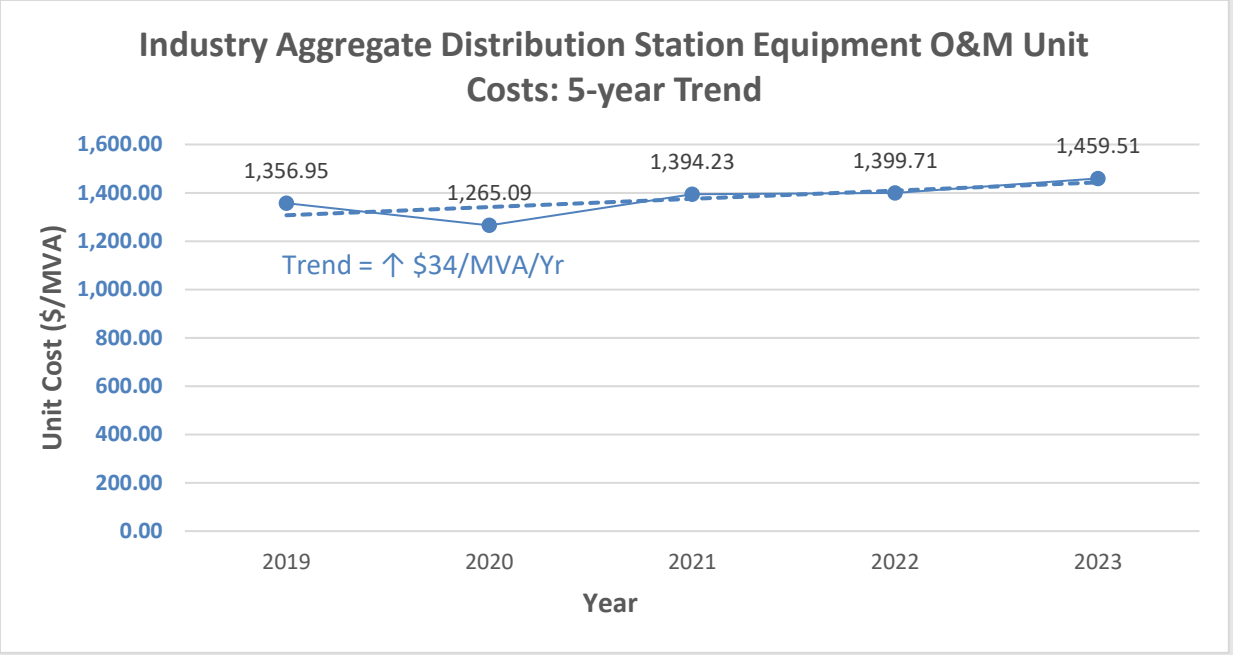
[16] Combined for 43 distributors. Excludes 11 of the 54 distributors that do not own distribution stations.
[17] Accounts 5016, 5017, 5114 as per Accounting Procedures Handbook for Electricity Distributors.

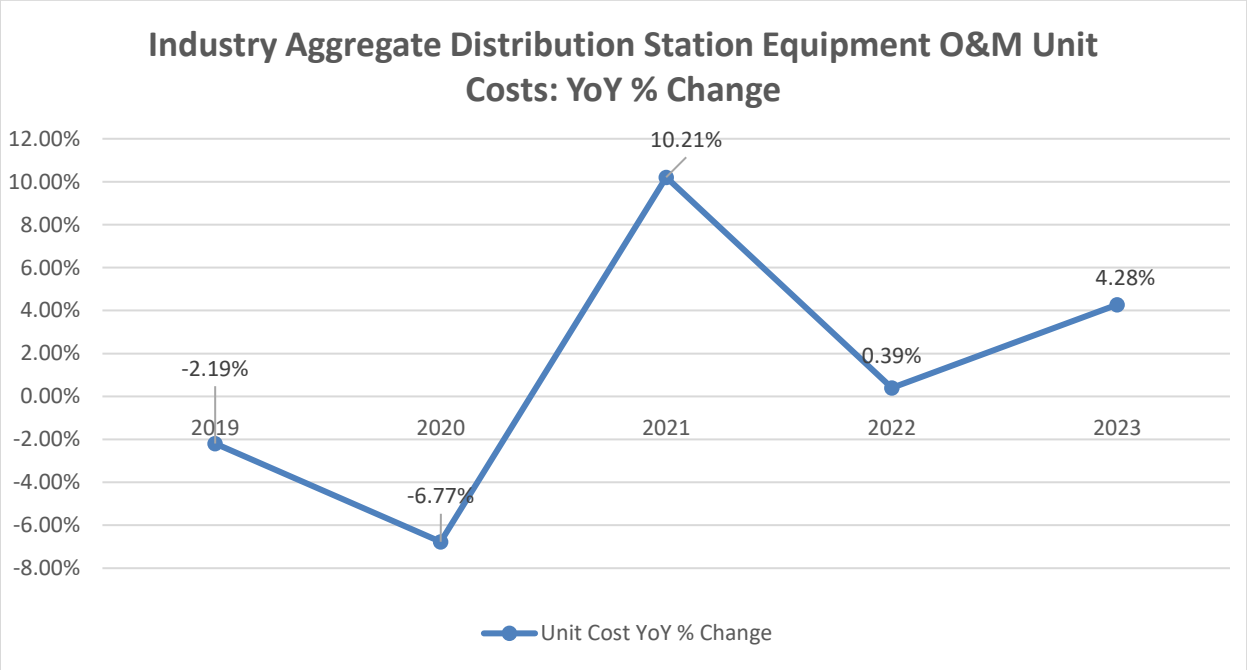


The unit cost for this metric is calculated by dividing the distribution station equipment cost, by the Total MVA.

$$\text{Unit Cost } \left(\frac{\$}{\text{MVA}}\right) = \frac{\text{USoA } [5016+5017+5114] \ (\$)}{\text{Total MVA}}$$

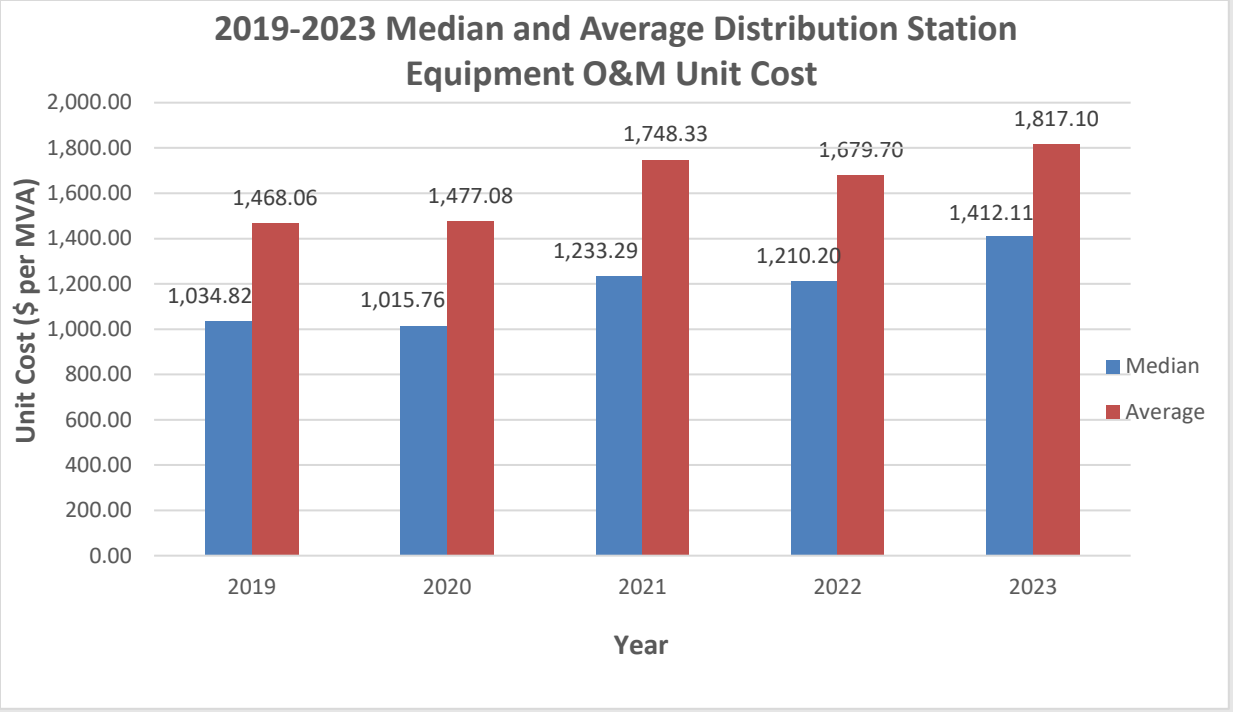
The industry aggregate unit cost shown in the following chart is derived by dividing the total distribution system equipment O&A costs of 43 distributors, by total MVA. Aggregated at the industry level, the unit cost increased by $34 per MVA, per year.



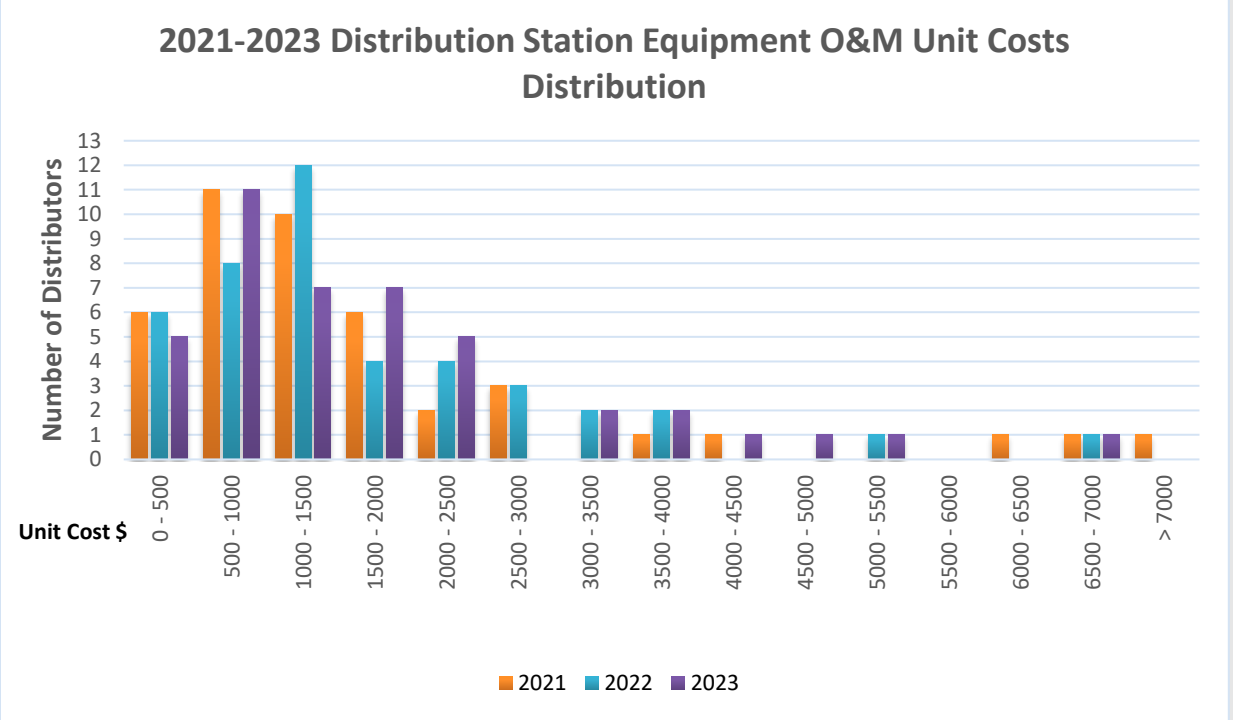


The chart below summarizes the median and average[18] distribution station equipment O&M unit cost from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost increased from $1,034.82 in 2019 to $1,412.11 in 2023. Similarly, the average cost rose from $1,468.06 in 2019 to $1,817.10 in 2023.

[18] An average of unit costs across the 43 distributors.



