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

October 11, 2023

Activity and Program-based Benchmarking (APB) – 2022 Unit Cost Report

EB-2018-0278

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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 10 programs that were selected for APB. Six of these programs are classified under the category of Operation and Maintenance (O&M) Expenditures, four under Capital Expenditures (CapEx), and three of them are classified under both (See table).

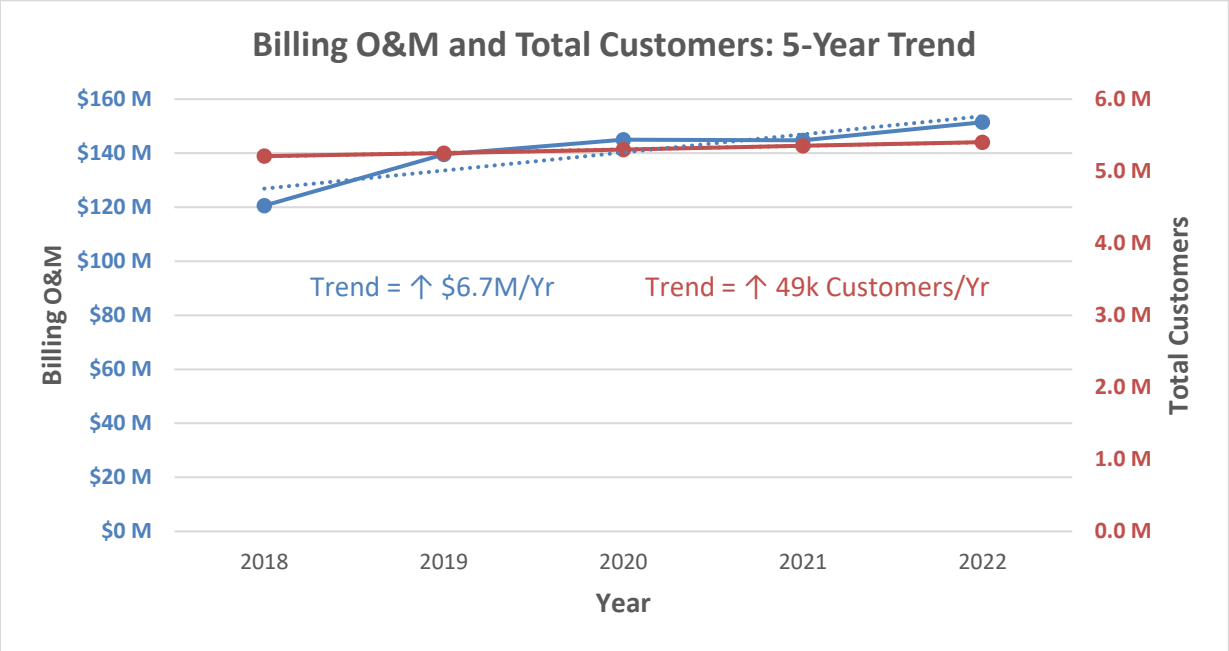
Programs	Operation and Maintenance (O&M) Expenditures	Capital Expenditures (CapEx)
Meters	x	x
Distribution Station Equipment	x	x
Poles, Towers and Fixtures	x	x
Billing	x	
Lines	x	
Vegetation Management	x	
Line Transformers		x

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 10 programs, this report summarizes the unit costs for fiscal year 2022 and a five-year trend for years 2018 to 2022.

2. Unit Cost Benchmarking Results

2.1 Billing O&M

During the five-year period 2018-2022, the overall industry trend[1] for billing O&M costs[2], as measured by the line of best fit, increased by approximately $6.7 million per year, and the overall total number of customers[3] increased by approximately 49,000 per year. The chart below shows the five-year trend.

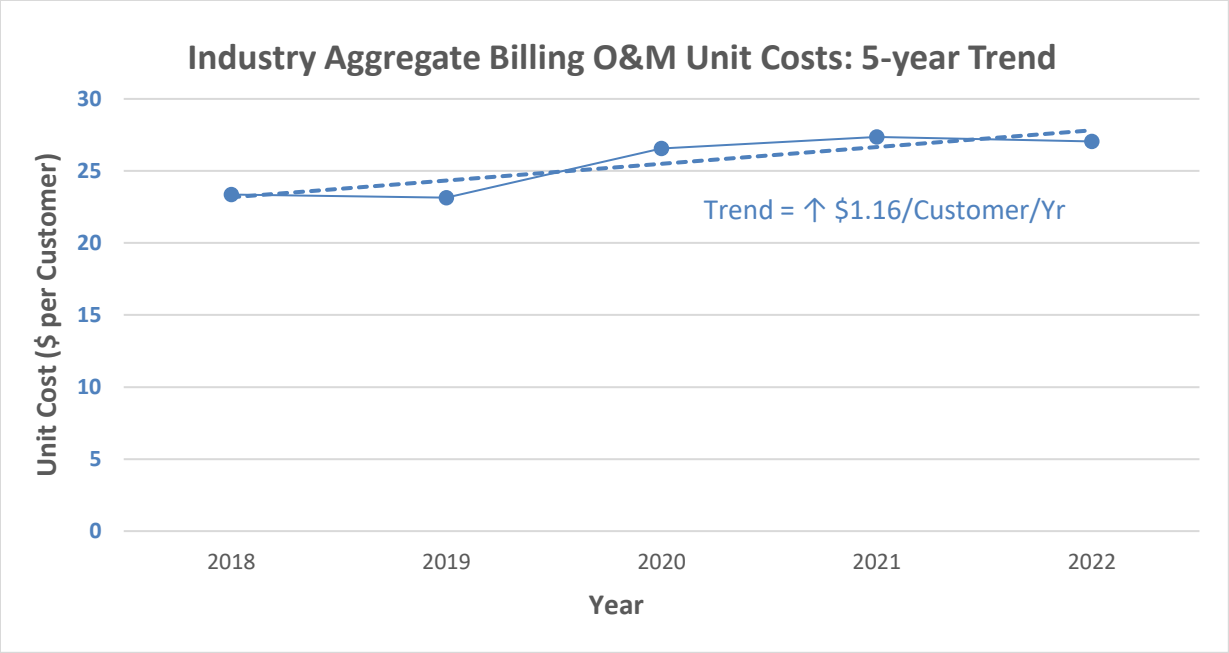


The unit cost for this metric is calculated by dividing the billing O&M cost incurred, by the total number of customers.

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

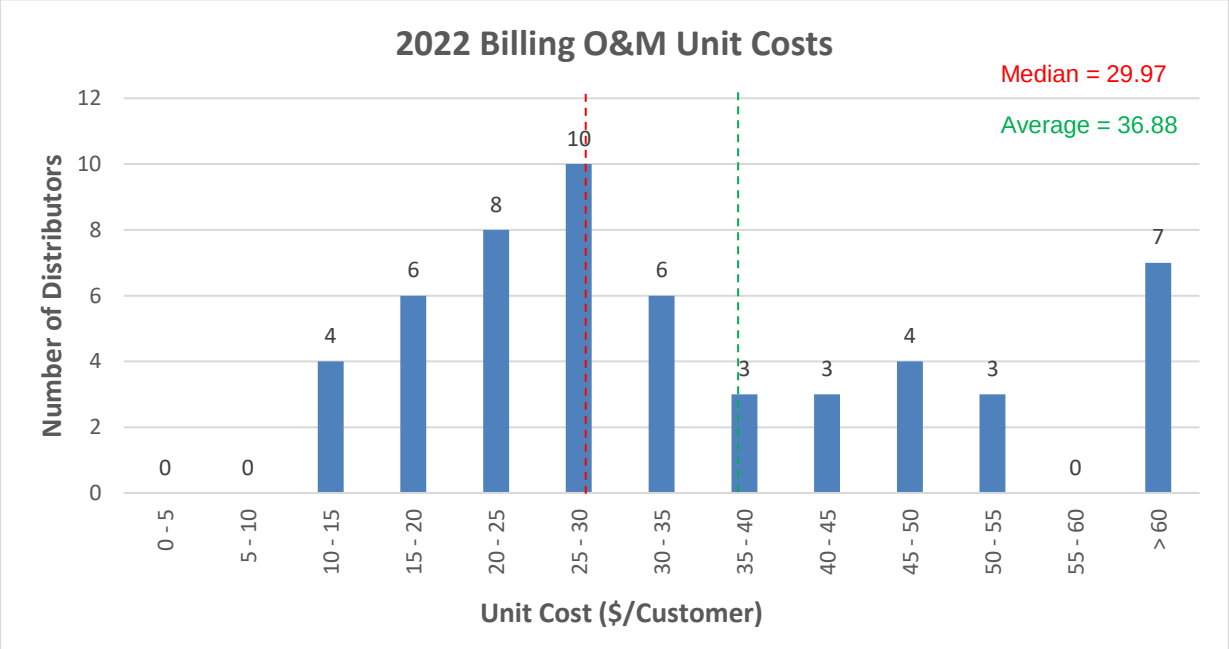
The industry aggregate unit cost shown in the following chart is derived by dividing the total billing O&M costs of all 54 distributors, by the total number of customers. Aggregated at the industry level, the unit cost increased by $1.16 per customer, per year.

[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.



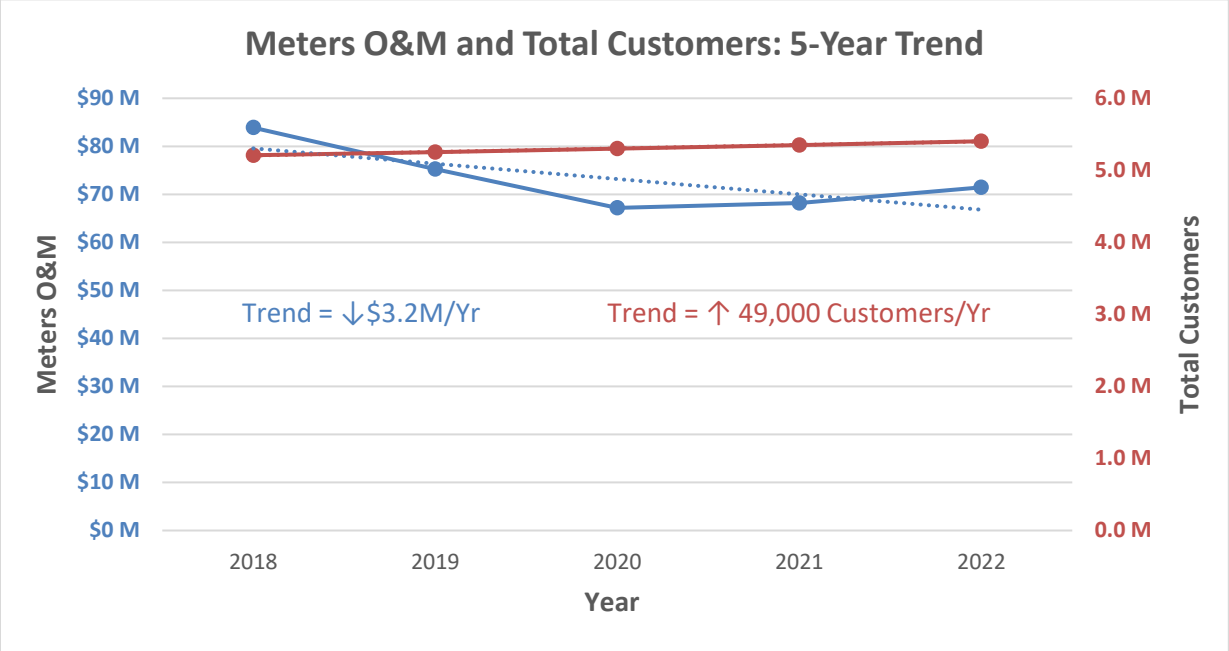
From 2021-2022, in line with the five-year uptrend, the combined total billing O&M costs for all 54 distributors increased by 4.61%, and the total number of customers increased by 0.96%.

