

Empirical Research in Support of Incentive Rate-Setting: 2022 Benchmarking Update

Report to the Ontario Energy Board

July 2023



Pacific Economics Group Research, LLC

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1. Introduction

In 2013, the Ontario Energy Board (OEB) issued a report titled “Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario’s Electricity Distributors”¹ (Board Report) in which it set forth the framework for setting rate adjustment formulas for local distribution companies (LDCs or “distributors”). The Board Report provides the OEB’s final determination on its policies and approaches to the distributor rate adjustment parameters and the benchmarking of electricity distributor total cost performance. This 2022 Benchmarking Update determines the 2023 stretch factor assignments for distributors in relation to the 2024 rate year.

According to the Board Report, rates will be indexed by a formula “which is used to adjust the distribution rates to reflect expected growth in the distributors’ input prices (the inflation factor) less allowance for appropriate rates of productivity and efficiency gains (the X-factor).”² The productivity part of the X-Factor is the same for all LDCs. The efficiency gains part of the X-Factor is called the stretch factor and can vary by company. This stretch factor reflects the potential for incremental productivity gains by a given LDC under incentive regulation (i.e., incentive rate mechanism or IRM) which in turn depends on an individual distributor’s level of cost efficiency.

These stretch factor assignments are based on the results of a statistical cost benchmarking study designed to make inferences on individual distributors’ cost efficiency. An econometric model is used to predict the level of cost associated with each distributor’s operating conditions. Distributors that had actual cost that was lower than that predicted by the model were assigned lower stretch factors than those that did not. The October 18, 2013 report by Pacific Economics Group (PEG) titled “Productivity and Benchmarking Research in Support of Incentive Rate Setting in Ontario” describes the model used to produce the benchmarking results. The work was subsequently updated to include 2013 data in July of 2014³ and has been updated each year since. This report presents updated benchmarking results that incorporate 2022 data to update the stretch factors.

¹ Issued on November 21, 2013 and corrected on December 4, 2013.

² Board Report, page 5.

³ [“Empirical work in Support of Incentive Rate Setting: 2013 Benchmarking Update”](#).

Section 2 of this report discusses the methodology used for the 2022 update. Section 3 discusses the data used. Section 4 presents the benchmarking results and updated stretch factors. Section 5 discusses additional resources available to distributors to validate the results contained in this report.

2. Benchmarking Methodology

The model used to determine the cost efficiency of distributors is based on econometrics. Distributor cost in this model is estimated as a function of business conditions faced by each distributor. These business conditions include the number of customers served and the price of inputs such as labour and capital. The parameters of this model establish the relationship between each business condition and distributor cost. These parameters were estimated using Ontario distributor data from 2002-2012.

The model can make a prediction of each distributor's cost given its business conditions by multiplying the company's business condition variables by the model parameters and summing the results⁴. The distributor's actual cost is then compared to that predicted by the model. The percentage difference between actual and predicted cost is the measure of cost performance. Companies with larger negative differences between actual and predicted costs are considered to be better cost performers and therefore eligible for lower stretch factors. A detailed description of the econometric model including estimation technique and other technical details are contained in sections 6 and A2.1 of the PEG report.

The econometric model used to obtain the updated stretch factors is identical to the model described in the PEG report. The OEB intentionally decided not to update the parameters of the

⁴ The table of parameters published in the PEG report was for the full sample. When making predictions of cost for each company, the econometric program estimated the model without including the subject of benchmarking in the sample. Therefore, there exist 59 different sets of parameters which are very similar to each other. For ease of presentation, the PEG report did not present the parameters specific to each distributor. These company-specific parameters are necessary for the calculations and are contained within the working papers associated with this report.

econometric model to include future data. The goal was to establish a fixed benchmark that would allow distributors a fair opportunity to demonstrate continuous improvement of cost performance and earn a lower stretch factor. The parameters from the previous model were combined with each company's data – including 2013-2022 data - to produce 2022 predicted cost. The rationale for this decision is discussed in the Board Report and in a memorandum by PEG.⁵

To apply the 2022 values to the model parameters, the data must be transformed to be consistent with how the data were specified for the estimated econometric model. One example of a transformation is that many of the explanatory variables were expressed as logarithms prior to the model being estimated. The PEG report describes the details of the estimation process in section A2.1. The spreadsheet model and associated documentation discussed in section 5 contain the calculations leading to the cost benchmarking results.