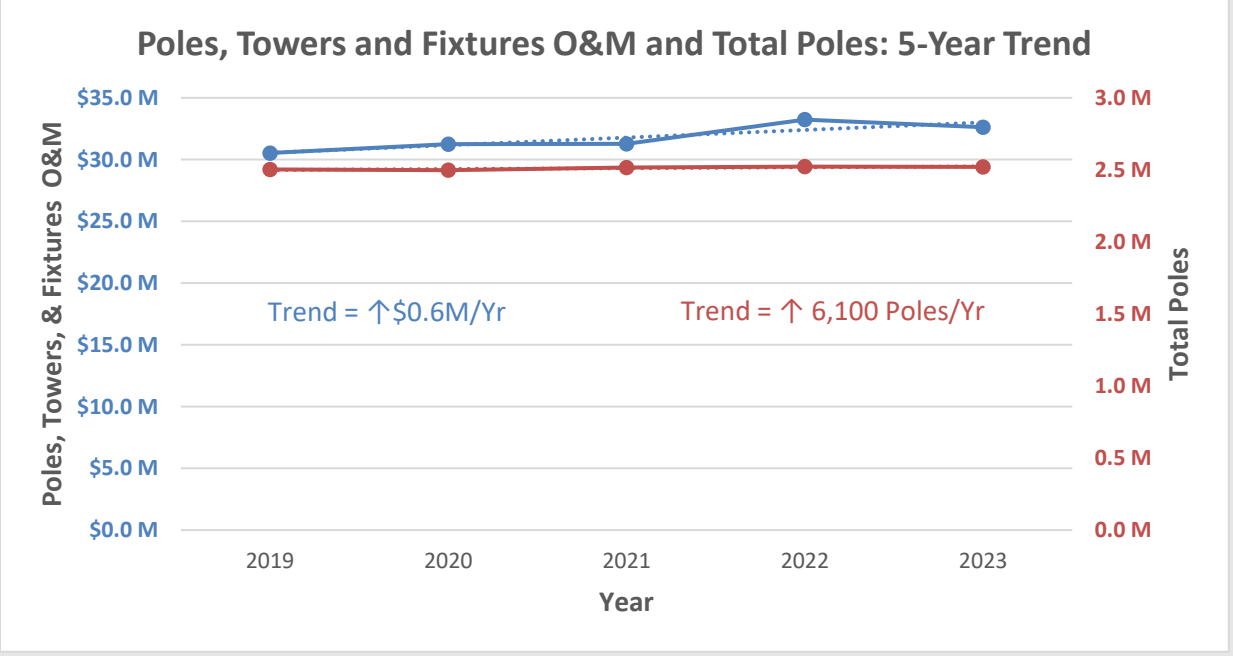
The chart below shows the distribution of distribution station equipment O&M unit cost from 2021 to 2023.



Unit Cost $	0 - 500	500 - 1000	1000 - 1500	1500 - 2000	2000 - 2500	2500 - 3000	3000 - 3500	3500 - 4000	4000 - 4500	4500 - 5000	5000 - 5500	5500 - 6000	6000 - 6500	6500 - 7000	> 7000
2021	6	11	10	6	2	3	0	1	1	0	0	0	1	1	1
2022	6	8	12	4	4	3	2	2	0	0	1	0	0	1	0
2023	5	11	7	7	5	0	2	2	1	1	1	0	0	1	0

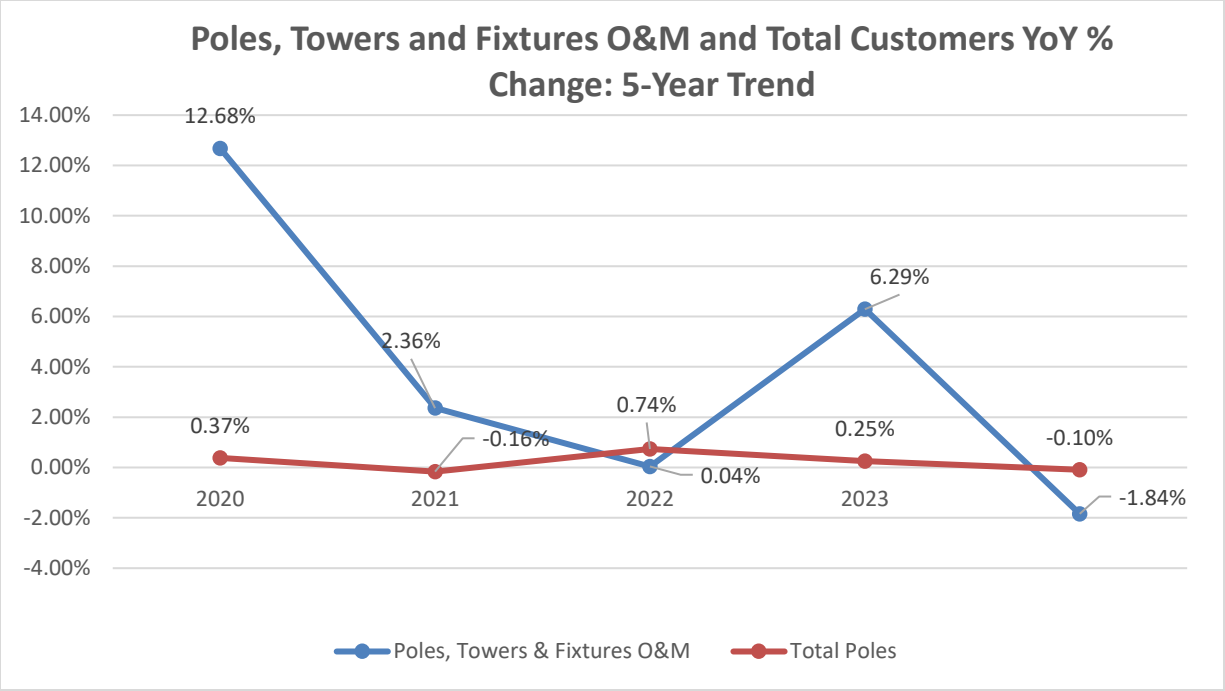
2.6 Poles, Towers and Fixtures O&M

During the five-year period 2019 to 2023, the overall industry trend[19] of poles, towers and fixtures O&M costs[20], as measured by standardized linear regression, increased by approximately $0.6 million per year, and the overall trend of the total number of poles increased by approximately 6,100 per year. The chart below shows the five-year trend.



From 2022-2023, the combined cost of total poles, towers and fixtures O&M for all 54 distributors decreased by 1.84%, and the total number of poles decreased by 0.10%.

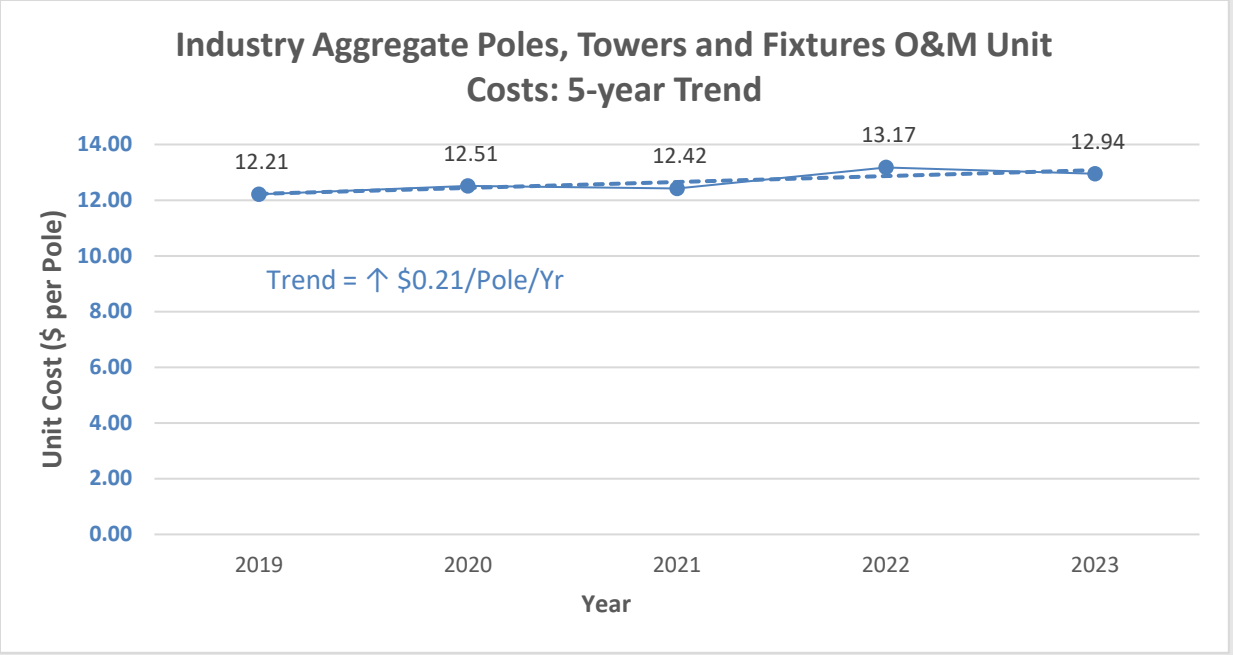
[19] Combined for all 54 distributors.
[20] Accounts 5120 as per Accounting Procedures Handbook for Electricity Distributors.

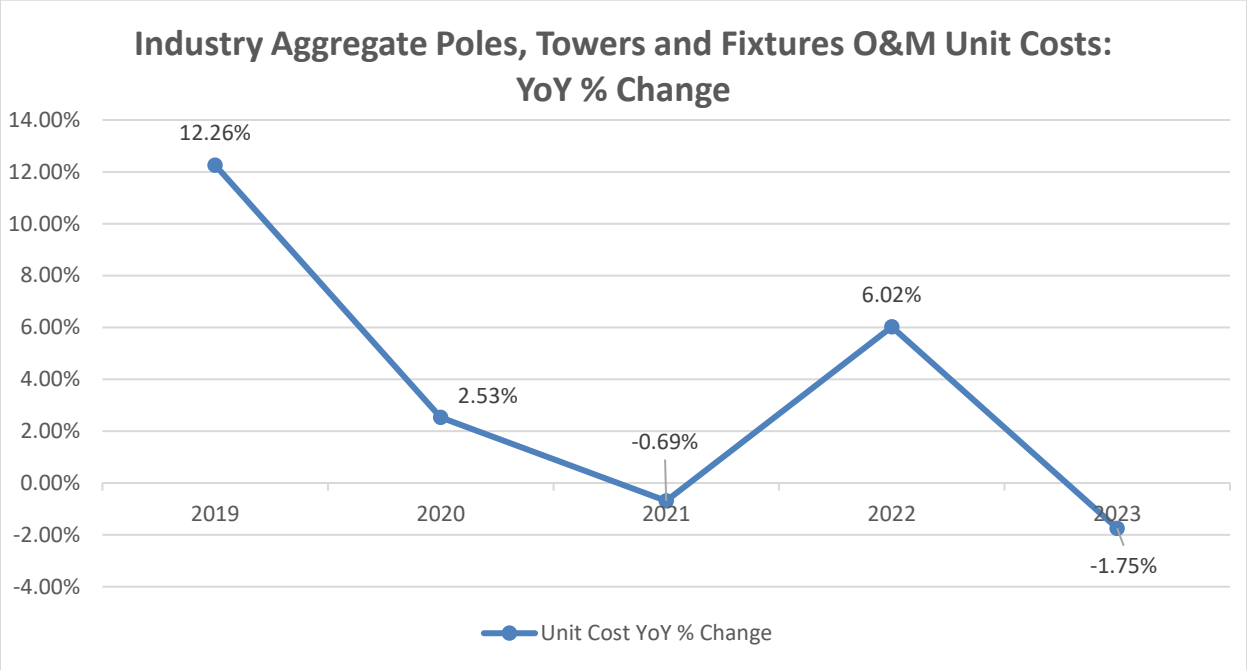


The unit cost for this metric is calculated by dividing the poles, towers and fixtures O&M cost, by the total number of poles.

$$\text{Unit Cost (\$/Pole)} = \frac{\text{USoA 5120 (\$)}}{\text{Total Number of Poles}}$$

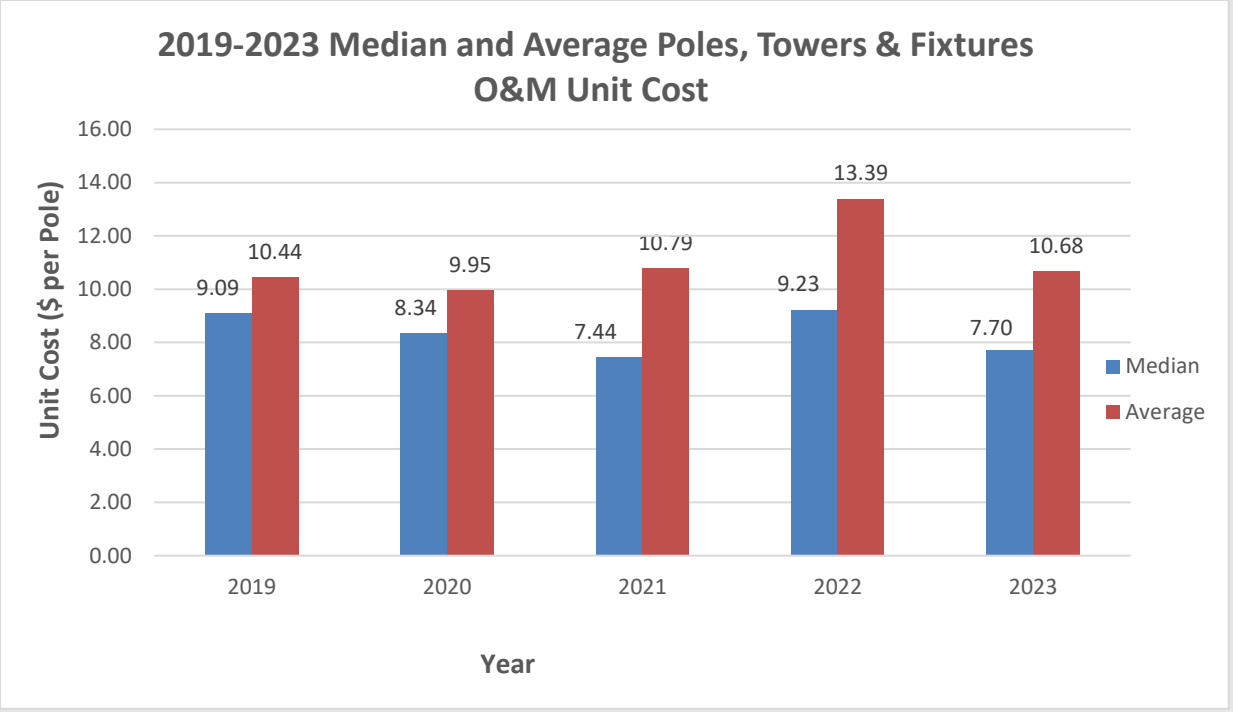
The industry aggregate unit cost shown in the following chart is derived by dividing the total poles, towers and fixtures O&M costs of all 54 distributors, by the total number of poles in the system. Aggregated at the industry level, the unit cost increased by $0.21 per pole, per year.