The chart below summarizes 2022 unit cost results. The median unit cost for 2022 is $29.97 per customer and the average unit cost is $36.88 per customer.



2.2 Meters O&M

During the five-year period 2018-2022, the overall industry trend[4] for meters O&M costs[5], as measured by the line of best fit, decreased by approximately $3.2 million per year, while the overall total number of customers[6] increased by approximately 49,000 per year. The chart below shows the five-year trend.

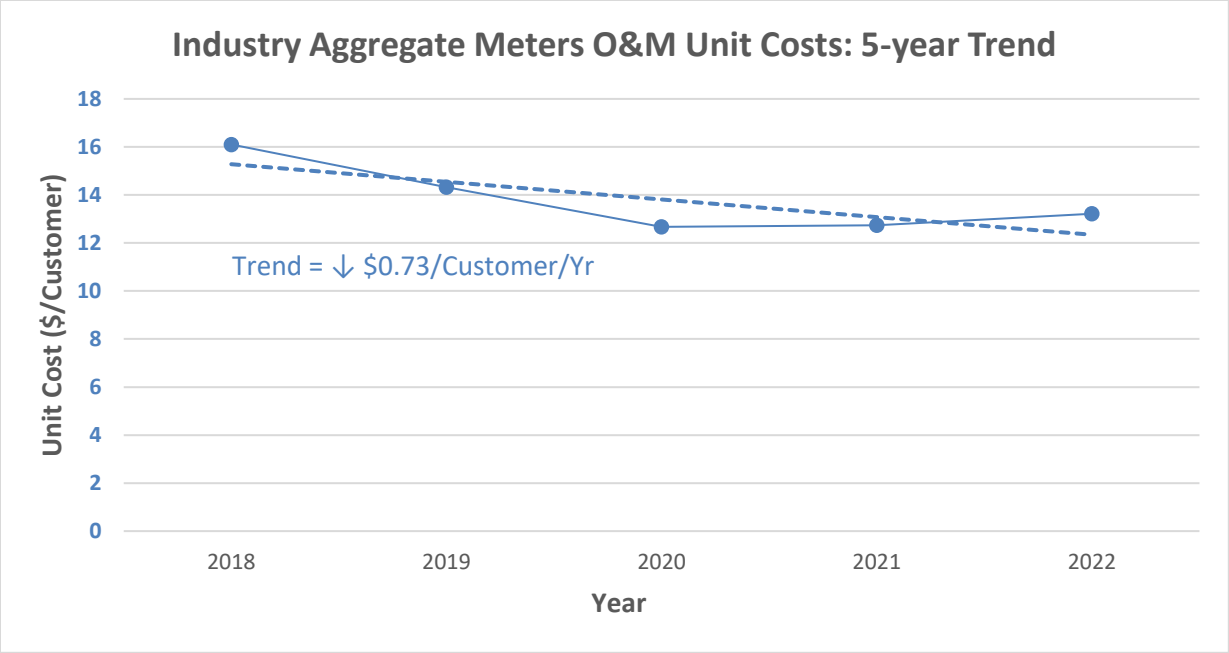


The unit cost for this metric is calculated by dividing the meters O&M cost, by the total number of customers.

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

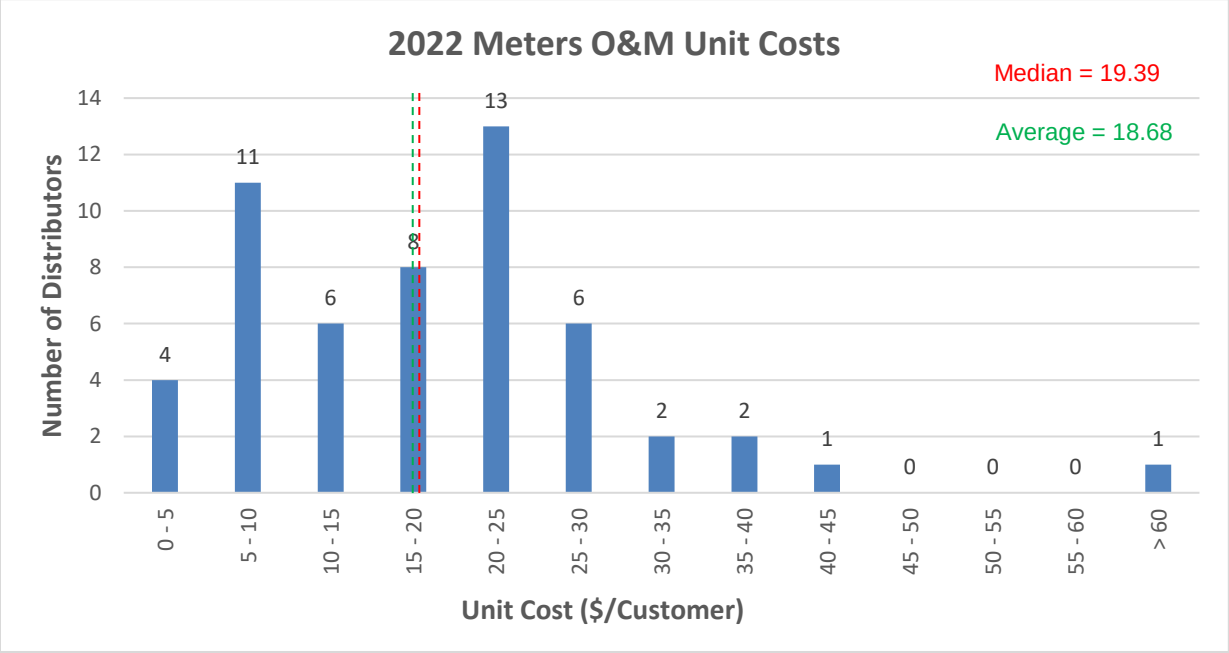
The industry aggregate unit cost shown in the following chart is derived by dividing the total meters O&M costs of all 54 distributors, by the total number of customers. Aggregated at the industry level, the unit cost declined by $0.73 per customer, per year.

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



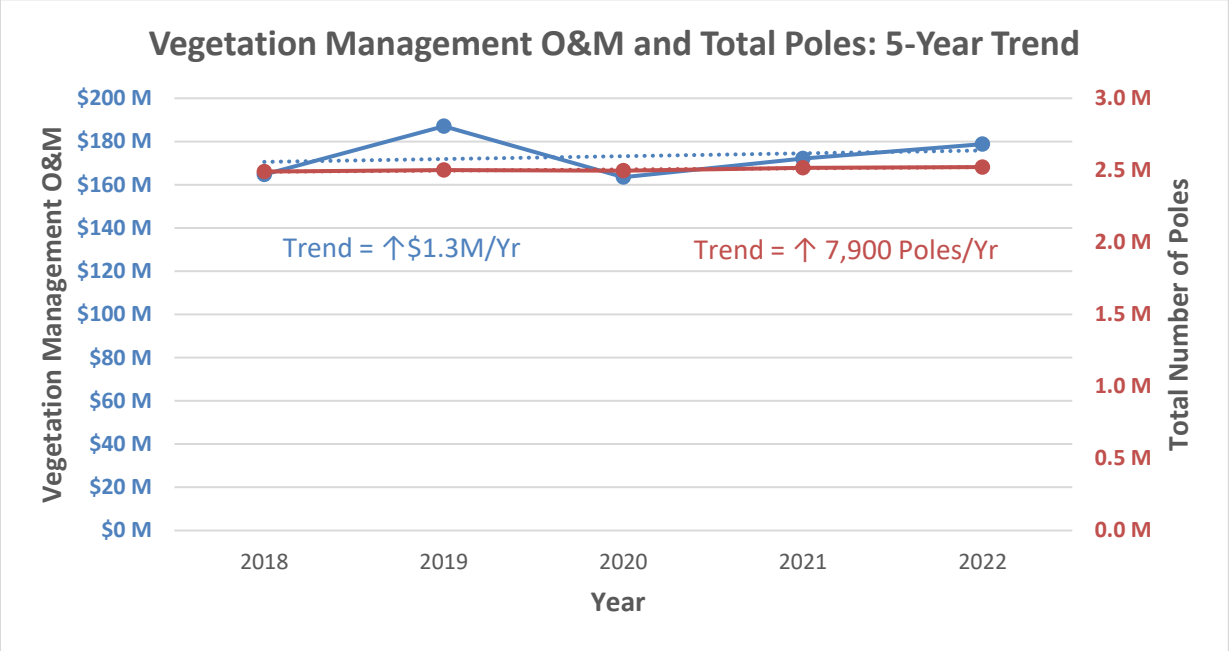
From 2021-2022, contrary to the five-year downtrend the combined total meters O&M costs for all 54 distributors increased by 4.79%. Aligned with the five-year uptrend, the total number of customers increased by 0.96%.

The chart below summarizes 2022 unit cost results for meters O&M. The median unit cost for 2022 is $19.39 per customer and the average unit cost is $18.68 per customer.



2.3 Vegetation Management O&M

During the five-year period 2018-2022, the overall industry trend[7] of vegetation management O&M costs[8], as measured by the line of best fit, increased by approximately $1.3 million per year, and the overall total number of poles increased by approximately 7,900 per year. The chart below shows the five-year trend.