The purpose of the benchmarking work is to evaluate the total cost incurred by each distributor. Table 1 shows the formulas used to calculate the measure of total cost used in PEG's benchmarking analysis. As described in the PEG benchmarking report, adjustments were undertaken with the purpose of standardizing cost to facilitate more accurate cost comparisons among distributors. These adjustments included the treatment of high voltage and low voltage costs.

The variables used to explain total cost are the same as in the previous PEG report. They include outputs such as customers, kWh deliveries, and capacity. Prices for capital and OM&A along with other business conditions such as customer growth and average length of lines are also included. A complete discussion of the explanatory variables can be found in section 6 of the PEG report and the supporting documents to this report discussed in section 5. The explanatory variables are used to explain the level of cost incurred by each LDC. Cost that is not explained by the variables is deemed to be an estimate of management performance.

⁵ Available on the OEB website in the file "PEG_Memorandum_OEB on_corrections_20131220.pdf"

3. Benchmarking Data

The source of the cost and output data used in the calculations is from the distributors as reported in the reporting and record-keeping requirements (RRR) filings. The study assumes that the data as reported by the distributors conforms to accounting policies and procedures described in the Accounting Procedures Handbook for Electricity Distributors that includes the Uniform System of Accounts and other instructions contained within the RRR filing system. It also assumes that the LDCs have taken ownership of the data provided to the OEB and significant revisions are not anticipated.⁶

Data sources apart from the RRR are related to input prices. OEB-approved rates of return were obtained from OEB Staff. The source for other input price data was Statistics Canada. The input price indexes used were the same as those used in PEG's original study with one exception. Statistics Canada no longer calculates the Electric Utility Construction Price Index (EUCPI). The growth in the GDPIPI (FDD) was used to escalate the EUCPI values used in the calculations.⁷

The update was done in the same manner as the original work with an exception. The OEB has improved the quality of data collected related to capital additions. As a result, improved data are available for 2013-2022. PEG has accordingly relied upon these more recently available capital additions data filed in the RRRs instead of inferring these data from changes in gross plant.

The calculations have also been adjusted for amalgamations that have taken place since the original study was done. The historical cost performance of the combined entity was calculated from the historical results of the predecessor distributors that were amalgamated or

⁶ The Ontario Energy Board (OEB) released the Report of the Board on Performance Measurement for Electricity Distributors: A Scorecard Approach (EB-2010-0379) on March 5, 2014. This report states that: '*While the Board will create consistent Scorecard reports for distributors, ownership of the data and Scorecard resides with the distributor.*'

⁷ GDPIPI (FDD) is the Gross Domestic Product Implicit Price Index for Final Domestic Demand.

acquired.⁸ North Bay Hydro Distribution Limited acquired Espanola Regional Hydro Distribution Corporation; they have now consolidated reporting and are benchmarked as a single entity. Kitchener-Wilmot Hydro Inc. and Waterloo North Hydro Inc. merged into Enova Power Corp, and Brantford Power Inc. and Energy Plus Inc. merged into GrandBridge Energy Inc. In each of these cases the companies have consolidated reporting and are benchmarked as single entities under the new company names.