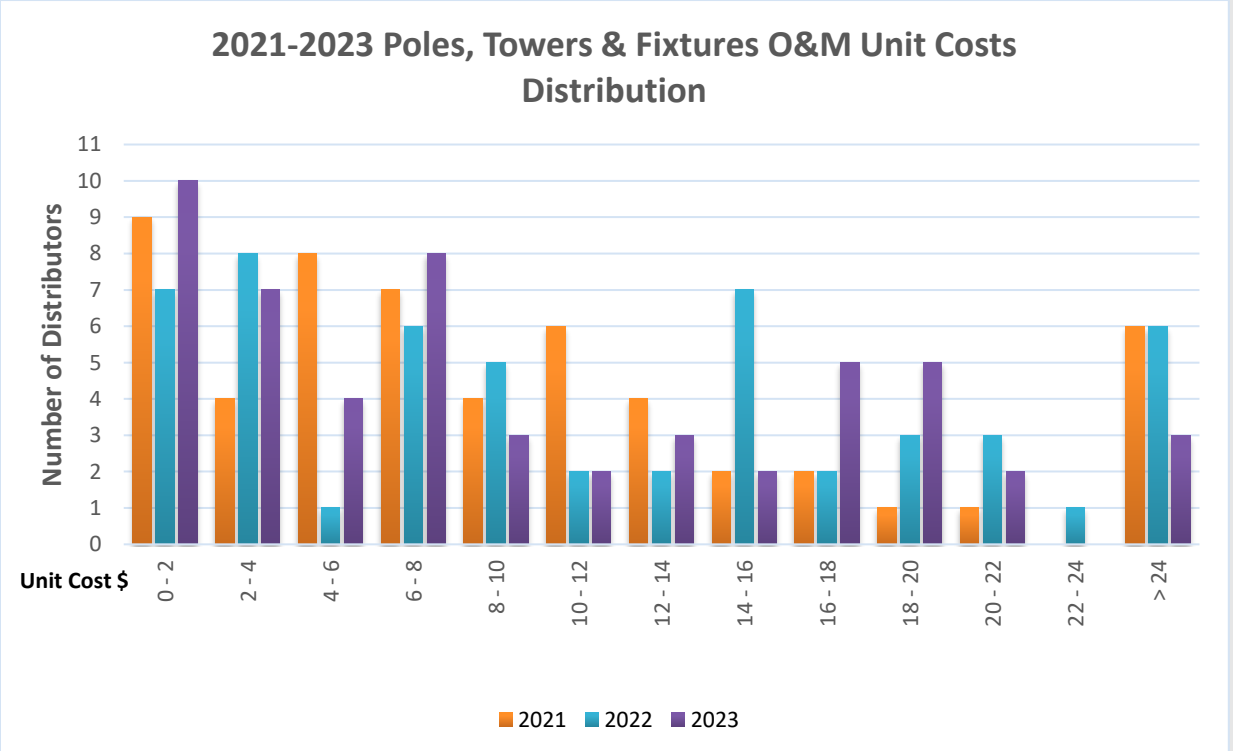


The chart below summarizes the median and average[21] unit cost for poles, towers and fixtures O&M from 2019 to 2023. The median unit cost for 2023 is $7.70 per pole and the average unit cost is $10.68 per pole.

[21] An average of unit costs across the 54 distributors.



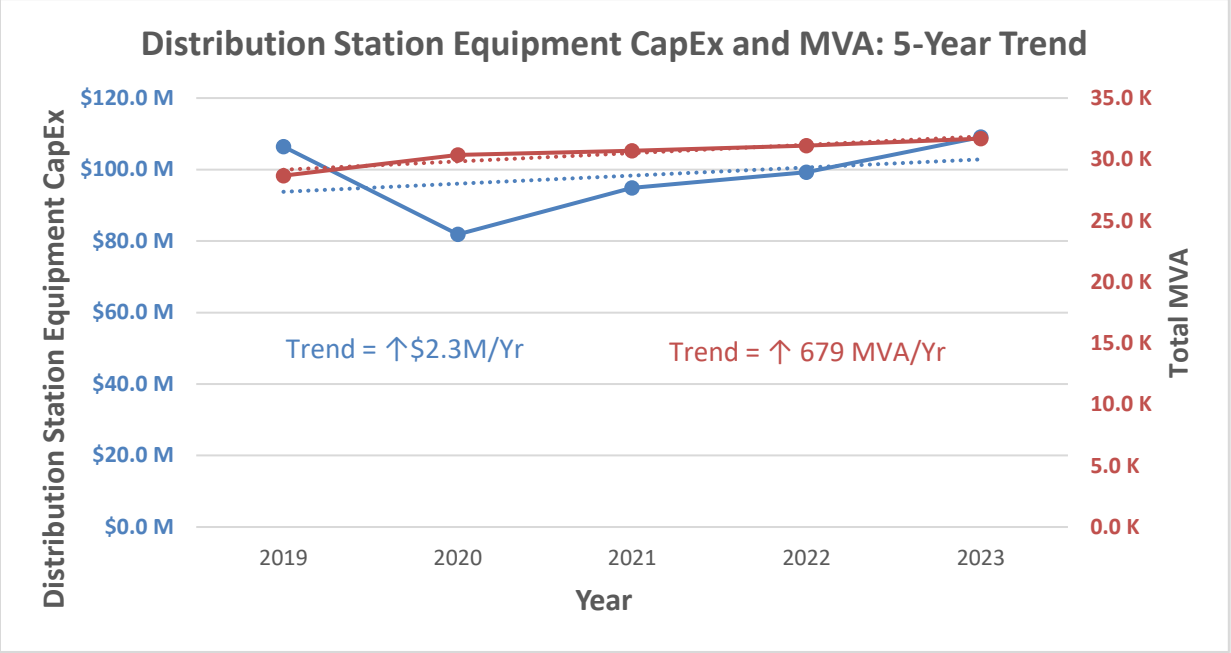
The chart below shows the distribution of poles, towers and fixtures O&M unit cost from 2021 to 2023.



Unit Cost $	0 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14	14 - 16	16 - 18	18 - 20	20 - 22	22 - 24	> 24
2021	9	4	8	7	4	6	4	2	2	1	1	0	6
2022	7	8	1	6	5	2	2	7	2	3	3	1	6
2023	10	7	4	8	3	2	3	2	5	5	2	0	3

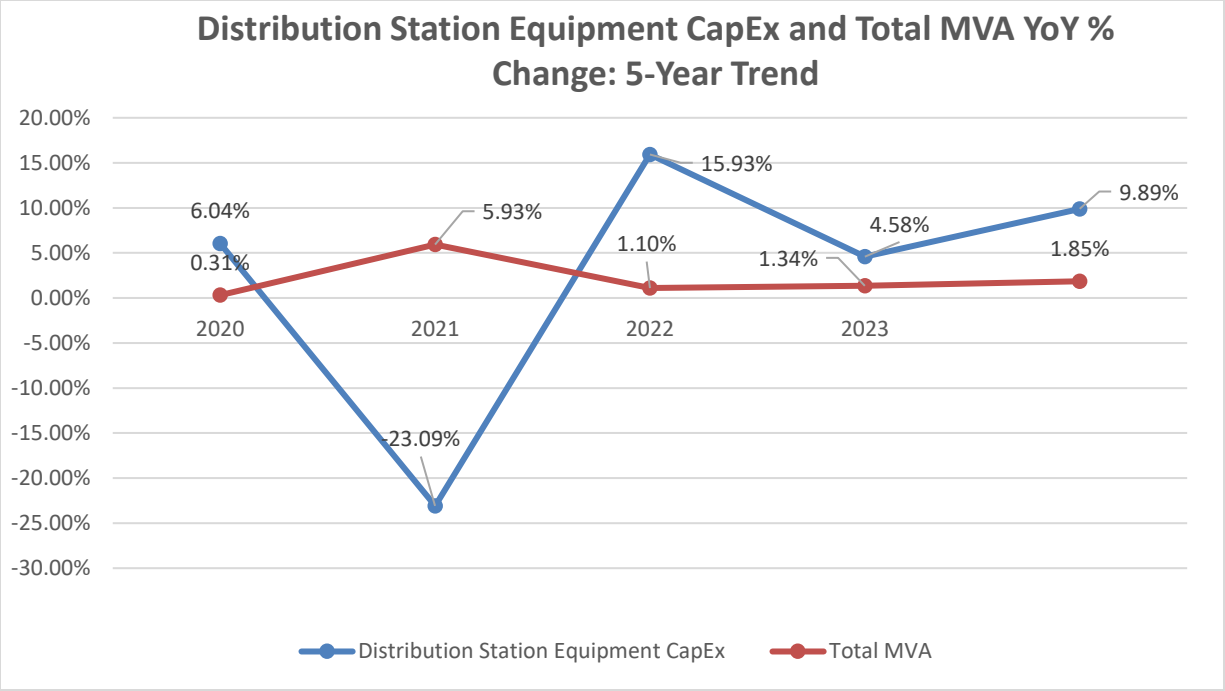
2.7 Capital Expenditures: Distribution Station Equipment

During the five-year period from 2019 to 2023, the overall industry trend[22] of distribution station equipment CapEx[23,24], as measured by standardized linear regression, increased by approximately $2.3 million per year, and the general trend of Total MVA increased by approximately 679 per year. The chart below shows the five-year trend.



From 2022-2023, the total combined distribution station equipment CapEx for 43 distributors increased by 9.89%. Aligned with the five-year uptrend, overall MVA increased by 1.85%.

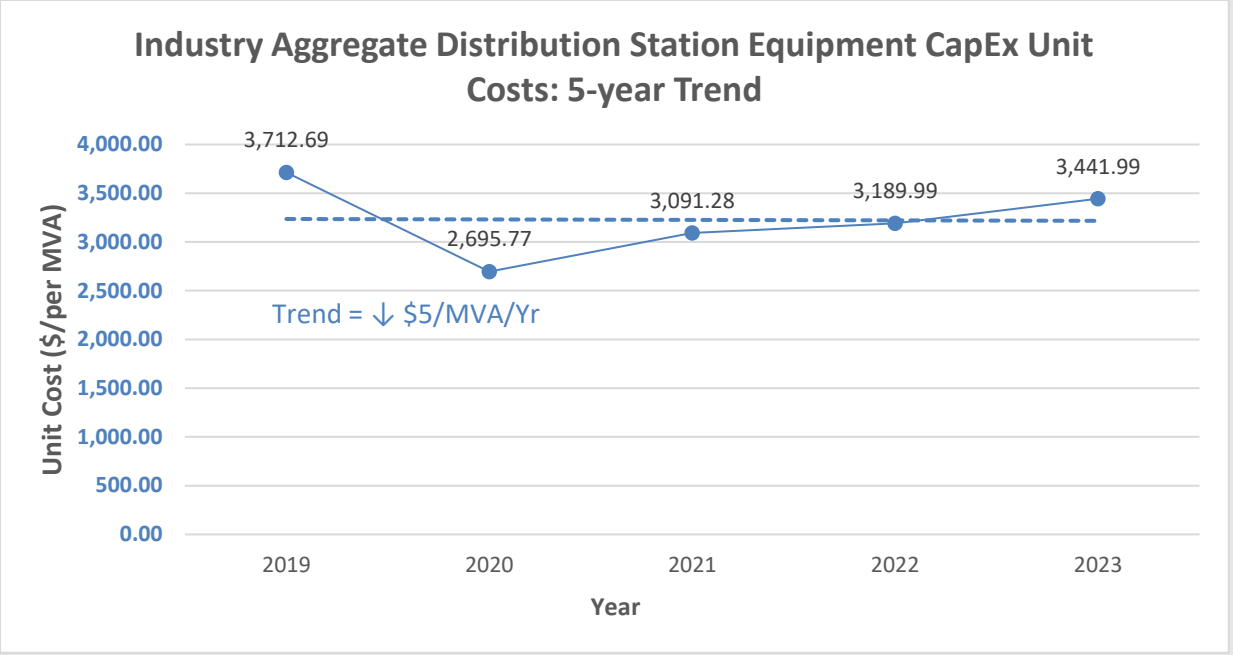
[22] Combined for 43 distributors. Excludes 11 of the 54 distributors that do not own distribution stations.
[23] Account 1820 as per Accounting Procedures Handbook for Electricity Distributors.
[24] Hydro One Network's capital additions for 2020 are on estimated basis using their capital additions for other years.