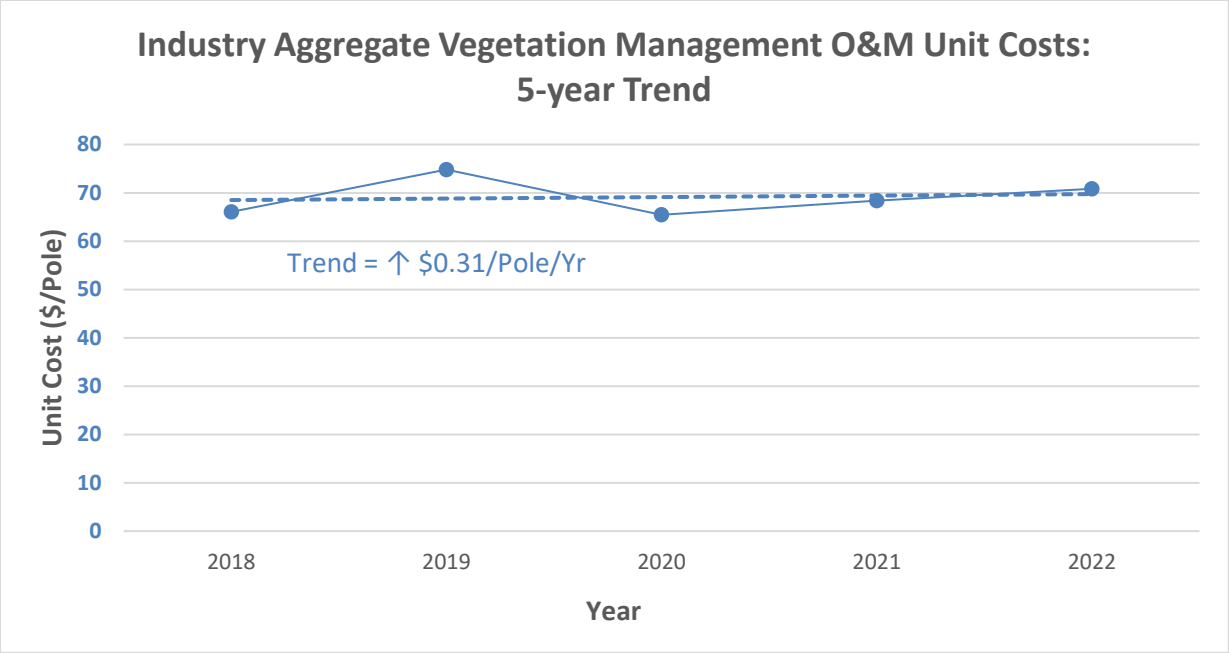


The unit cost for this metric is calculated by dividing the vegetation management O&M cost, by the total number of poles.

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

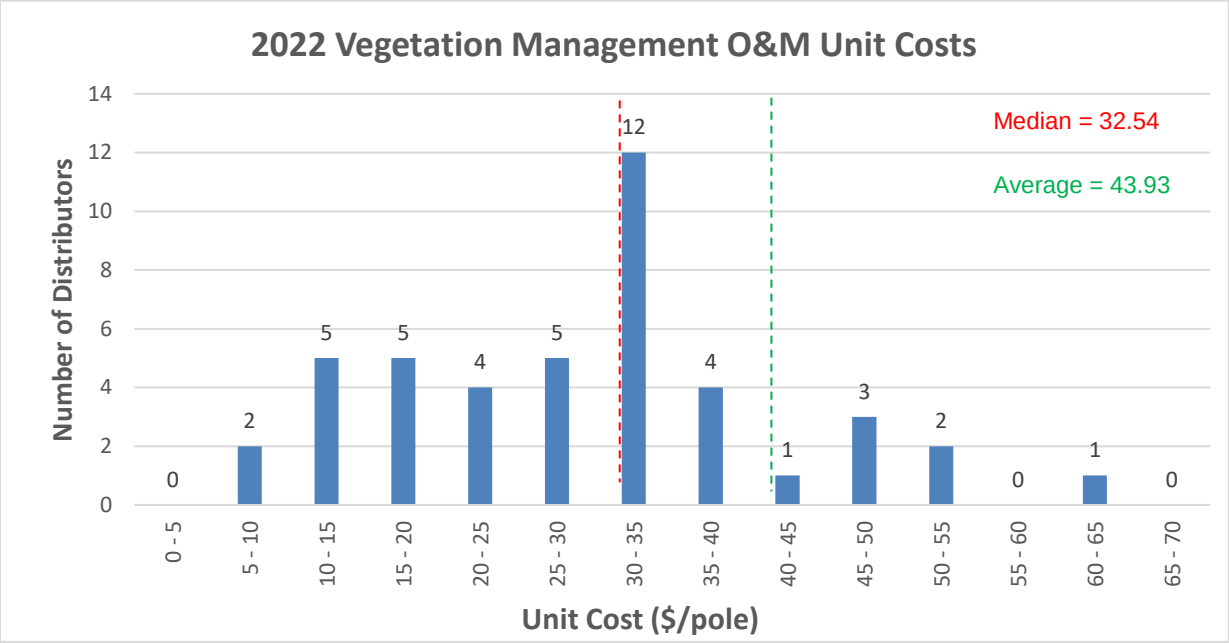
The industry aggregate unit cost shown in the following chart is derived by dividing the total vegetation management O&M costs of all 54 distributors, by the total number of poles in the system. Aggregated at the industry level, the unit cost increased by $0.31 per pole, per year.

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



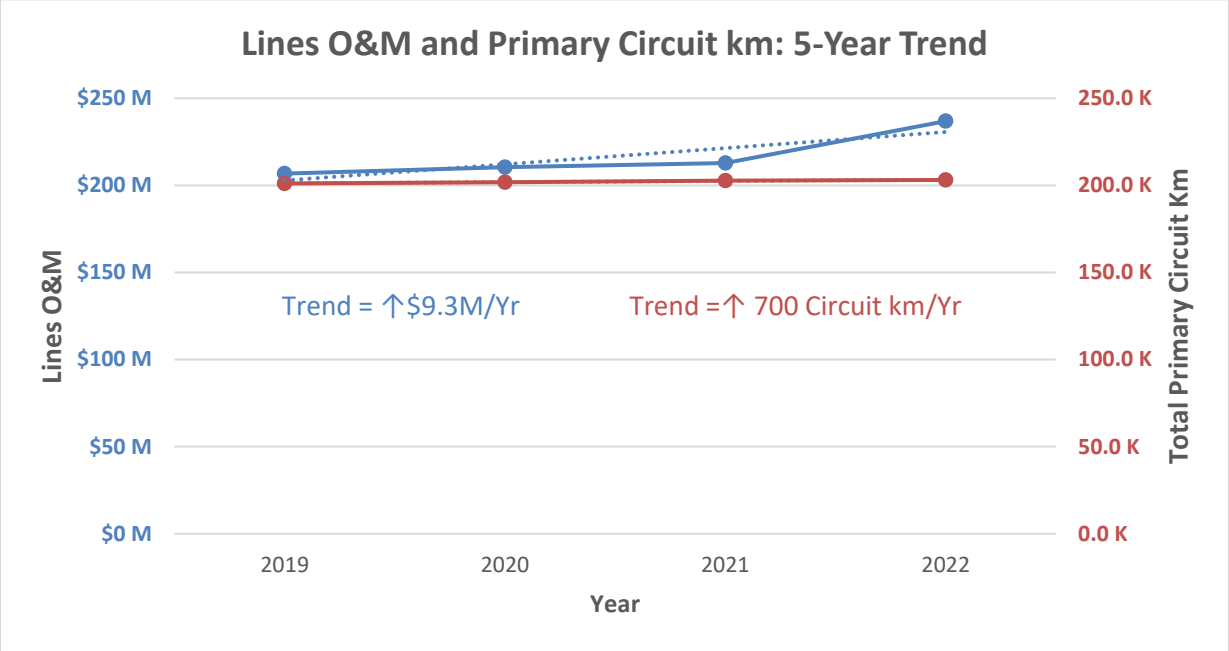
From 2021-2022, aligned with the five-year trend, the combined total cost of vegetation management O&M costs for all 54 distributors increased by 3.84%, and the total number of poles in the system increased by 0.20%.

The chart below summarizes 2022 unit cost results for vegetation management O&M. The median unit cost for 2022 is $32.54 per pole and the average unit cost is $43.93 per pole.



2.4 Lines O&M

During the four-year[9] period 2019-2022, the overall industry trend[10] of lines O&M costs[11], as measured by the line of best fit, increased by approximately $9.3 million per year, and the overall trend of total number of primary circuit kilometers increased by approximately 700 circuit kilometers per year. The chart below shows the four-year trend.

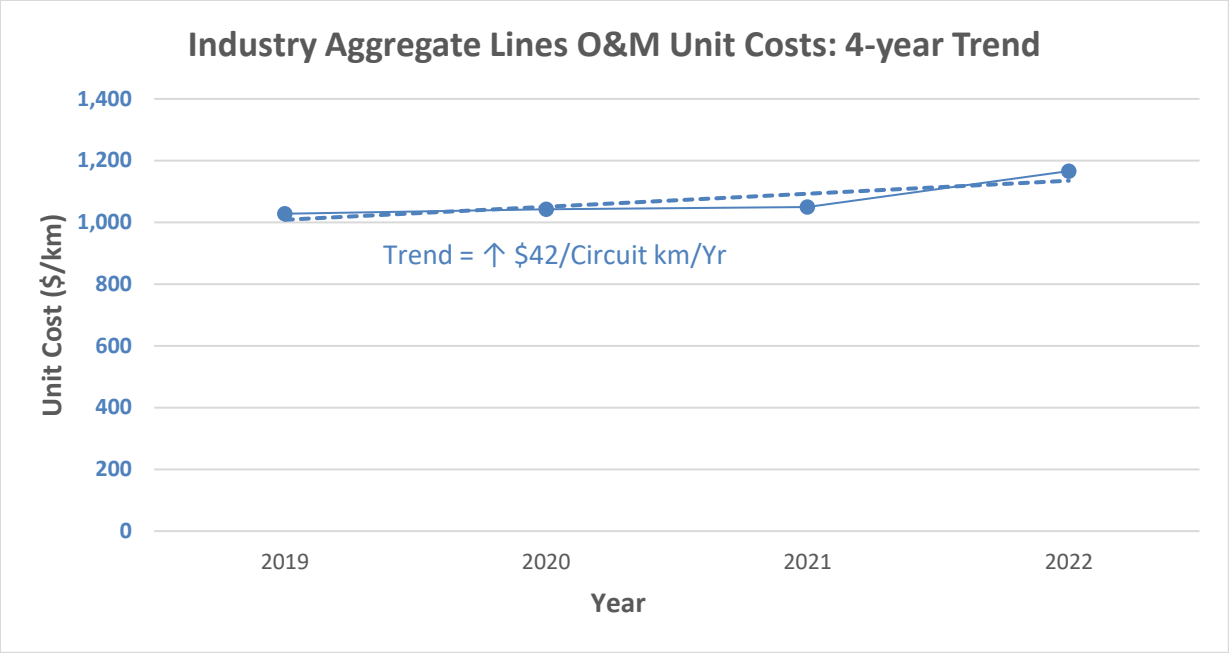


The unit cost for this metric is calculated by dividing the lines O&M cost, by the total number of primary circuit kilometers.