This report also addresses the impact of data revisions by LDCs for informational purposes only. The OEB requires distributors to be accountable for the integrity of their reported data. As part of its procedures to improve data quality, the OEB invited distributors to submit corrections to previously provided data. However, a key determination is that already-established and published benchmarking results for prior years would not be modified as a result of revised data. This includes any year that comprised the three-year average used to determine the current year's stretch factor. As stretch factors are used directly to set the distribution rates of distributors, they are not subsequently adjusted in order to avoid retroactive rate setting (i.e., rates are final once set unless approved on an interim basis). Consequently, the three years of data used to derive the three-year average for any year's stretch factors are locked-in such that the underlying data used do not change due to any subsequent data revisions.⁹

To show the impacts of data changes on the stretch factors, revised data have been incorporated into the benchmarking databases and model to allow previous results to be recalculated. The revised 2021, 2020, and 2019 results are presented only for the purposes of showing the impact of the data changes but were not used as discussed above to calculate the new 2020-2022 average cost performance used to determine the 2023 stretch factors assignments.

⁸ The method used to calculate the hypothetical historical cost performance of the combined entity is to sum the actual costs, sum the costs predicted by the model, and calculate the percentage difference. This method is essentially a cost-weighted average of the historical cost performances of the amalgamated distributors.

⁹ The previous results were "locked-in" by pasting the values of previous cost performance into the current calculations worksheet. This means that these values will not be affected by subsequent data revisions. This allows for the calculation of a new three-year average of the new 2022 result consistent with the previously published 2019, 2020 and 2021 results while still allowing the calculation of revised results for previous years, if applicable, to show the impact of any data revision.

Several tables are included at the end of this report. Table 1 describes the calculation of total cost. Table 2 shows each distributor's growth in total cost from 2021 to 2022. Table 3 (A) presents the 2022 benchmarking results and a comparison to prior years' results. Table 3 (B) summarizes data revision impacts on cost performance although they have no bearing on the derivation of the current stretch factors. Table 4 presents average cost performance and associated stretch factors. Table 5 presents the companies assigned to each cohort according to their updated stretch factors. Changes from the previous year's assignments are shown in bold.

The goal of the benchmarking work is to evaluate levels of distributor cost. Table 2 presents the actual OM&A, Capital, and Total cost for each distributor for 2021 and 2022. As can be seen, industry total cost increased by 10.85% on average from 2021-2022. Total OM&A cost grew by 7.80% and capital cost grew on average by 12.51%.

The econometric model estimates LDCs' costs as a function of distributor output, input price growth, and other business condition variables beyond management control. It will also produce a prediction of the level of cost consistent with these business conditions and thus "explain" some of the observed cost level. As described in the PEG benchmarking report, changes not accounted for by these factors are deemed to be due to management performance. The parameter estimates measure the cost impact of the different business conditions and are presented on Table 16 of the PEG benchmarking report. The discussion below provides some details about the parameters and their associated impacts established for the 2002 to 2012 period.

The first of the cost drivers is output quantity. The model uses three measures for the quantity of distributor output. The first is the number of customers served and the second is kWh delivered. The third is a proxy for the capacity of the distribution system. The capacity variable is described in the PEG report and is equal to the largest peak load experienced as of the current year of data. For example, the 2012 value for the capacity variable is equal to largest reported system summer or winter kW in all the years 2002-2012. Therefore, for 2013, this capacity variable only increased if the distributor's kW demand in that year exceeded kW demand in every year between 2002 and 2012. Of the three output variables, the model estimates that the number of customers has the largest impact on cost, followed by the system capacity variable. The kWh delivered was the least important of the output variables. For the average company, the number of customers was found to be a more important cost driver than the other two combined. For each 1% change in number of customers, cost was estimated to change by 0.44%.

The second group of cost drivers were the input prices for capital and OM&A. For the average company, the cost impact of changes in the capital price was found to be almost twice as important as that for OM&A. For every 1% change in capital price, the impact on total cost was about 0.63%. The corresponding impact for changes in the OM&A price was 0.37%. The relevant indexes were updated to include 2022 data. For the OM&A price, the growth in average weekly earnings and that for the GDP implicit price index for final domestic demand (“GDPIPI (FDD)”) were calculated. The 2022 growth in the OM&A price index is calculated as 70% times average weekly earnings growth plus 30% times GDPIPI (FDD) growth. The 2021 values for the OM&A price index from the previous report were escalated by the growth that occurred in 2022.