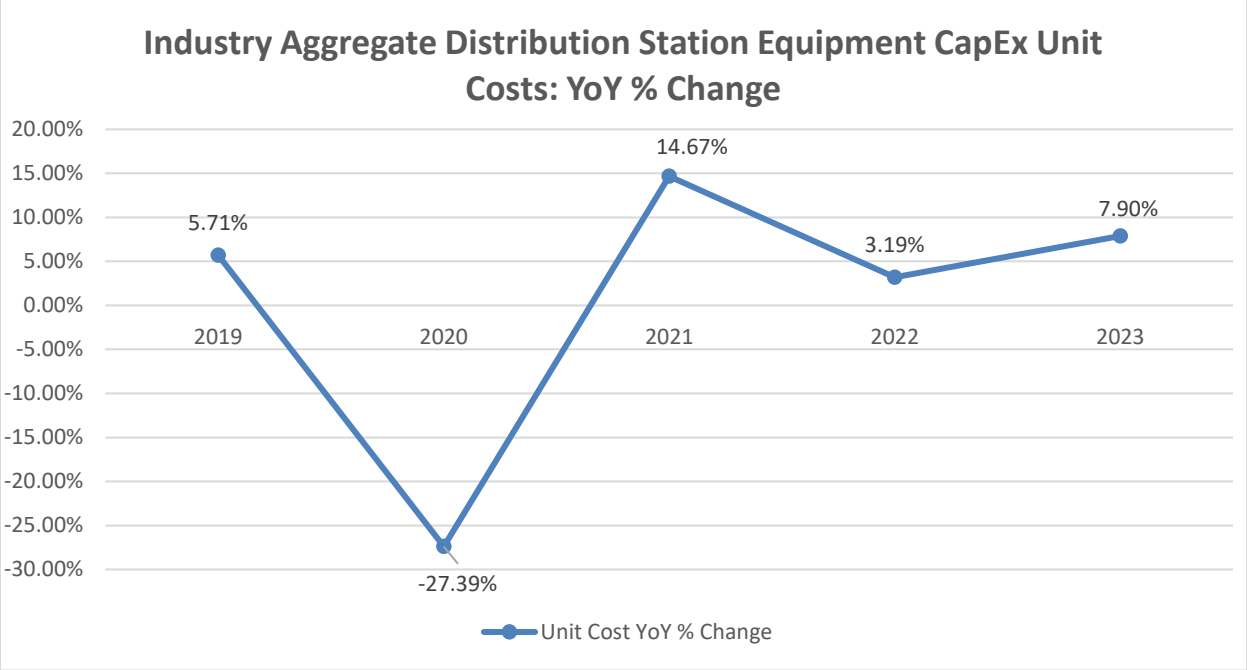


The unit cost for this metric is calculated by dividing the distribution station equipment CapEx, by total MVA.

$$\text{Unit Cost } \left(\frac{\$}{\text{MVA}}\right) = \frac{\text{USoA [1820] (\$)}}{\text{Total MVA}}$$

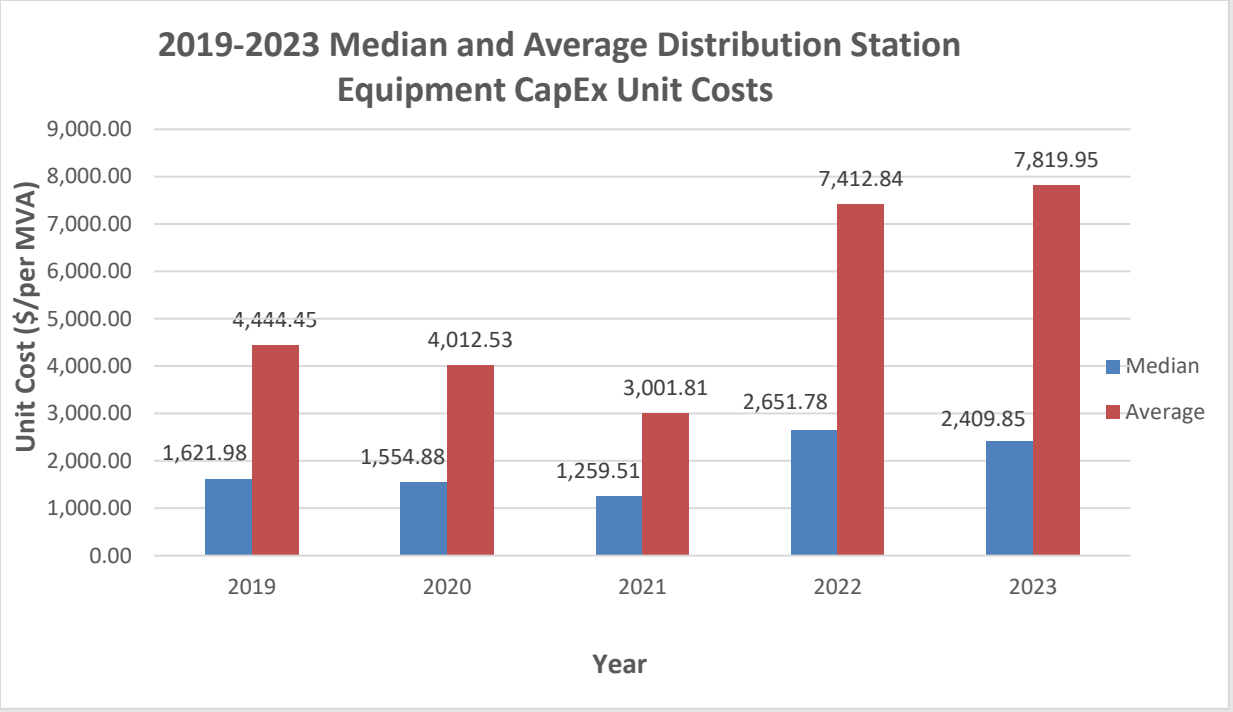
The industry aggregate unit cost shown in the following chart is derived by dividing the total distribution system equipment CapEx of 43 distributors, by the combined total MVA Aggregated at the industry level, the unit cost decreased by $5 per MVA, per year.



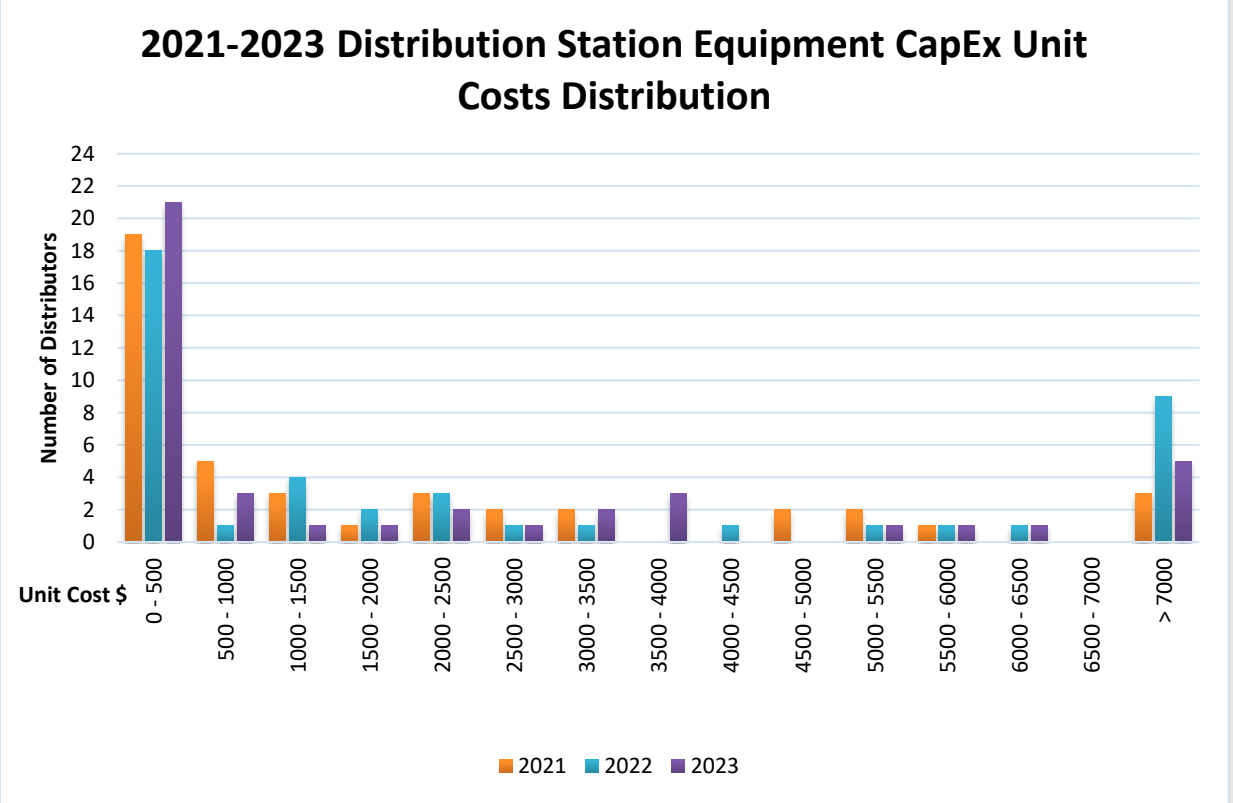


The chart below summarizes the median and average[25] unit cost for distribution station equipment CapEx from 2019 to 2023. The median unit cost for 2023 is $2,409.85 per MVA, and the average unit cost is $7,819.95 per MVA.

[25] An average of unit costs across the 43 distributors. Zero values are excluded.



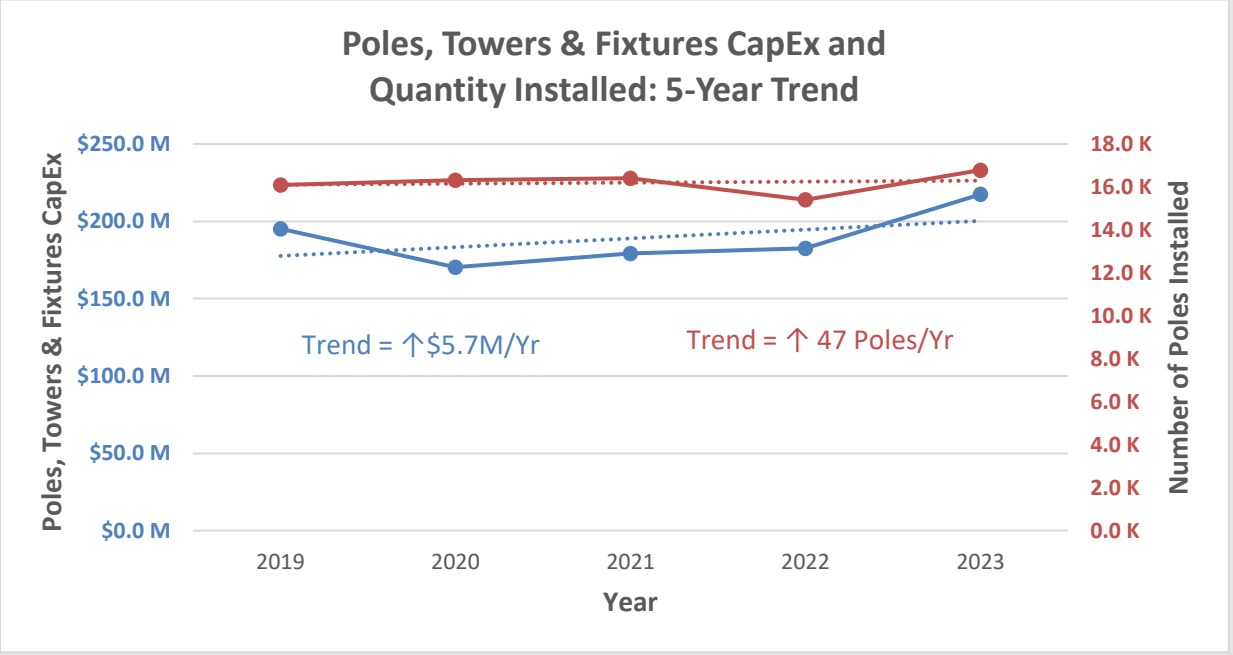
The chart below shows the distribution of distribution station equipment CapEx unit costs from 2021 to 2023.