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

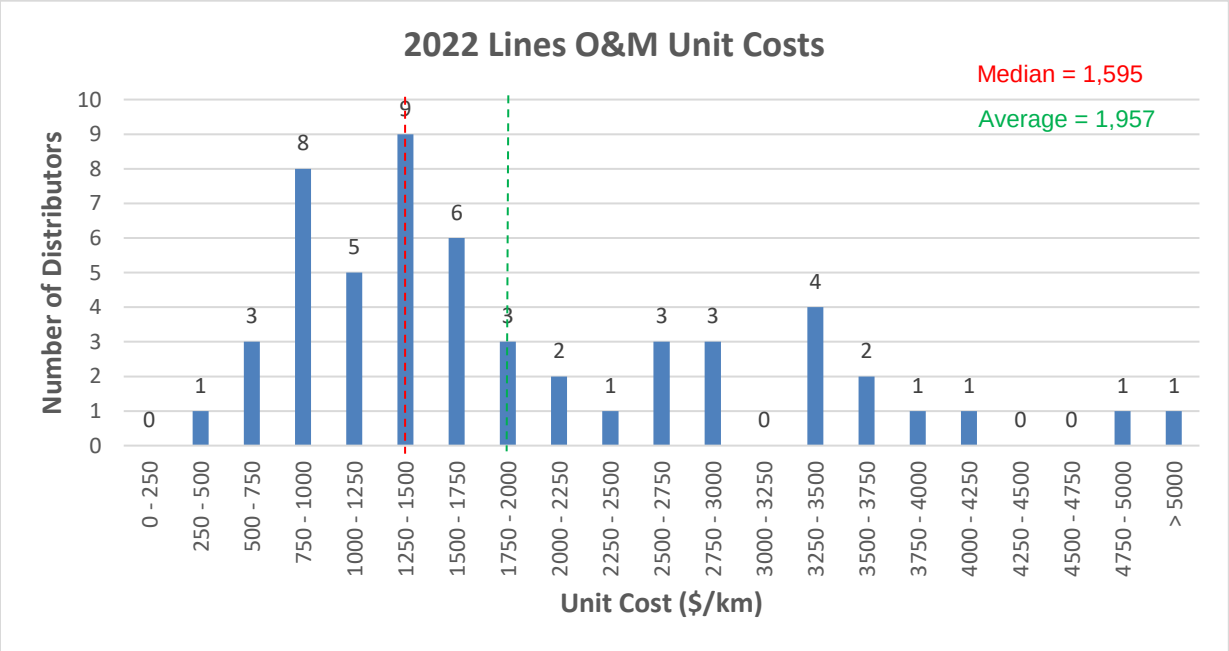
The industry aggregate unit cost shown in the following chart is derived by dividing the total lines O&M costs of all 54 distributors, by the total primary circuit kilometers of line. Aggregated at the industry level, the unit cost increased by $42 per circuit kilometers, per year.

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



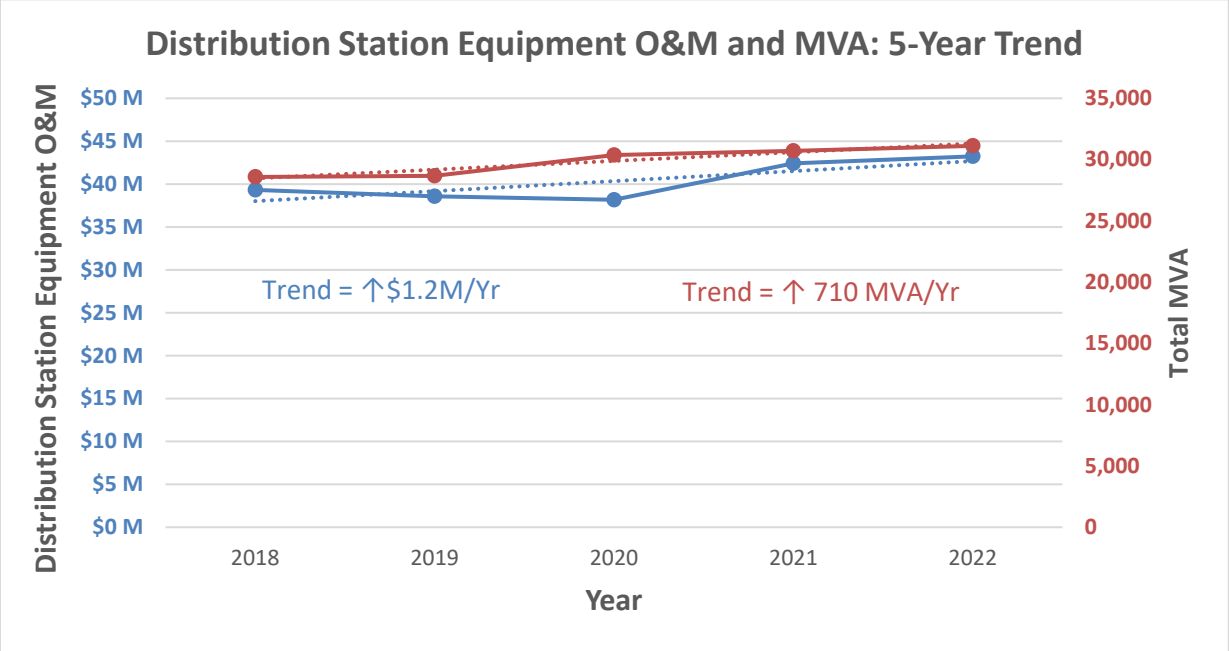
From 2021-2022, the combined total cost for lines O&M of all 54 distributors increased by 11.3%. This is a significant increase compared to earlier years and the four-year trend. Aligned with the O&M increase, the total number of primary circuit kilometers increased by 11.1%.

The chart below summarizes the 2022 unit cost results for lines O&M. The median unit cost for 2022 is $1,595 per km and the average unit cost is $1,957 per km.



2.5 Distribution Station Equipment O&M

During the five-year period 2018-2022, the overall industry trend[12] of distribution station equipment O&M costs[13], as measured by the line of best fit, increased by approximately $1.2M per year, and the overall trend of the Total Mega Volt-Ampere (MVA) increased by approximately 715 MVA per year. The chart below shows the five-year trend.

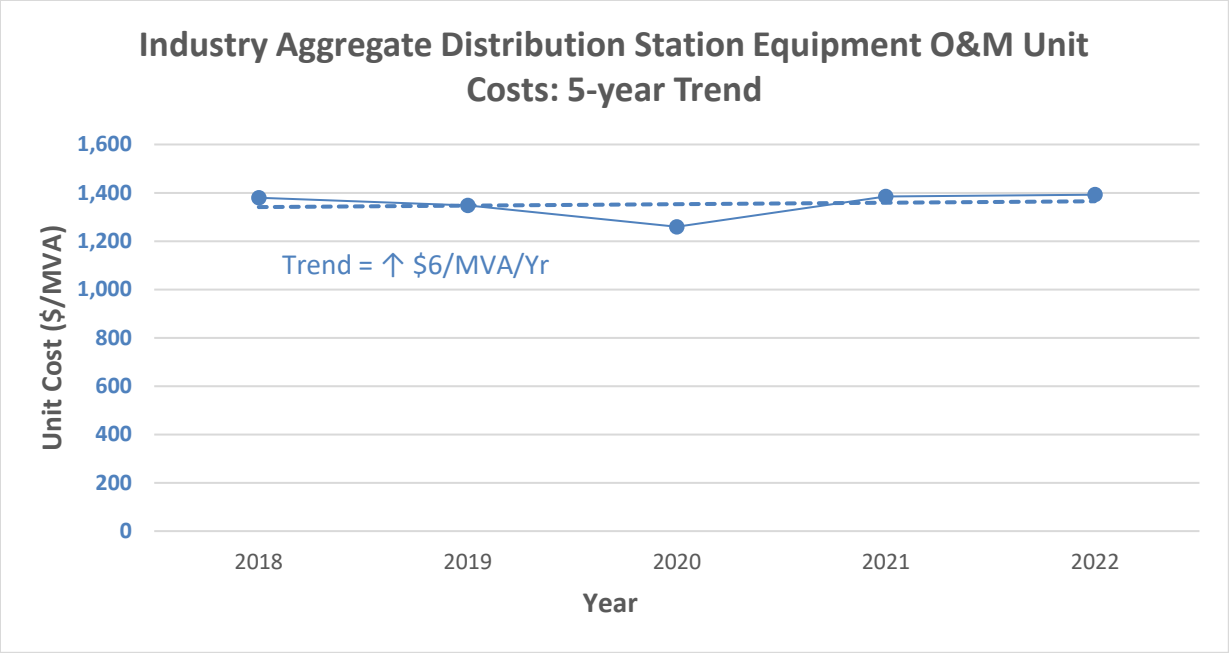


The unit cost for this metric is calculated by dividing the distribution station equipment cost, by the Total MVA.

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

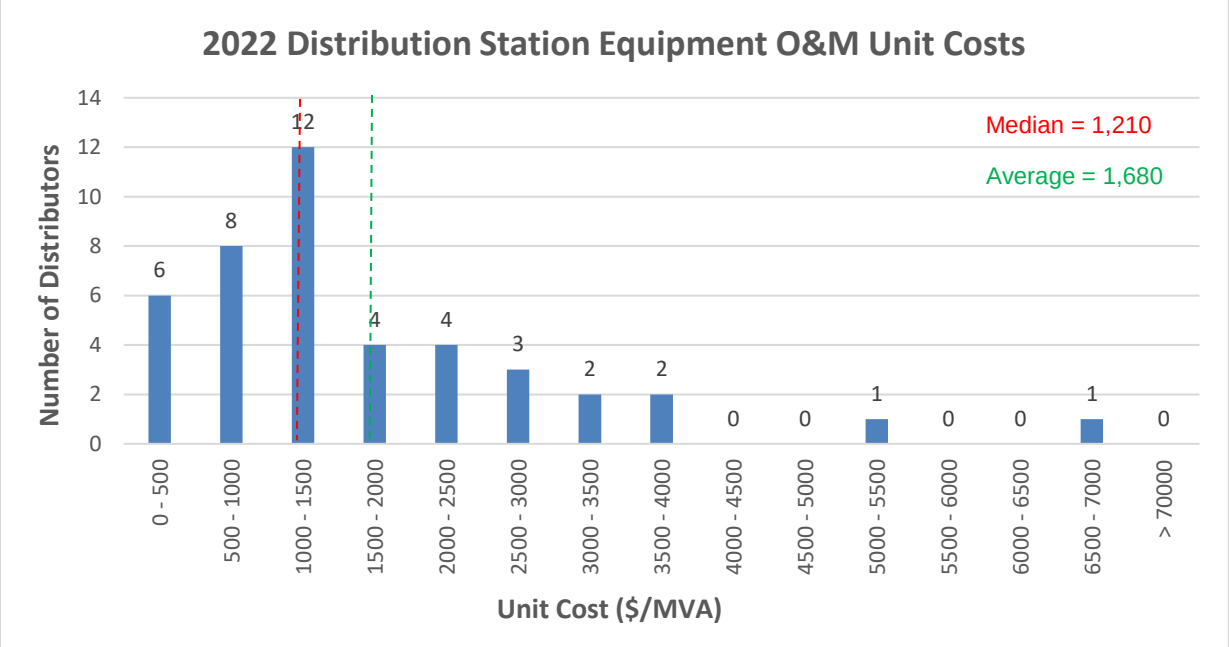
The industry aggregate unit cost shown in the following chart is derived by dividing the total distribution system equipment O&A costs of 43 distributors, by total MVA. Aggregated at the industry level, the unit cost decreased by $6 per MVA, per year.