The capital price calculation is based upon an asset price index, an economic depreciation rate, and a rate of return. The asset price index was the Electric Utility Construction Price Index as calculated by Statistics Canada. As this index is no longer available, the previous values are escalated by an alternate index. The index chosen was the GDPIPI (FDD) which is the same index used to represent all non-labour price inflation in the Board-approved inflation measure formula¹⁰. The depreciation rate is fixed at 4.59% consistent with the previous work. The rate of return is a weighted average of the rates for return on equity, long-term debt, and short-term debt as approved by the OEB. The capital price used to calculate total cost is also used as an explanatory variable. Therefore, any changes in the rate of return or asset price index that affect the cost calculation will also affect the price calculation which will in turn “explain” the observed changes in cost.

The last group of cost drivers consists of other business condition variables. The first was the percentage of customers added over the last ten years. The second was the average km of distribution line. For each 1% change in line length, total cost was estimated to increase by 0.29%. The model also contains a time trend that accounts for changes in cost over time that are not accounted for by the other cost drivers. This variable estimates that cost should rise by 1.7% per year for reasons not identified by other variables in the model. All of these business condition variables were updated to include 2022 data.

¹⁰ The weight given to the non-labour index in the inflation formula includes capital cost.

4. Benchmarking Results and Updated Stretch Factors

Table 3 (A) presents a summary of the current benchmarking results for each distributor from 2019-2022. The updated average cost performance is based on a three-year rolling average calculated from the 2020-2022 values and is used to assign updated stretch factors to distributors. The last column presents the difference between the updated average cost performance and the previous one (2019-2021).¹¹ The electricity distributor sector has shown consistent year-over-year cost performance improvements. The average level of cost performance in 2022 for the distributors is 14.2% lower than forecast (or predicted) cost that builds upon cost performance improvement in previous years. Previous years also have shown performance improvements for the currently benchmarked distributors but not as good compared to recent years.

As discussed above, the OEB requires distributors to be accountable for the integrity of their reported data and sets out reporting procedures to improve data quality. OEB Staff reviewed and approved distributors' data corrections requests to previously filed data when reasonable justification is provided. The revised data were incorporated into the benchmarking databases and the 2019, 2020, and 2021 results were recalculated to demonstrate the impact on the previously published 2019-2021 average cost performance. Table 3 (B) shows the impact of LDC data revisions on 2019, 2020, and 2021 cost performance for those companies that had approved changes since the previous update¹². No revisions would have changed previously determined cohort placement.

Updated stretch factors are assigned based on a three-year average of actual less predicted cost over the 2020-2022 period. As discussed in the Board Report, distributors that averaged 25% or more below cost received the lowest stretch factor of 0%. Those that averaged in excess of 10% and up to 25% below cost received a stretch factor of 0.15%. Those within 10% of predicted cost received a stretch factor of 0.30%. Those distributors that had cost in excess of 10% and up to 25% of that predicted received a stretch factor of 0.45%. Any distributors that

¹¹ Changes in average cost performance are due to not only the addition of 2022 results, but the removal of 2019 results. It is therefore possible to simultaneously have improved 2022 cost performance and deteriorating average performance.

¹² There were no accepted revisions to 2019 data since the previous update.

had actual costs in excess of 25% more than predicted were assigned the highest stretch factor of 0.60%.

Table 4 presents a summary of the current and previous years' cost performance results and corresponding stretch factors. The assigned stretch factor for most companies was not affected by the 2022 update. A total of eight companies have been assigned different stretch factors and all eight now have lower stretch factors. Table 5 presents the updated stretch factor assignments in the format of Appendix D of the Board report.

5. Validation and Other Supporting Documents

As part of their reporting requirements, distributors are asked to validate the numbers contained in their scorecard. The Spreadsheet Model as updated produces the updated benchmarking results contained in this report. It builds on the previous version by adding additional worksheets related to the 2022 calculations.