Unit Cost $	0 - 500	500 - 1000	1000 - 1500	1500 - 2000	2000 - 2500	2500 - 3000	3000 - 3500	3500 - 4000	4000 - 4500	4500 - 5000	5000 - 5500	5500 - 6000	6000 - 6500	6500 - 7000	> 7000
2021	19	5	3	1	3	2	2	0	0	2	2	1	0	0	3
2022	18	1	4	2	3	1	1	0	1	0	1	1	1	0	9
2023	21	3	1	1	2	1	2	3	0	0	1	1	1	0	5

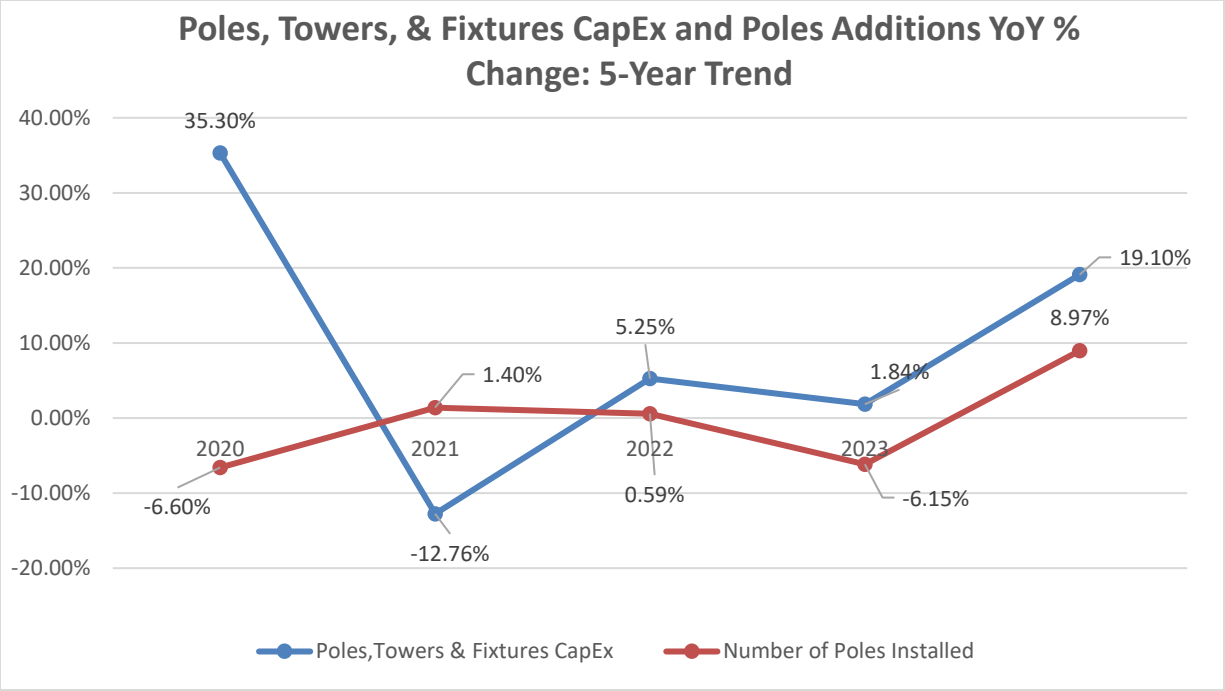
2.8 Capital Expenditures: Poles, Towers and Fixtures

During the five-year period from 2019 to 2023, the overall industry trend[26] of poles, towers and fixtures CapEx[27], as measured by standardized linear regression, increased by approximately $5.7 million per year. The overall trend of the number of poles installed increased by 47 poles per year. The chart below shows the five-year trend.



From 2022 to 2023, aligned with the five-year uptrend, the combined total poles, towers and fixtures CapEx for 52 distributors increased by 19.10%. Contrary to the five-year downtrend, the number of poles installed increased by 8.97%.

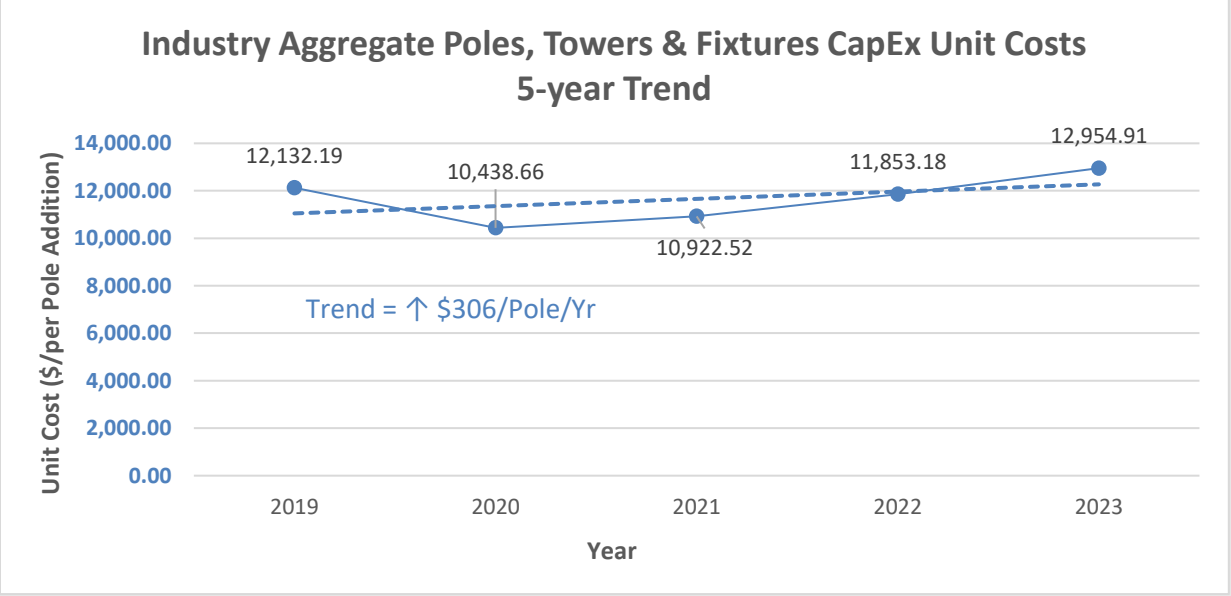
[26] Combined for 52 distributors: Hydro One Networks Inc., and Rideau St. Lawrence Distribution Inc. have been excluded since their number of pole additions aren't available for years 2017-2020.
[27] Account 1830 as per Accounting Procedures Handbook for Electricity Distributors.

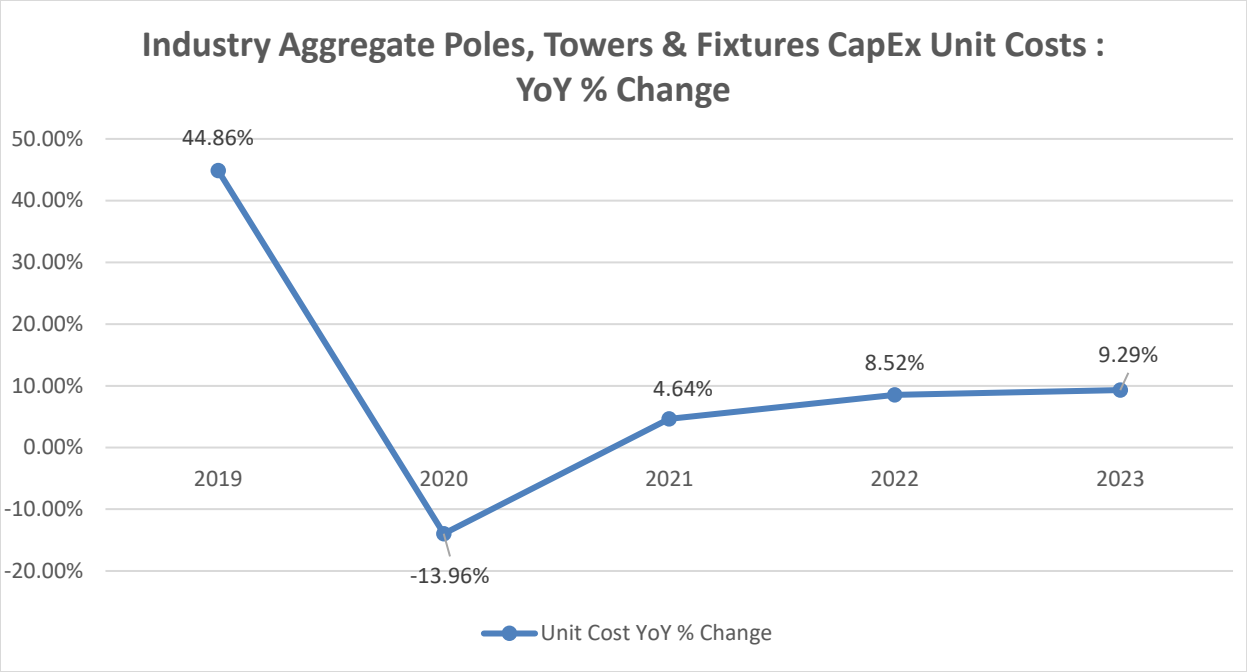


The unit cost for this metric is calculated by dividing the total poles, towers and fixtures CapEx, by the number of poles installed.

$$\text{Unit Cost (\$/Pole)} = \frac{\text{USoA 1830 (\$) Capital Additions}}{\text{Number of Poles Installed}}$$

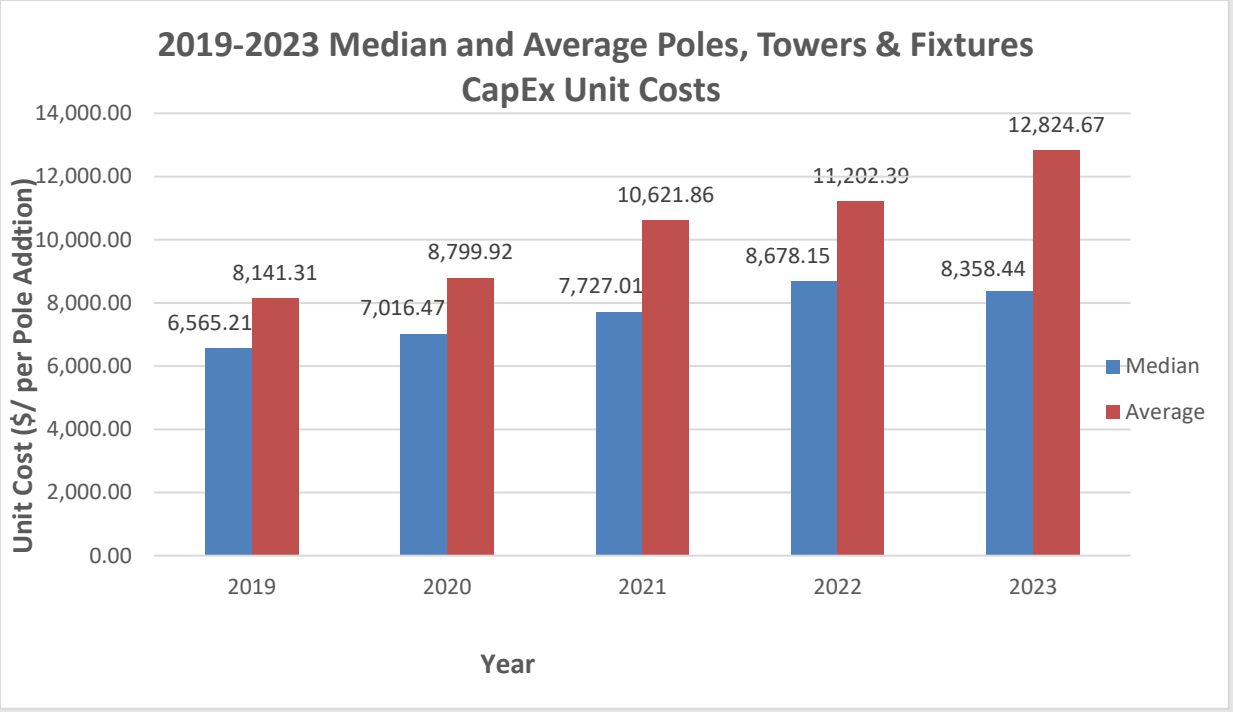
The industry aggregate unit cost shown in the following chart is derived by dividing the total poles, towers and fixtures CapEx of 52 distributors, by the total poles installed. Aggregated at the industry level, the unit cost increased by $306 per pole, per year.



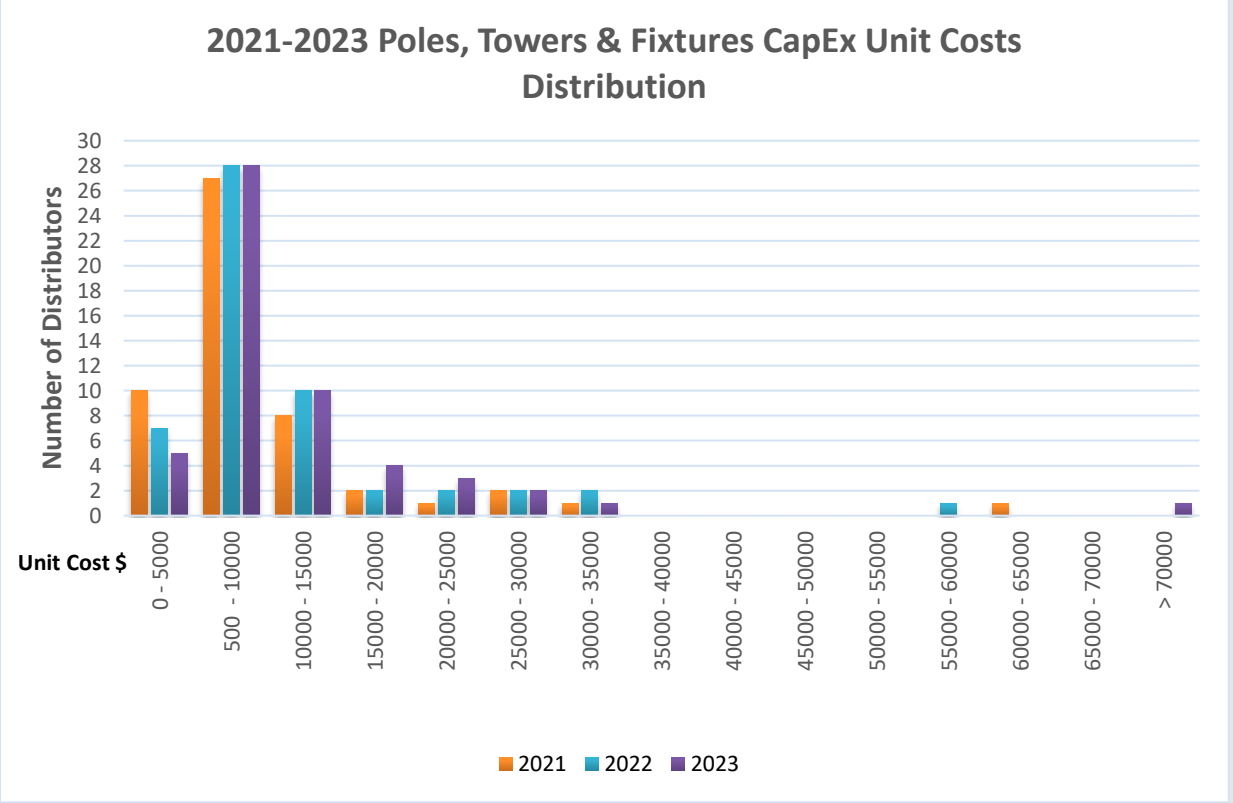


The chart below summarizes the median and average[28] unit costs for poles, towers and fixtures CapEx from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost per customer increased from $6,565.21 in 2019 to $8,358.44 in 2023. Similarly, the average cost rose from $8,141.31 in 2019 to $12,824.67 in 2023.