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



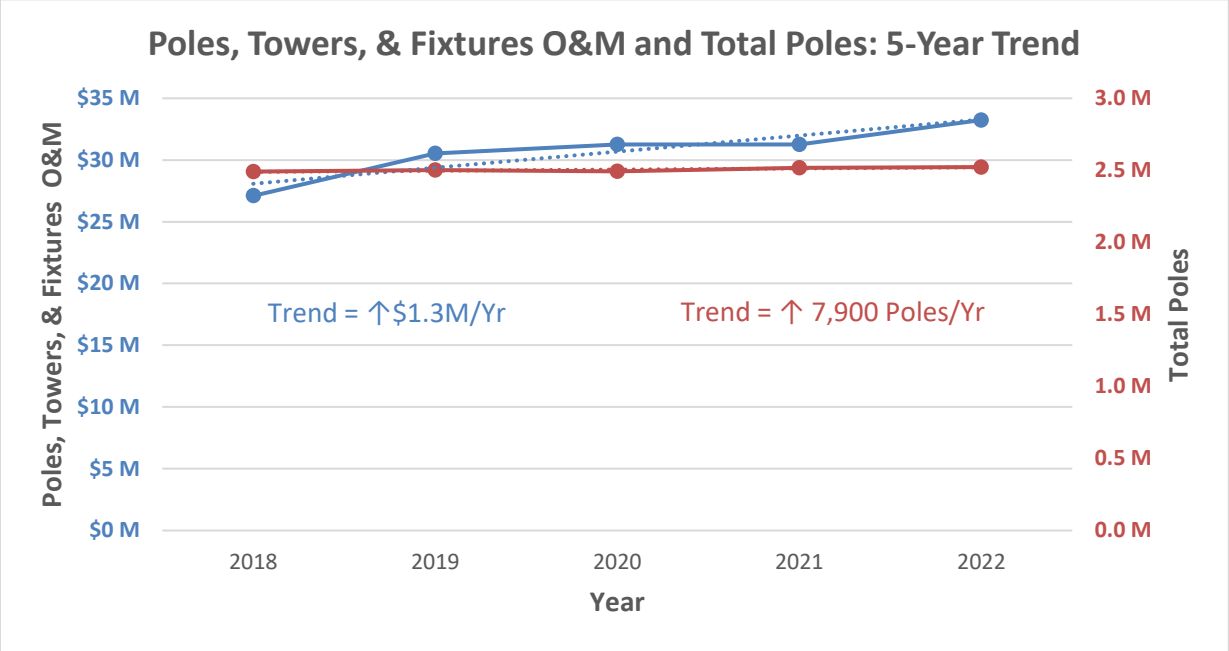
From 2021-2022, aligned with the five-year uptrend, the combined total distribution station equipment O&M costs of 43 distributors increased by 1.91%, and MVA increased by 1.35%.

The chart below summarizes 2022 unit cost results for distribution station equipment O&M. The median unit cost for 2022 is $1,210 per MVA and the average unit cost is $1,680 per MVA.



2.6 Poles, Towers and Fixtures O&M

During the five-year period 2018-2022, the overall industry trend[14] of poles, towers and fixtures O&M costs[15], as measured by the line of best fit, increased by approximately $1.3 million per year, and the overall trend of the total number of poles increased by approximately 7,900 per year. The chart below shows the five-year trend.

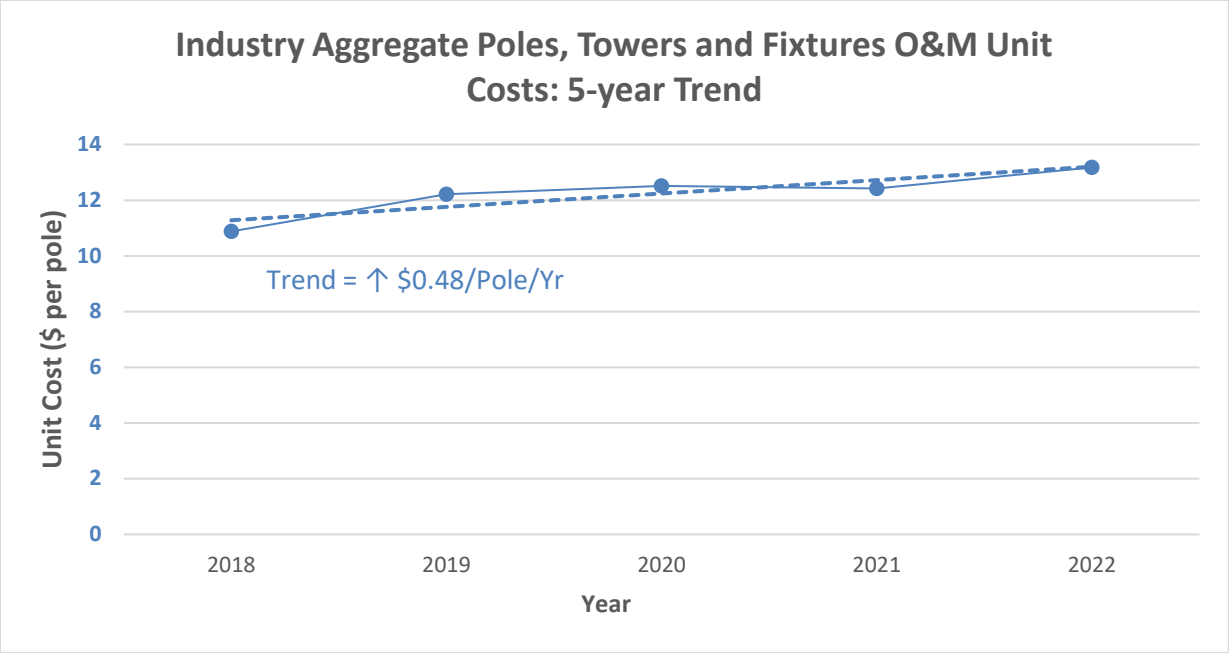


The unit cost for this metric is calculated by dividing the poles, towers and fixtures O&M cost, by the total number of poles.

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

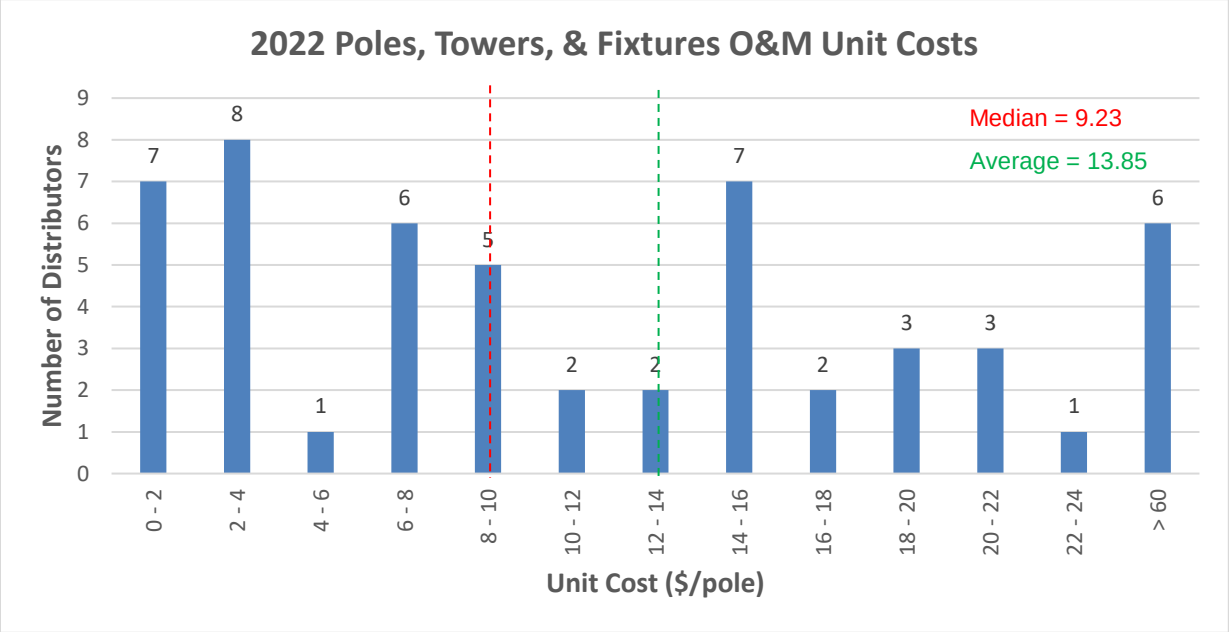
The industry aggregate unit cost shown in the following chart is derived by dividing the total poles, towers and fixtures O&M costs of all 54 distributors, by the total number of poles in the system. Aggregated at the industry level, the unit cost increased by $0.48 per pole, per year.

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



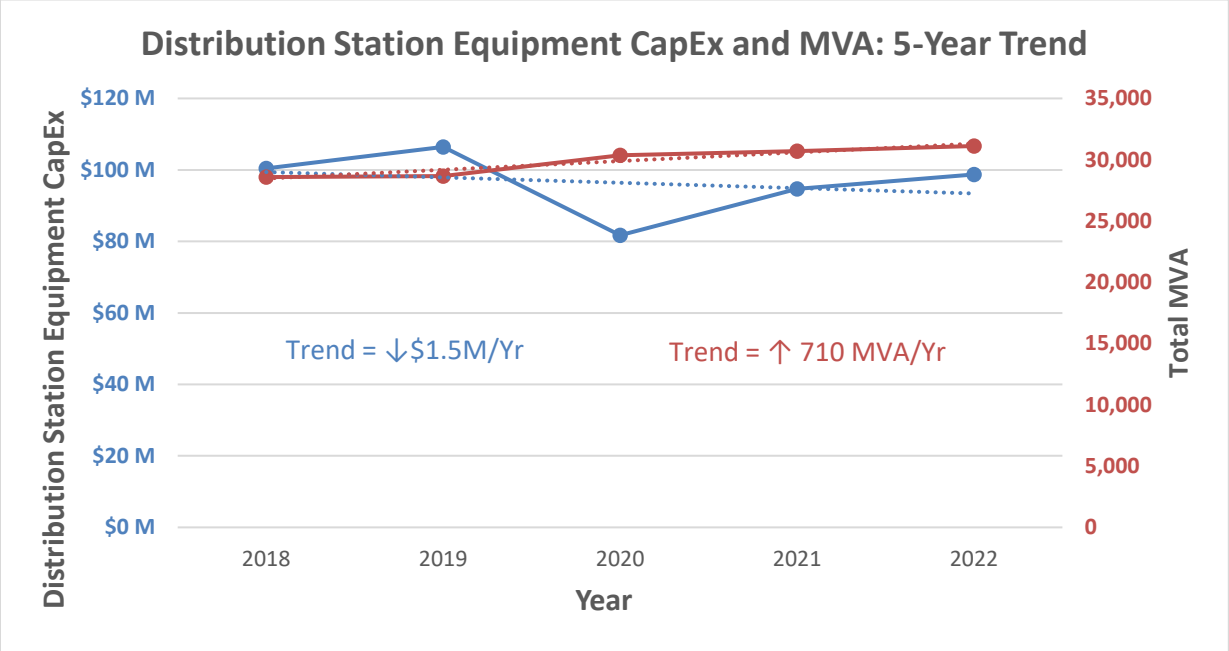
From 2021-2022, aligned with the five-year uptrend, the combined cost of total poles, towers and fixtures O&M for all 54 distributors increased by 6.29%, and the total number of poles increased by 0.2%.

The chart below summarizes the 2022 unit cost results for poles, towers and fixtures O&M. The median unit cost for 2022 is $9.23 per pole and the average unit cost is $13.85 per pole.



2.7 Capital Expenditures: Distribution Station Equipment

During the five-year period 2018-2022, the overall industry trend[16] of distribution station equipment CapEx[17,18], as measured by the line of best fit, decreased by approximately $1.5 million per year, and the general trend of Total MVA increased by approximately 710 per year. The chart below shows the five-year trend.

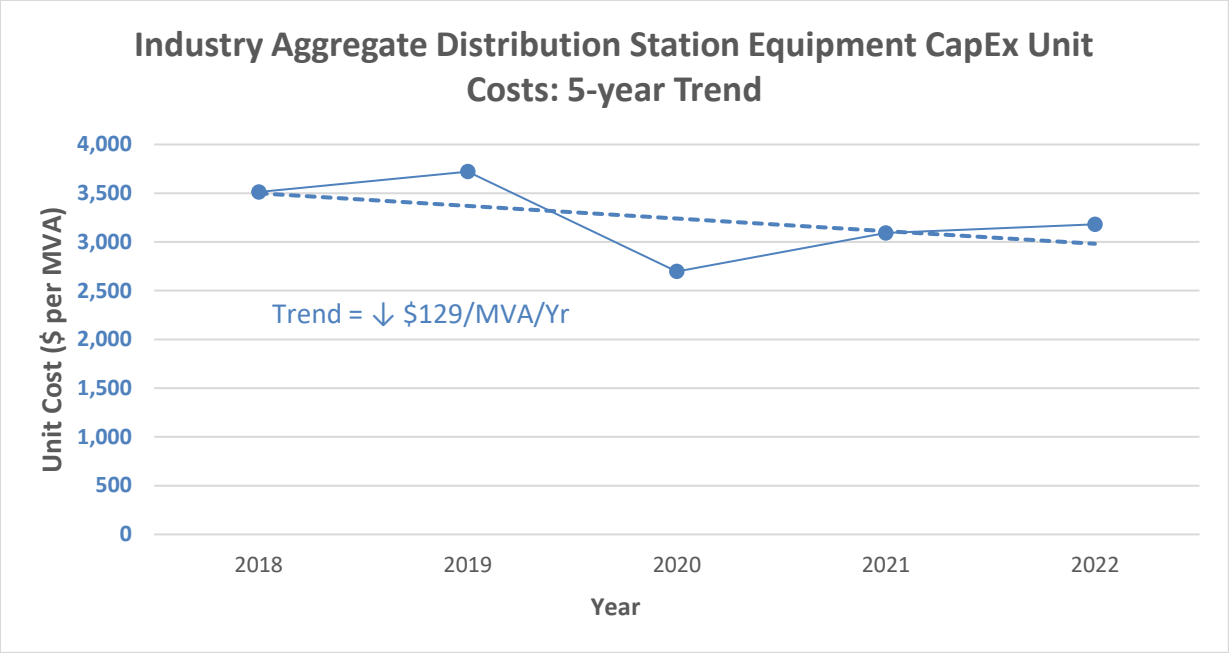


The unit cost for this metric is calculated by dividing the distribution station equipment CapEx, by total MVA.

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

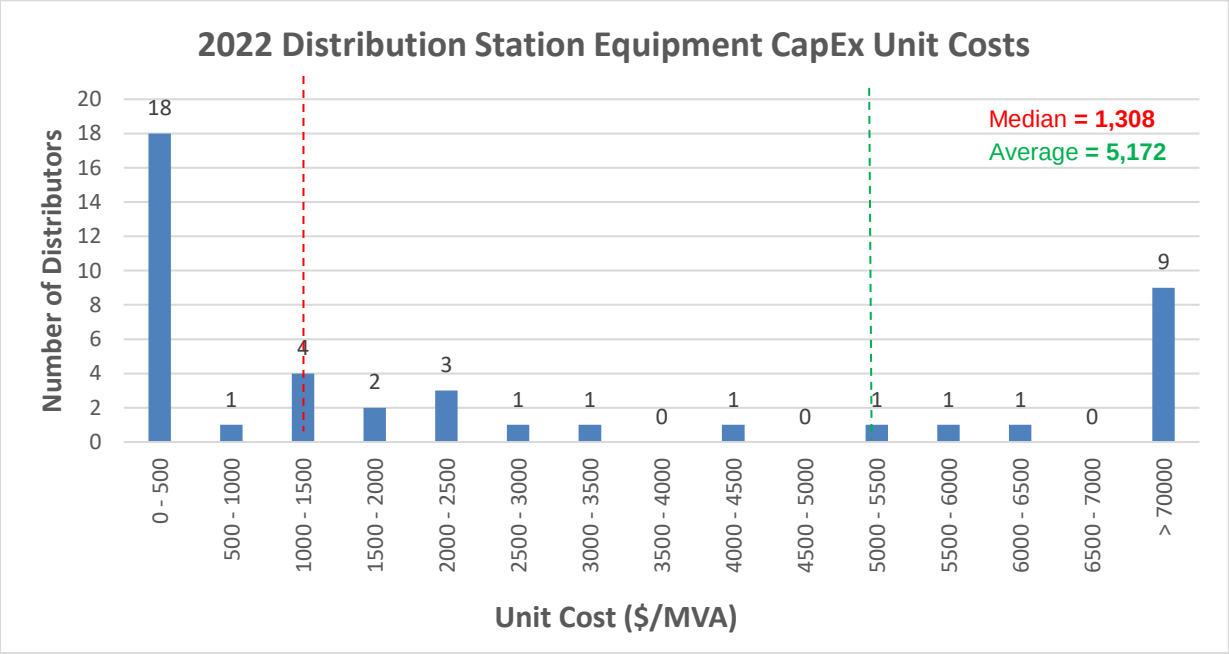
The industry aggregate unit cost shown in the following chart is derived by dividing the total distribution system equipment CapEx of 43 distributors, by the combined total MVA Aggregated at the industry level, the unit cost decreased by $129 per MVA, per year.

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



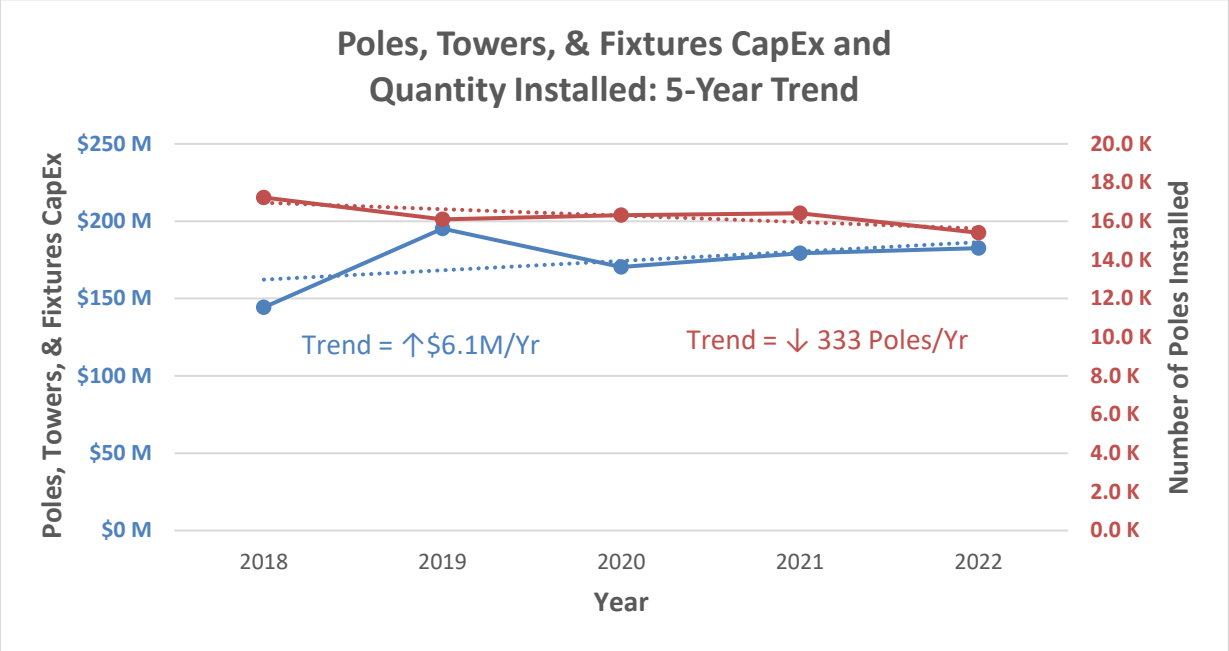
From 2021-2022, contrary to the five-year downtrend, the total combined distribution station equipment CapEx for 43 distributors increased by 4.23%. Aligned with the five-year uptrend, overall MVA increased by 1.35%.

The chart below summarizes the 2022 unit cost results for distribution station equipment CapEx. The median unit cost for 2022 is $1,308 per MVA, and the average unit cost is $5,172 per MVA.



2.8 Capital Expenditures: Poles, Towers and Fixtures

During the five-year period 2018-2022, the overall industry trend[19] of poles, towers and fixtures CapEx[20], as measured by the line of best fit, increased by approximately $6.1 million per year. The overall trend of the number of poles installed decreased by 333 per year. The chart below shows the five-year trend.