[28] An average of unit costs across the 52 distributors. Zero values are excluded.



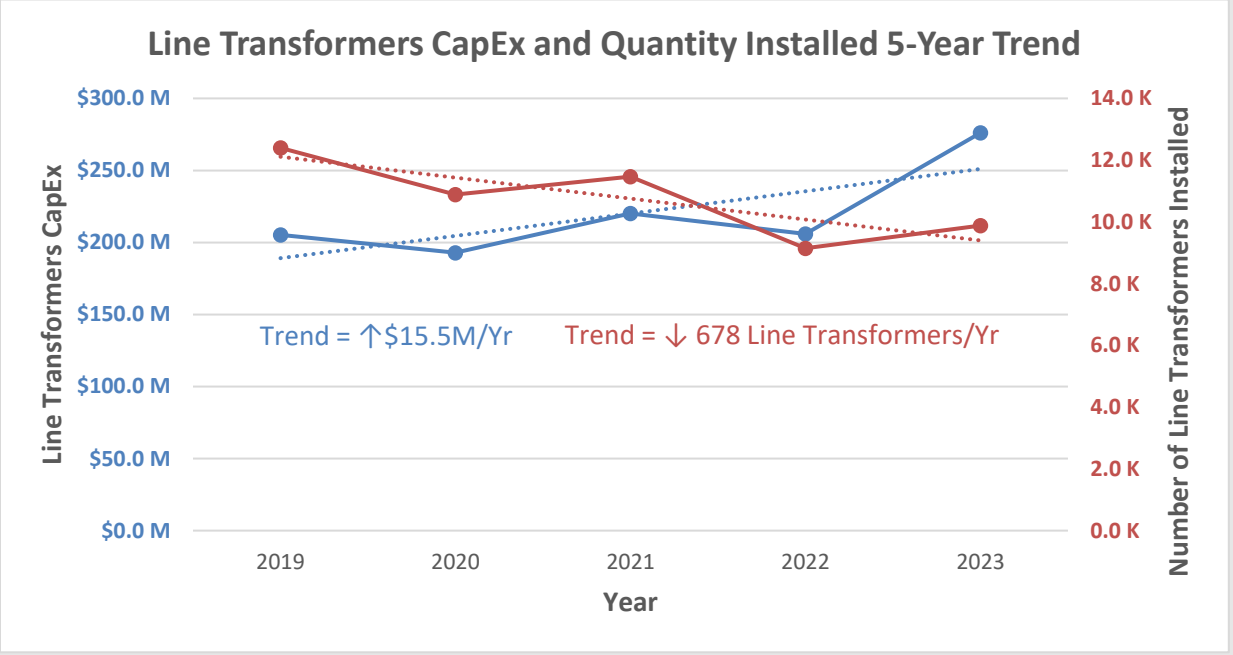
The chart below shows the distribution of poles, towers and fixtures CapEx unit costs from 2021 to 2023.



Unit Cost $	0 - 5000	500 - 10000	10000 - 15000	15000 - 20000	20000 - 25000	25000 - 30000	30000 - 35000	35000 - 40000	40000 - 45000	45000 - 50000	50000 - 55000	55000 - 60000	60000 - 65000	65000 - 70000	> 70000
2021	10	27	8	2	1	2	1	0	0	0	0	0	1	0	0
2022	7	28	10	2	2	2	2	0	0	0	0	1	0	0	0
2023	5	28	10	4	3	2	1	0	0	0	0	0	0	0	1

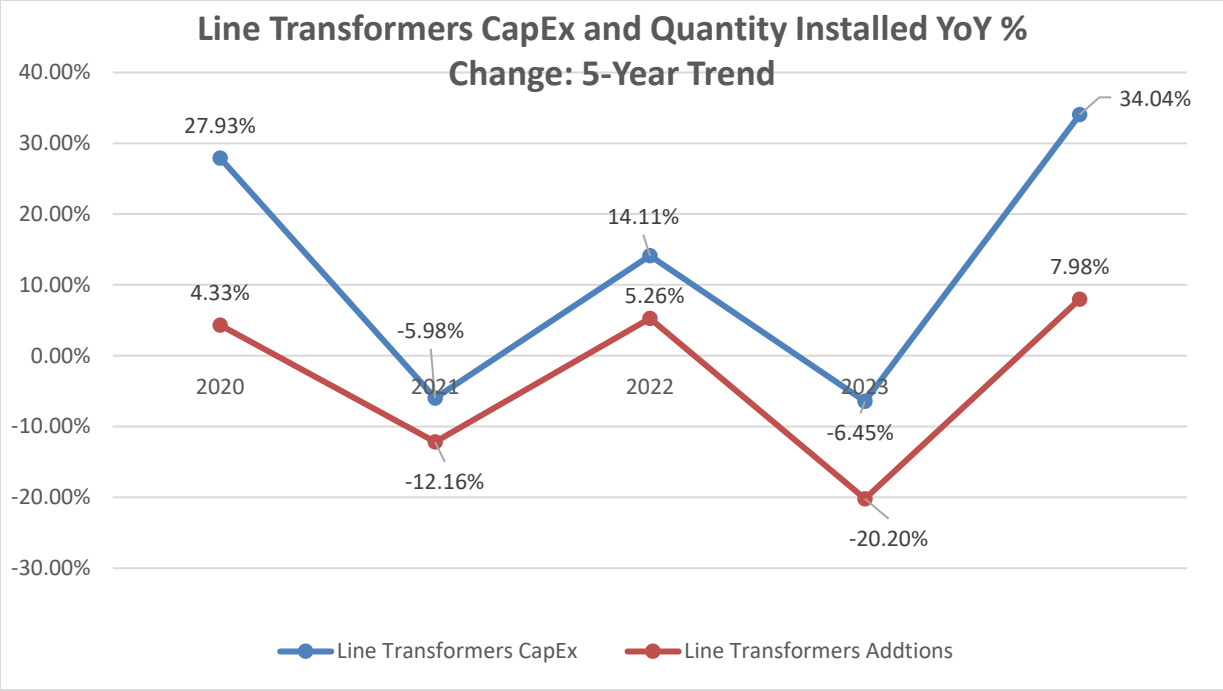
2.9 Capital Expenditures: Line Transformers

During the five-year period from 2019 to 2023, the overall industry trend[29] of the line transformers CapEx[30], as measured by standardized linear regression, increased by approximately $15.5 million per year, and the overall trend of the number of line transformers installed decreased by 678 per year. The chart below shows the five-year trend.



From 2022 to 2023, the total combined line transformers CapEx for 52 distributors increased by 34.04%. The number of line transformers installed increased by 7.98%.

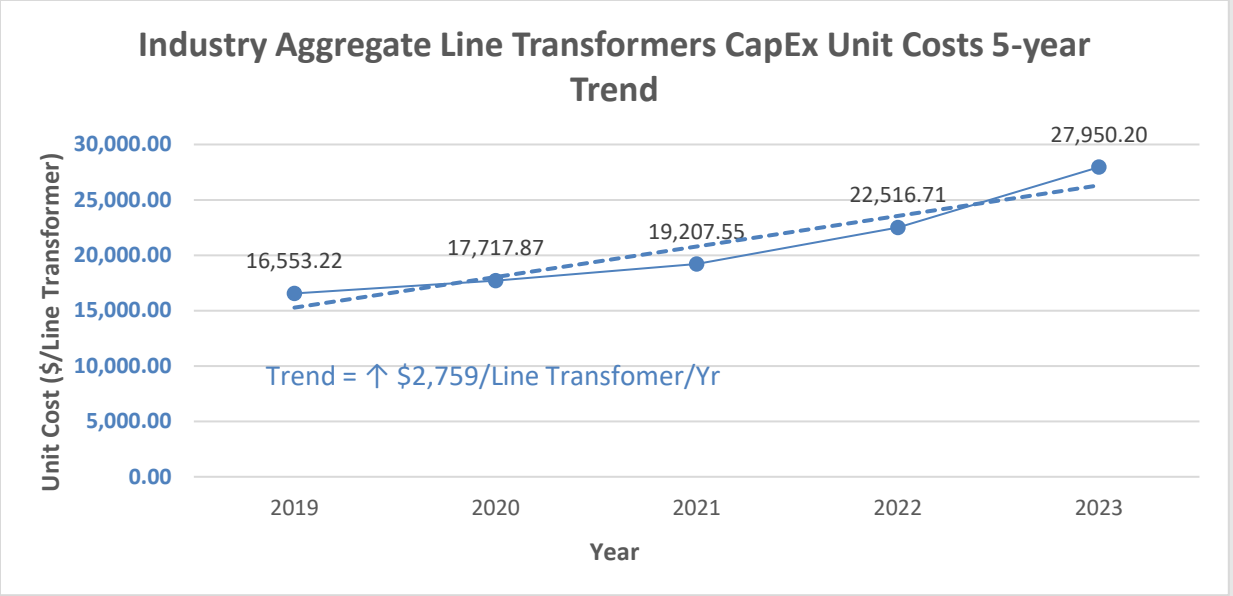
[29] Combined for 52 distributors: Hydro One Networks Inc. and Rideau St. Lawrence Distribution Inc. have been excluded since their number of line transformer additions aren't available for years 2017-2020.
[30] Account 1850 as per Accounting Procedures Handbook for Electricity Distributors.

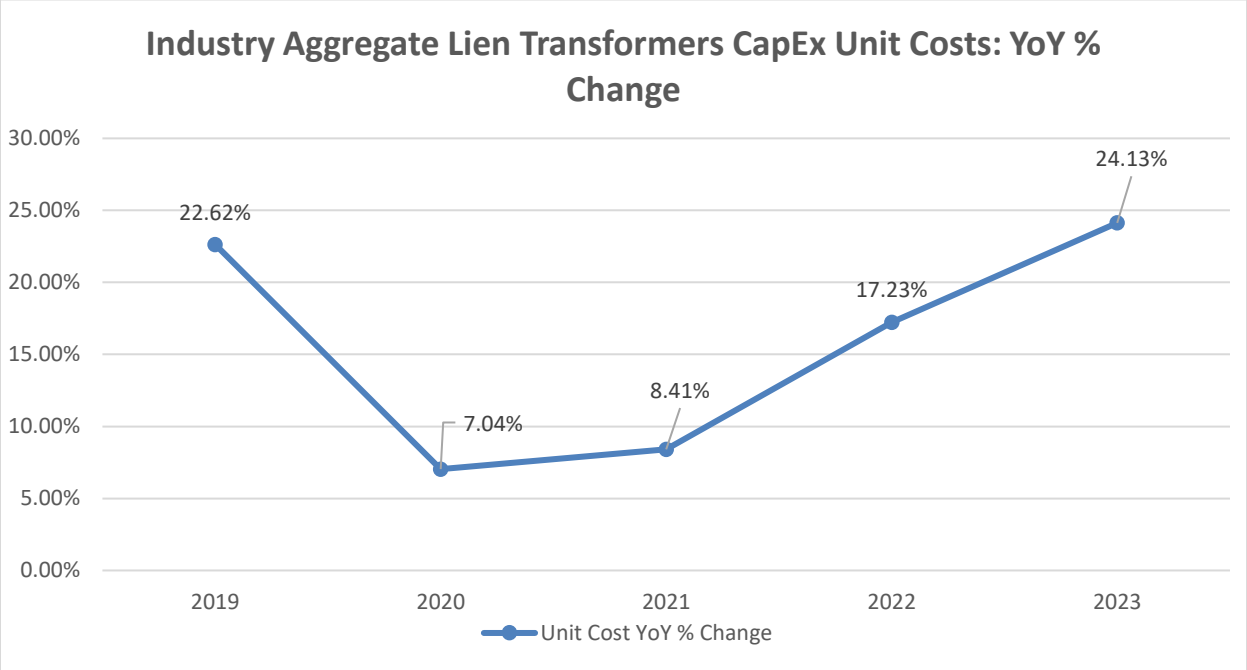


The unit cost for this metric is calculated by dividing the line transformer CapEx, by the number of line transformers installed.