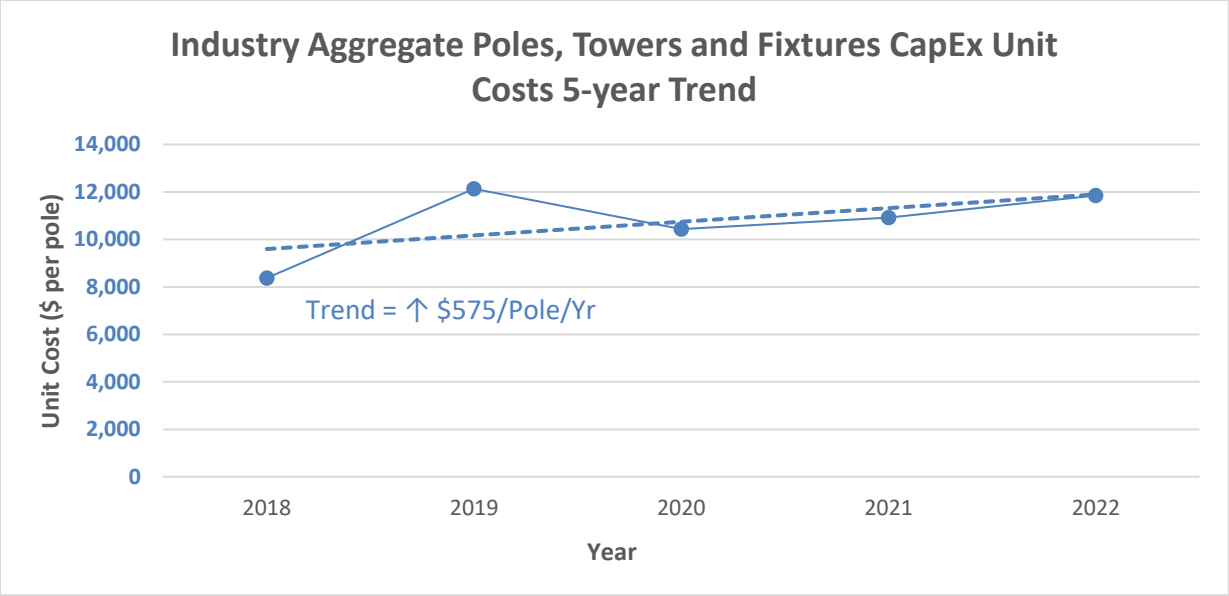


The unit cost for this metric is calculated by dividing the total poles, towers and fixtures CapEx, by the number of poles installed.

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

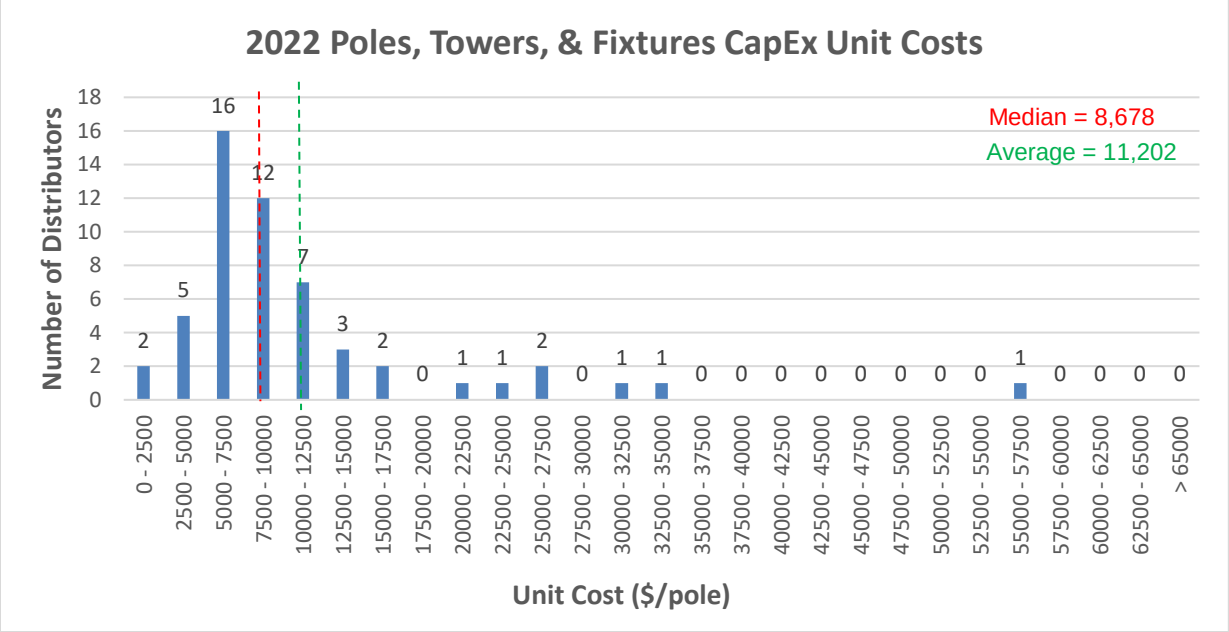
The industry aggregate unit cost shown in the following chart is derived by dividing the total poles, towers and fixtures CapEx of 52 distributors, by the total poles installed. Aggregated at the industry level, the unit cost increased by $575 per pole, per year.

[19] 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.
[20] Account 1830 as per Accounting Procedures Handbook for Electricity Distributors.



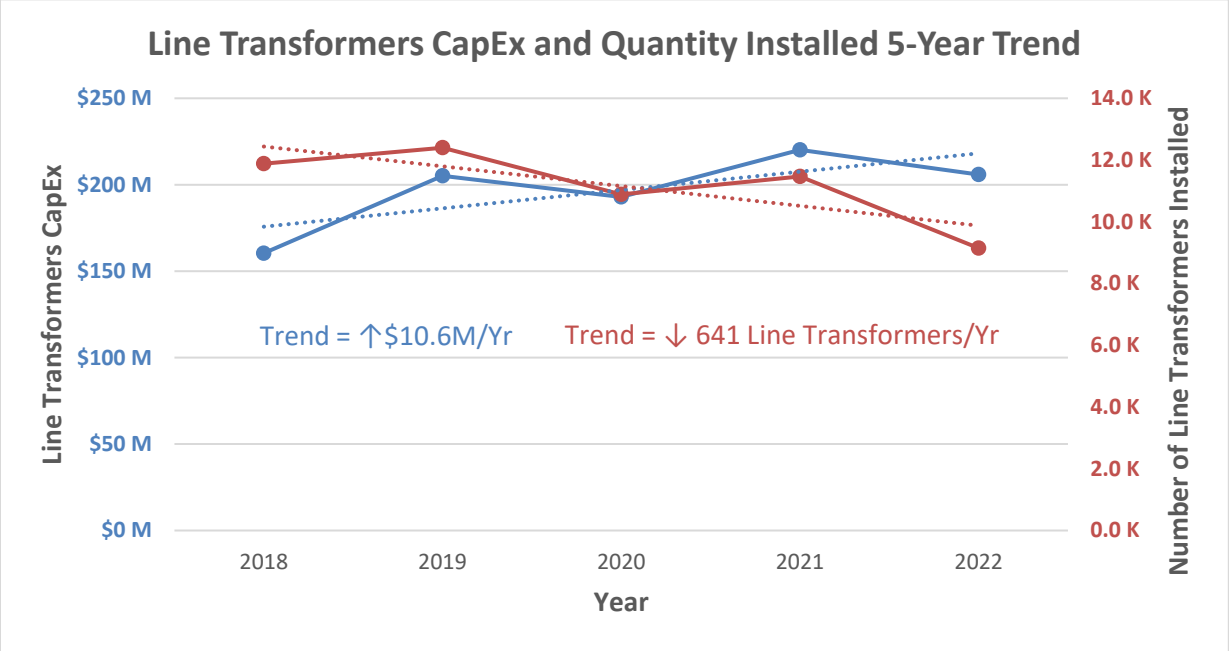
From 2021-2022, aligned with the five-year uptrend, the total combined Poles, Towers and Fixtures CapEx for 52 distributors increased by 1.84%. Aligned with the five-year downtrend, the number of poles installed decreased by 6.15%.

The chart below summarizes the 2022 unit cost results for poles, towers and fixtures CapEx. The median unit cost for 2022 is $8,678 per pole and the average unit cost is $11,202 per pole.



2.9 Capital Expenditures: Line Transformers

During the five-year period 2018-2022, the overall industry trend[21] of the line transformers CapEx[22], as measured by the line of best fit, increased by approximately $10.6 million per year, and the overall trend of the number of line transformers installed decreased by 641 per year. The chart below shows the five-year trend.

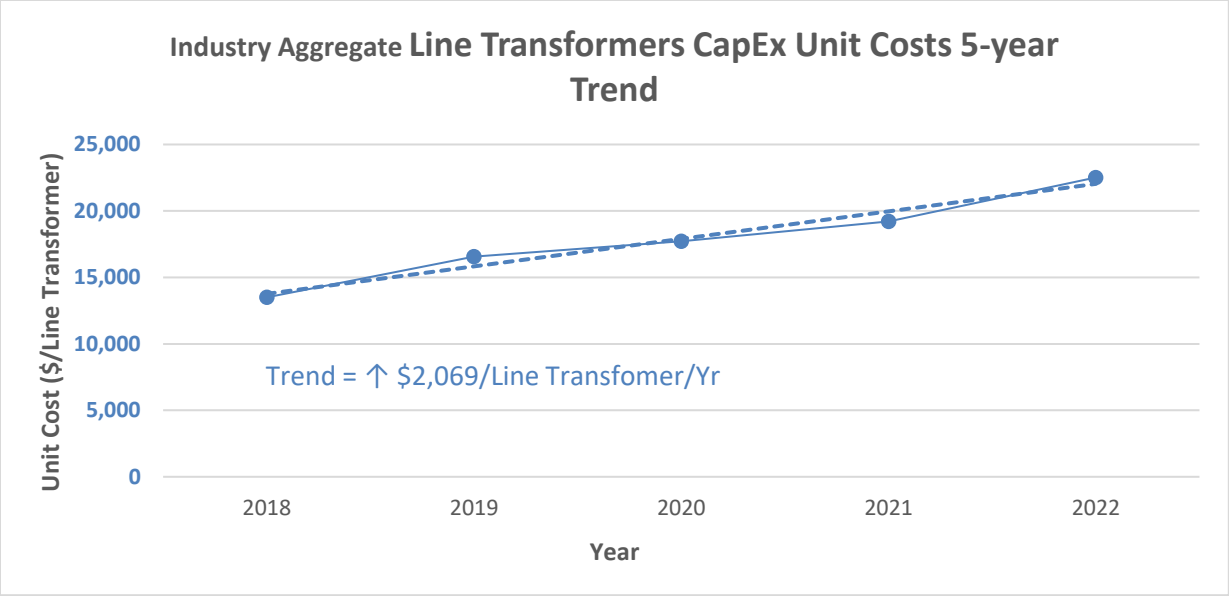


The unit cost for this metric is calculated by dividing the line transformer CapEx, by the number of line transformers installed.

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

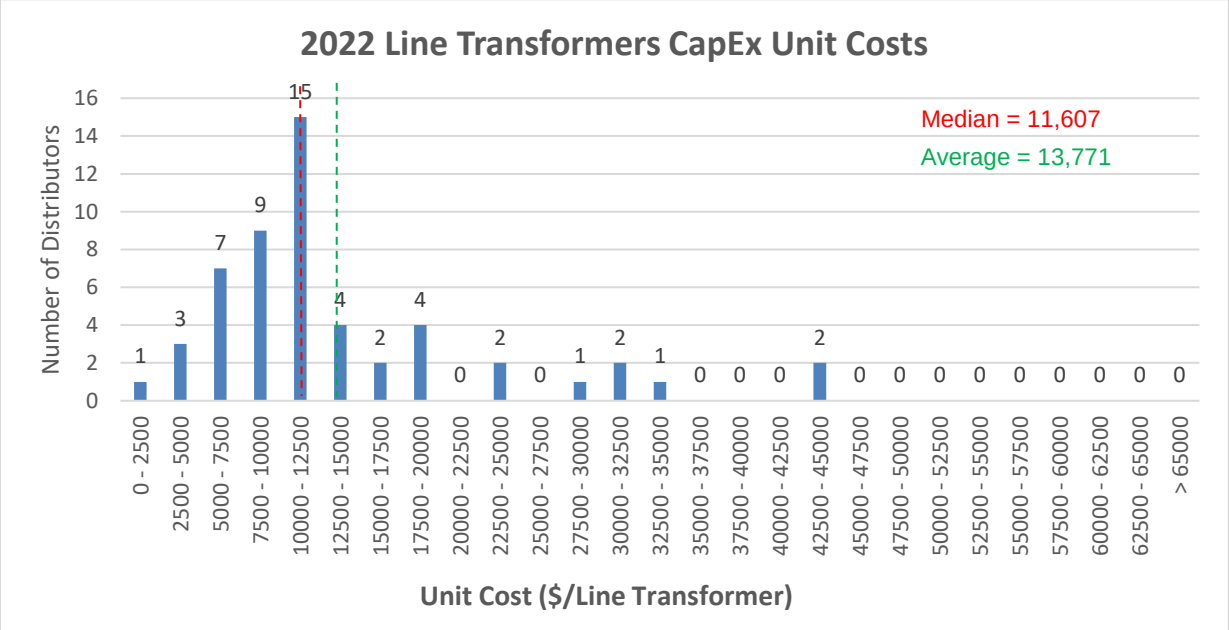
The industry aggregate unit cost shown in the following chart is derived by dividing the total line transformers CapEx of 52 distributors, by the total number of line transformers installed. Aggregated at the industry level, the unit cost increased by $2,069 per line transformers, per year.

[21] 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.
[22] Account 1850 as per Accounting Procedures Handbook for Electricity Distributors.



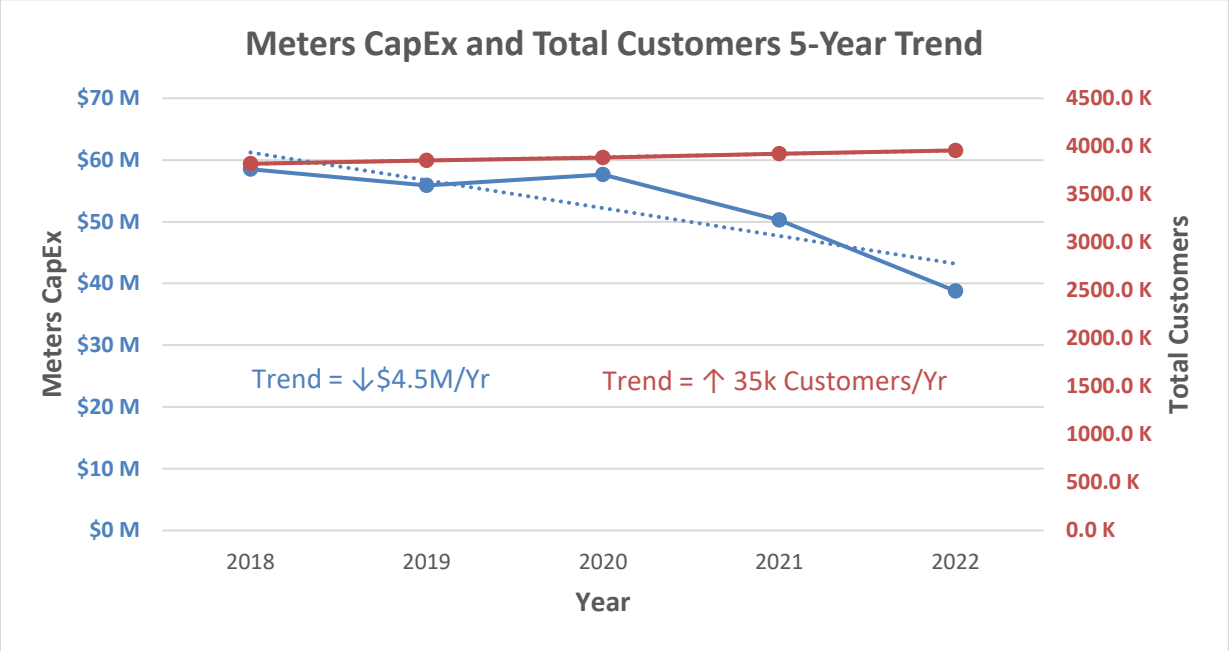
From 2021-2022, contrary to the five-year uptrend, the total combined line transformers CapEx for 52 distributors decreased by 6.5%. Aligned with the five-year downtrend, the number of line transformers installed decreased by 20.2%.

The chart below summarizes the 2022 unit cost results for line transformers CapEx. The median unit cost for 2022 is $11,607 per line transformer and the average unit cost is $13,771 per line transformer.



2.10 Capital Expenditures: Meters

During the five-year period 2018-2022, the overall industry trend[23] of the meters CapEx[24], as measured by the line of best fit, decreased by approximately $4.5 million a year, and the overall trend of the total number of customers[25] increased by approximately 35,000 customers per year. The chart below shows the five-year trend.

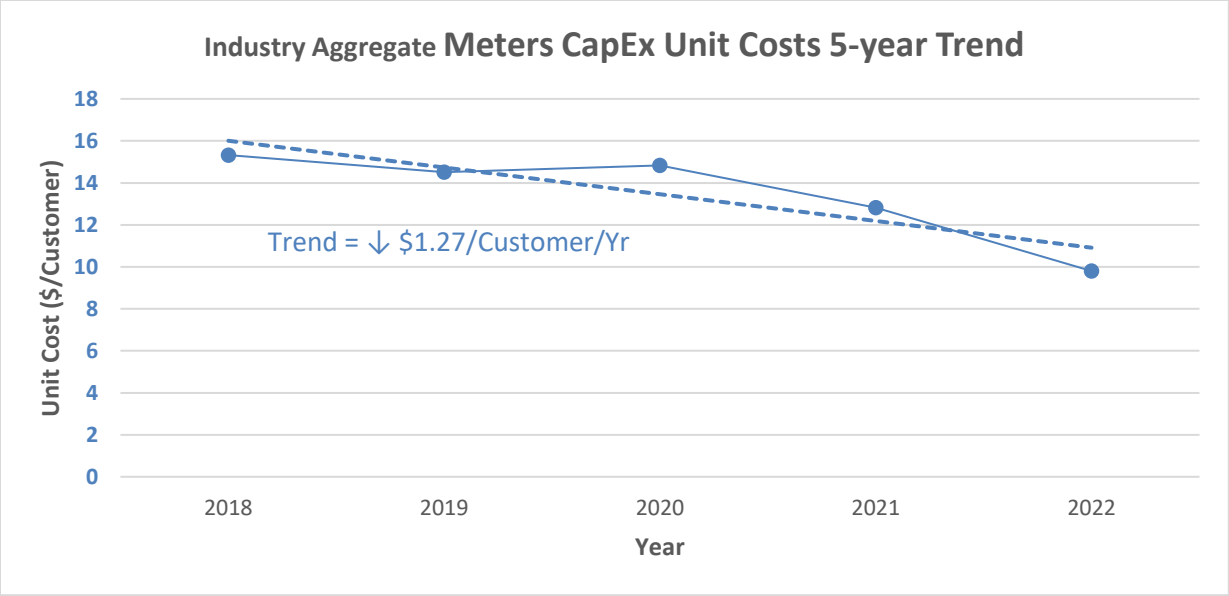


The unit cost for this metric is calculated by dividing the meters CapEx, by the total number of customers.

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

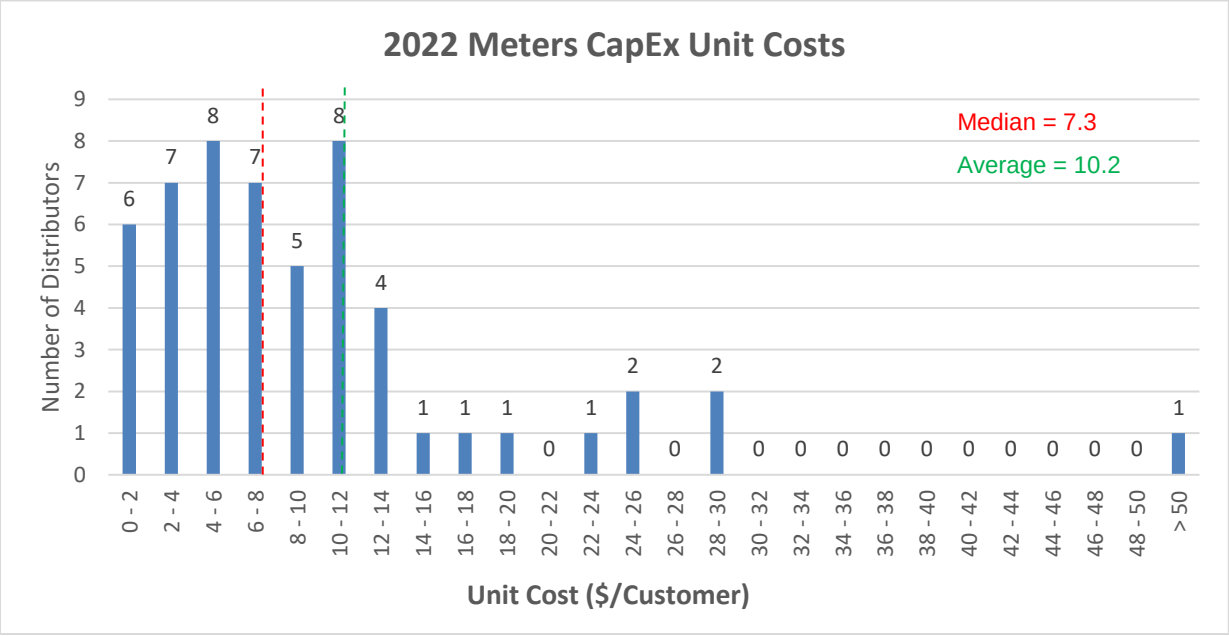
The industry aggregate unit cost shown in the following chart is derived by dividing the total meters CapEx costs of 52 distributors, by the total number of customers. Aggregated at the industry level, the unit cost decreased by $1.27 per customer, per year.

[23] 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.
[24] Account 1860 as per Accounting Procedures Handbook for Electricity Distributors.
[25] Excludes street lighting, sentinel lighting, and USL connections.



From 2021-2022, aligned with the five-year downtrend, the total meters CapEx of 52 distributors decreased by 22.9%. Aligned with the five-year uptrend, the total number of customers increased by 0.9%,

The chart below summarizes the 2022 unit cost results for meters CapEx. The median unit cost for 2022 is $7.3 per customer and the average unit cost is $10.2 per customer.



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.