$$\text{Unit Cost (\$/Line Transformer)} = \frac{\text{USoA 1850 (\$) Capital Additions}}{\text{Number of Line Transformers Installed}}$$

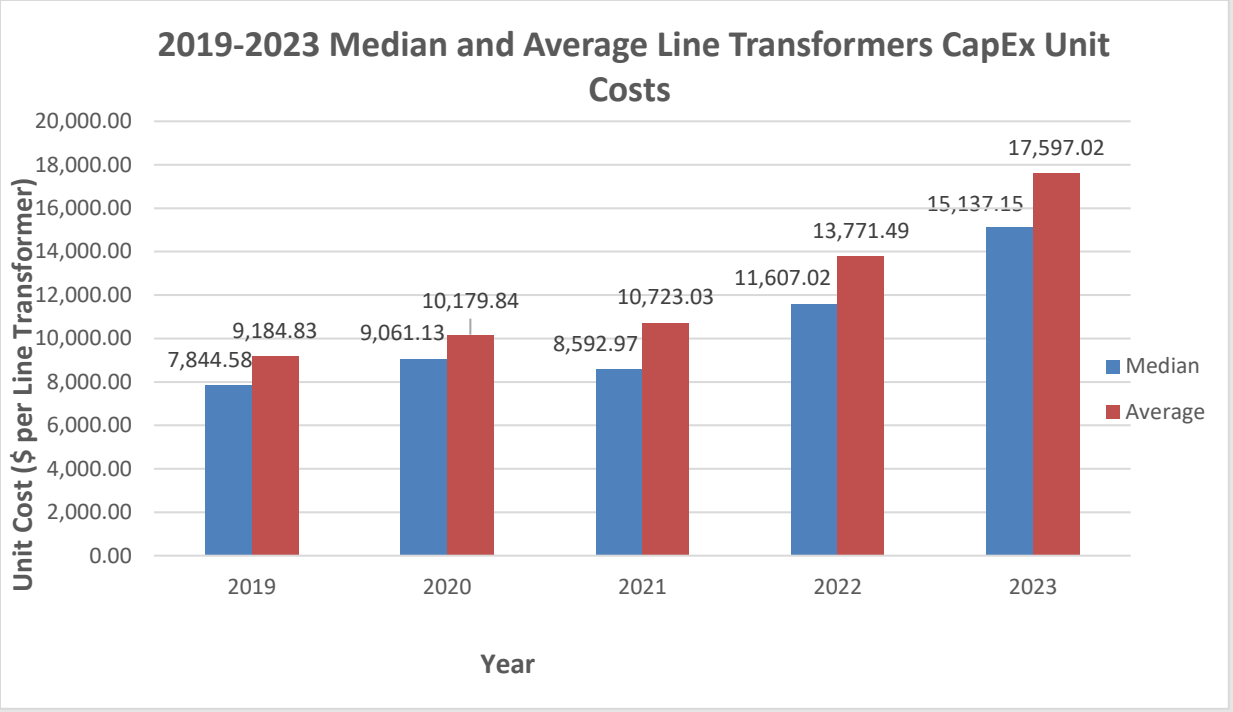
The industry aggregate unit cost shown in the following chart is derived by dividing the total line transformers CapEx of 52 distributors, by the total number of line transformers installed. Aggregated at the industry level, the unit cost increased by $2,759 per line transformers, per year.



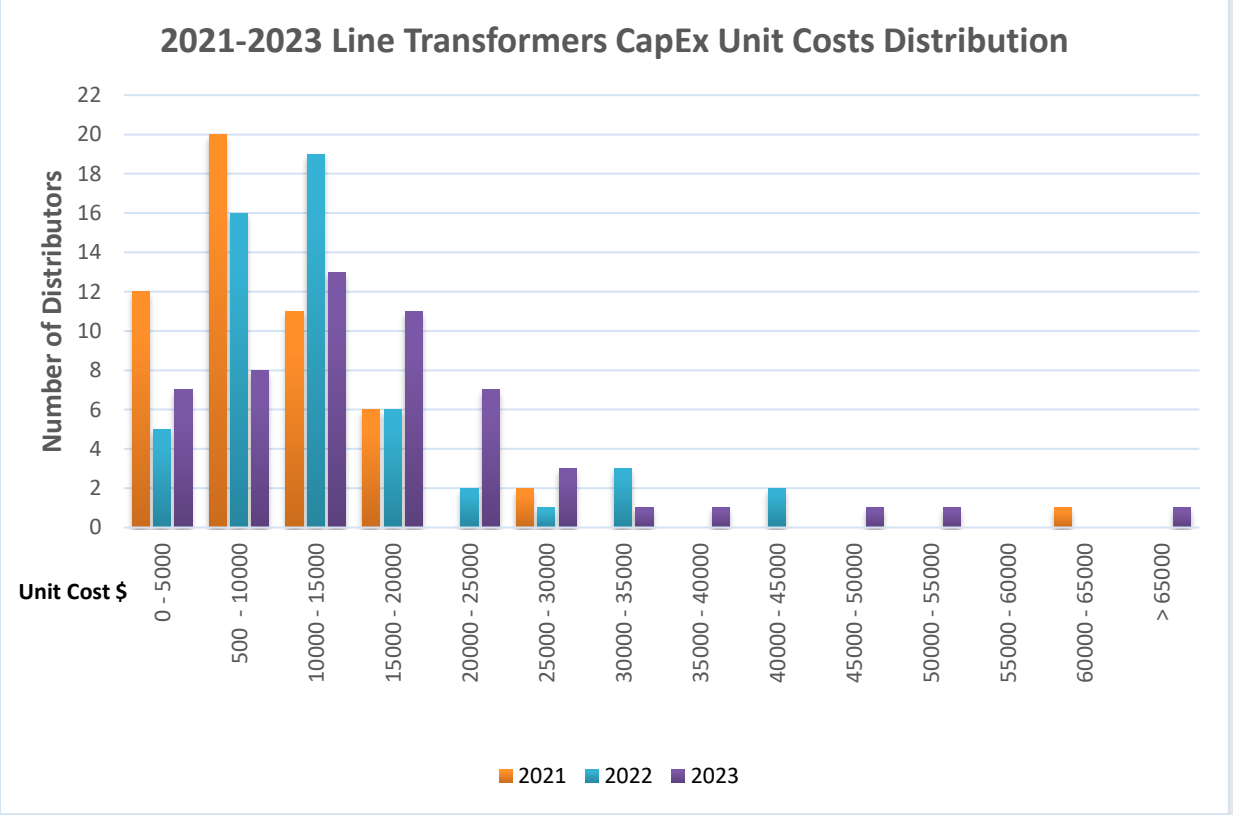


The chart below summarizes the median and average[31] unit costs for line transformers CapEx from 2019 to 2023. Throughout this five-year period, there has been an upward trend in both median and average costs. The median cost per line transformer increased from $7,844.58 in 2019 to $15,137.15 in 2023. Similarly, the average cost rose from $9,184.83 in 2019 to $17,597.02 in 2023.

[31] An average of unit costs across the 52 distributors. Zero values are excluded.



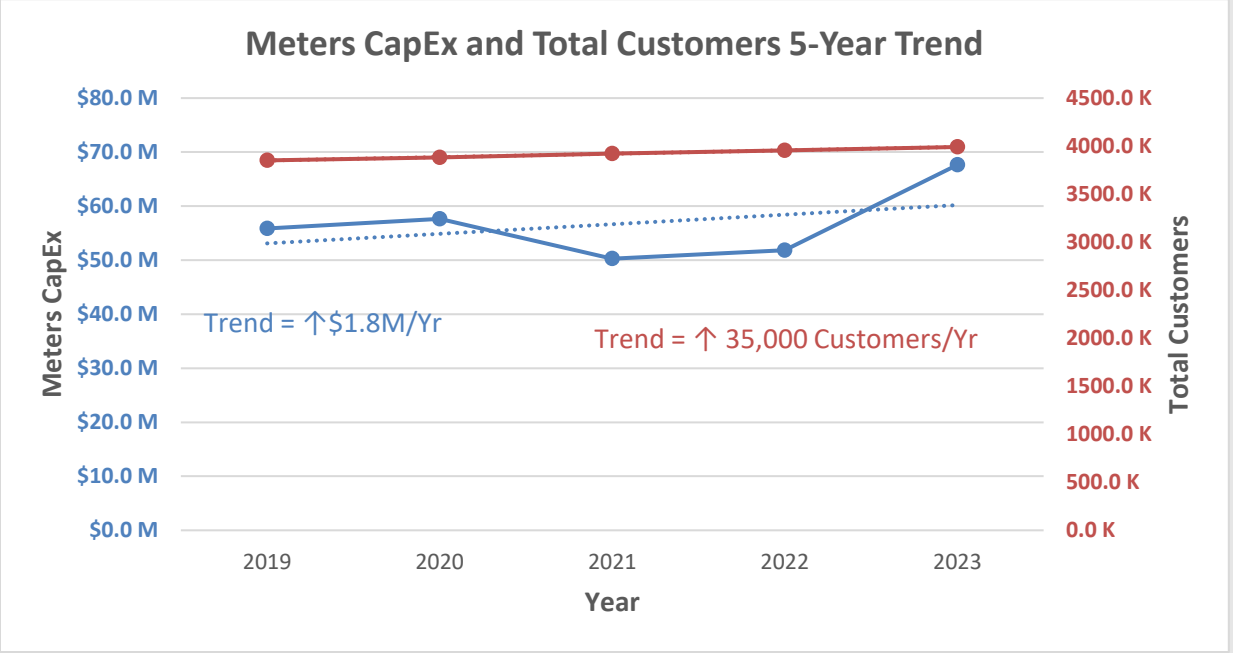
The chart below shows the distribution of line transformers CapEx unit costs from 2021 to 2023.



Unit Cost $	0 - 5000	500 - 10000	10000 - 15000	15000 - 20000	20000 - 25000	25000 - 30000	30000 - 35000	35000 - 40000	40000 - 45000	45000 - 50000	50000 - 55000	55000 - 60000	60000 - 65000	> 65000
2021	12	20	11	6	0	2	0	0	0	0	0	0	1	0
2022	5	16	19	6	2	1	3	0	2	0	0	0	0	0
2023	7	8	13	11	7	3	1	1	0	1	1	0	0	1

2.10 Capital Expenditures: Meters[32]

During the five-year period from 2019 to 2023, the overall industry trend[33] of the meters CapEx[34], as measured by standardized linear regression, increased by approximately $1.8 million a year, and the overall trend of the total number of customers[35] increased by approximately 35,000 customers per year. The chart below shows the five-year trend.



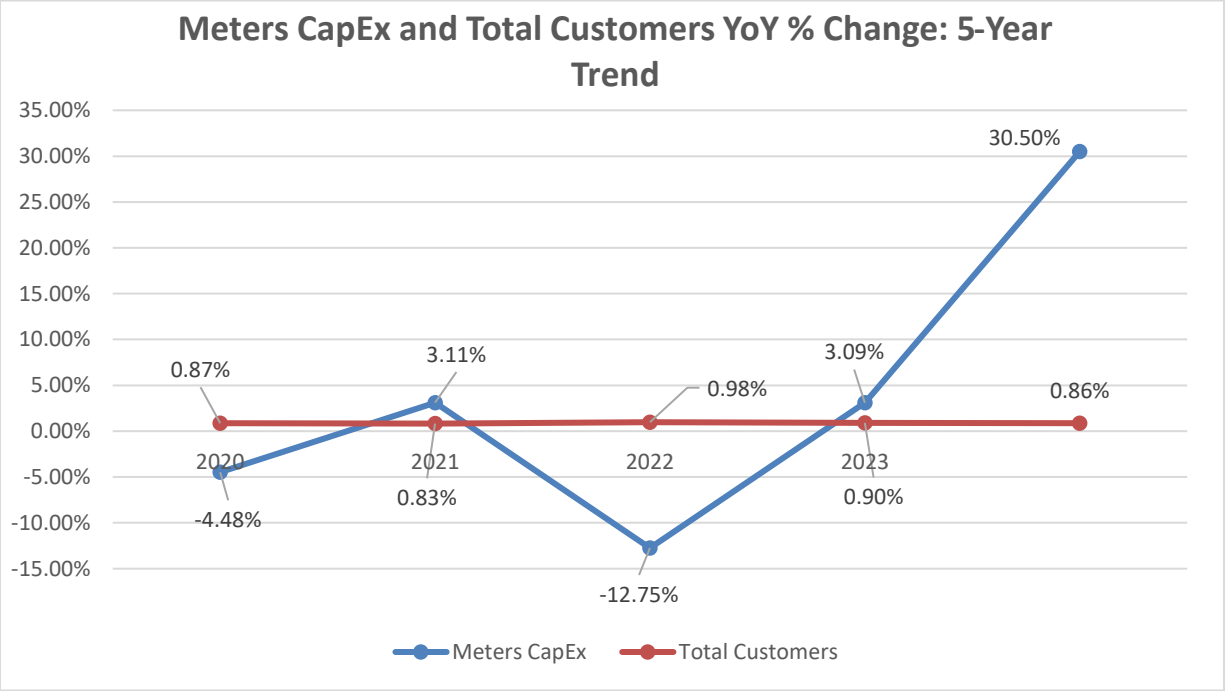
[32] Different from the other CAPEX metrics, Meters CAPEX denominator is based upon total customers versus new installed unit quantities. Because of this there will be high variability from year to year in reported unit cost values which is not reflective of the installed scope quantity.

[33] Combined for 52 distributors: Hydro One Networks Inc and Rideau St. Lawrence has been excluded since their Meters CapEx is not available for year 2020.

[34] Account 1860 as per Accounting Procedures Handbook for Electricity Distributors.

[35] Excludes street lighting, sentinel lighting, and USL connections. Hydro One Networks Inc and Rideau St. Lawrence has been excluded since their Meters CapEx is not available for year 2020.

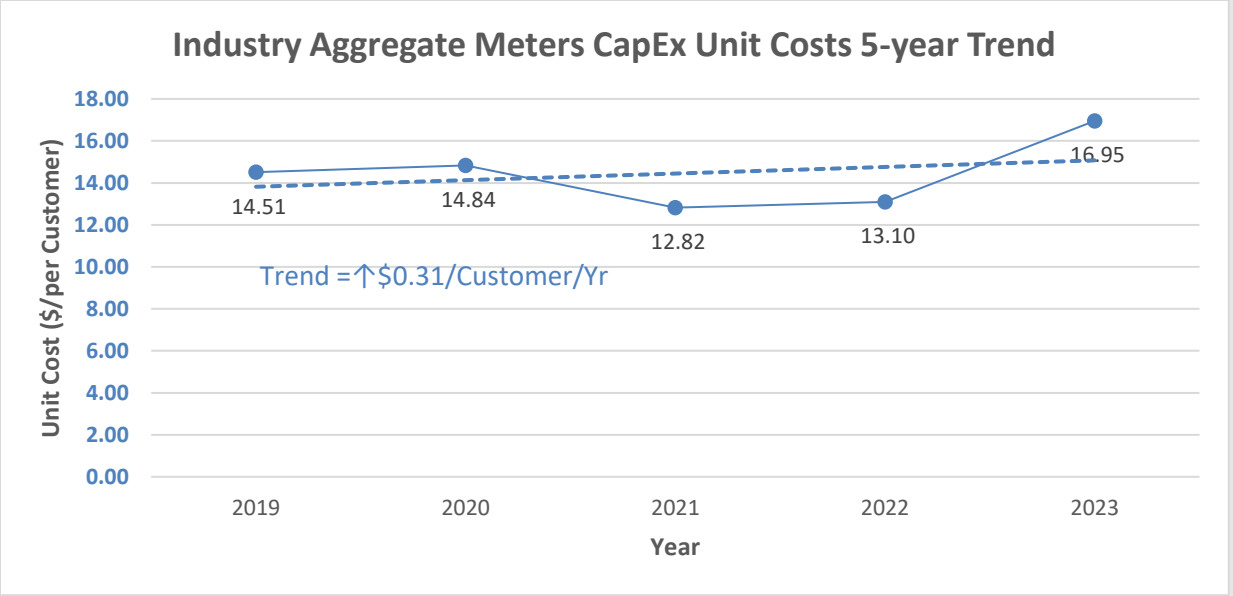
From 2022 to 2023, the total meters CapEx of 52 distributors increased by 30.50%. Aligned with the five-year uptrend, the total number of customers increased by 0.86%,

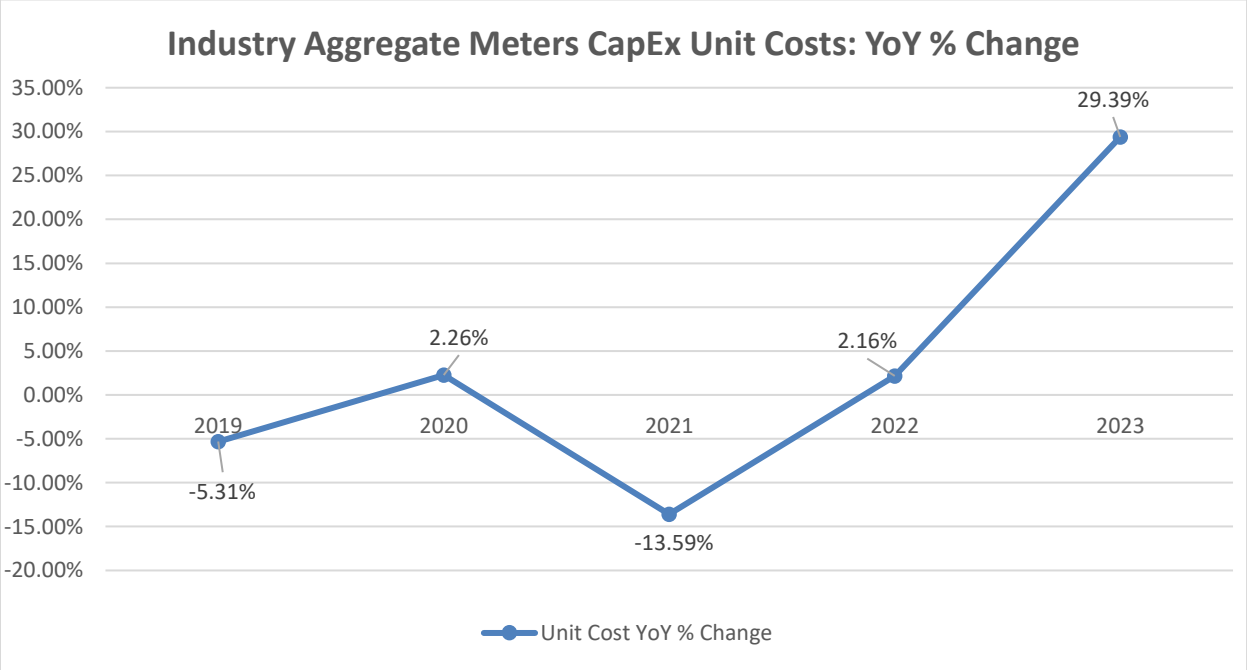


The unit cost for this metric is calculated by dividing the meters CapEx, by the total number of customers.

$$\text{Unit Cost (\$/Customer)} = \frac{\text{USoA 1860 (\$) Capital Additions}}{\text{Total Number of Customers}}$$

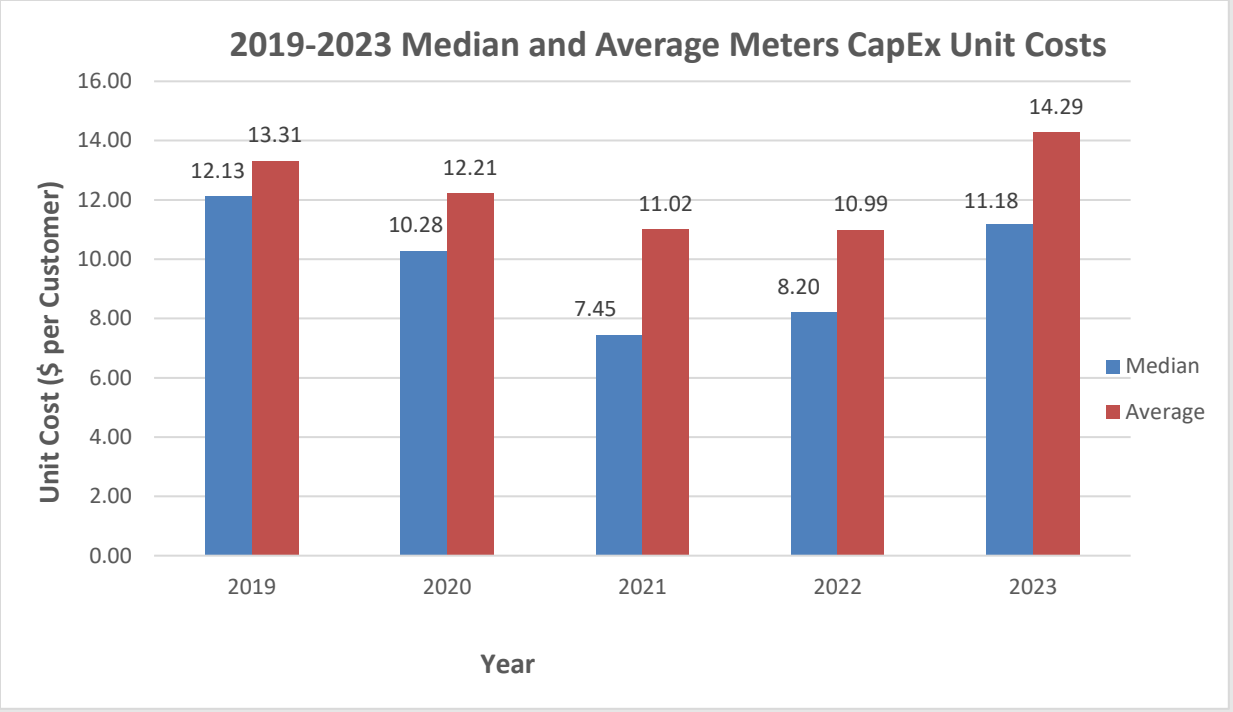
The industry aggregate unit cost shown in the following chart is derived by dividing the total meters CapEx costs of 52 distributors, by the total number of customers. Aggregated at the industry level, the unit cost increased by $0.31 per customer, per year.



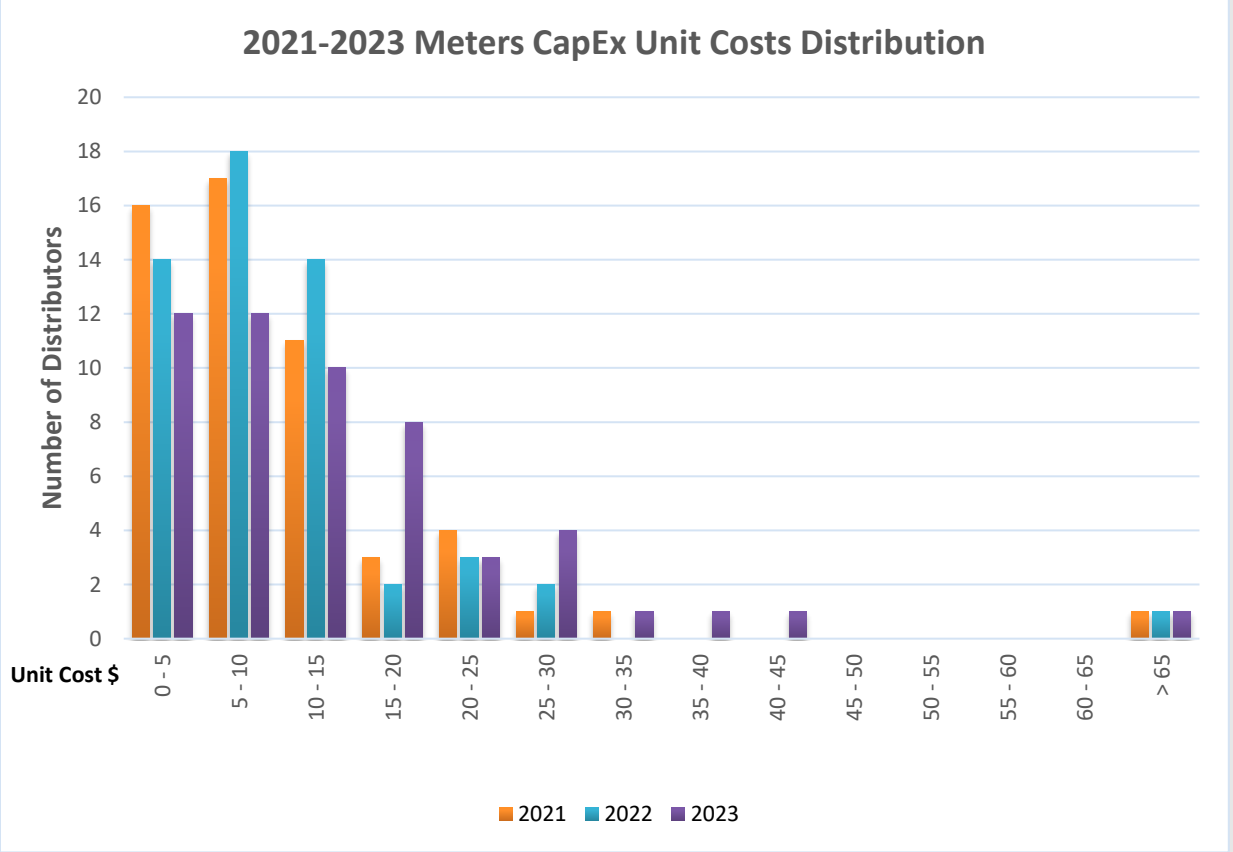


The chart below summarizes the median and average[36] unit costs for meters CapEx from 2019 to 2023. The median unit cost for 2023 is $11.18 per customer and the average unit cost is $14.29 per customer.

[36] An average of unit costs across the 52 distributors. Zero values are excluded.



The chart below shows the distribution of meters CapEx unit costs from 2021 to 2023.



Unit Cost $	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	> 65
2021	16	17	11	3	4	1	1	0	0	0	0	0	0	1
2022	14	18	14	2	3	2	0	0	0	0	0	0	0	1
2023	12	12	10	8	3	4	1	1	1	0	0	0	0	1

3. Endnotes

i. All the O&M and CapEx amounts used in the calculations are as reported by the distributors and no inflation adjustments have been made.