The format of the additional worksheets used in the update are similar to those provided earlier and the User's Guide will be applicable to the new worksheets. The guide is intended to serve as a tool for distributors to better understand these calculations and their cost performance. The spreadsheet model and users guide are available in the Total cost benchmarking – updates section of the [Performance Assessment](#) page on the OEB's website.

Table 1

Calculation of 2022 Total Cost

Variable	Reference	Formula	Source
Total Cost		= OM&A + Capital Cost	Formula
OM&A		= A+B+C+D+E+F+G-I+J	Formula
2022 Operation	A		RRR
2022 Maintenance	B		RRR
2022 Billing and Collection	C		RRR
2022 Community Relations	D		RRR
2022 Administrative and General Expenses	E		RRR
2022 Insurance Expense	F		RRR
2022 Advertising Expenses	G		RRR
Adjustments to OM&A			
2022 HV Adjustment	I		RRR
2022 LV Adjustment	J		Hydro One Networks
2022			
Capital			
2021 Asset Price Index	K		Previous Year Calculations
2021 Capital Quantity	M		Previous Year Calculations
2022 Asset Price Index	O	=K x (GDPPI-FDD 2021 / GDPPI-FDD 2020)	Formula, Statistics Canada
2022 Capital Additions	P		RRR
2022 HV Capital Additions	Q		RRR
2022 Quantity of Capital Additions	R	=(P-Q) / O	Formula
Depreciation Rate	S	Fixed at 4.59% for All Years	PEG Report for 4GIR
2022 Capital Quantity	T	= M - S x M + R	Formula
2022 Rate of Return	U		OEB Decision
2022 Capital Price	V	=U x K + S x O	Formula
2022 Capital Cost	W	= V x T	Formula

Table 2

Total Cost by Distributor: 2021 vs. 2022

	OM&A Cost			Capital Cost			Total Cost		
	2021	2022	Percent Change	2021	2022	Percent Change	2021	2022	Percent Change
Alectra Utilities Corporation	250,670,046	268,392,856	6.83%	488,587,309	541,882,560	10.35%	739,257,355	810,275,416	9.17%
Algoma Power Inc.	13,481,111	13,718,921	1.75%	15,108,636	16,849,512	10.91%	28,589,748	30,568,434	6.69%
Atikokan Hydro Inc.	1,104,348	1,174,670	6.17%	553,885	603,265	8.54%	1,658,233	1,777,935	6.97%
Bluewater Power Distribution Corporation	12,851,070	13,591,717	5.60%	13,576,798	15,471,223	13.06%	26,427,868	29,062,939	9.50%
Burlington Hydro Inc.	20,873,792	21,411,269	2.54%	26,044,424	28,937,773	10.53%	46,918,216	50,349,042	7.06%
Canadian Niagara Power Inc.	9,849,848	9,680,637	-1.73%	17,328,066	19,773,858	13.20%	27,177,914	29,454,496	8.04%
Centre Wellington Hydro Ltd.	2,469,580	2,737,920	10.32%	2,403,595	2,591,655	7.53%	4,873,175	5,329,576	8.95%
Chapleau Public Utilities Corporation	727,953	806,989	10.31%	227,695	247,899	8.50%	955,648	1,054,888	9.88%
Cooperative Hydro Embrun Inc.	708,060	692,601	-2.21%	498,034	549,556	9.84%	1,206,094	1,242,157	2.95%
Elexicon Energy Inc.	42,460,839	44,882,223	5.55%	69,350,786	77,772,518	11.46%	111,811,625	122,654,742	9.26%
E.L.K. Energy Inc.	2,940,757	4,208,740	35.85%	2,399,856	2,741,465	13.31%	5,340,614	6,950,205	26.34%
Enova Power Corp.	36,248,892	38,968,842	7.24%	67,495,713	75,217,696	10.83%	103,744,605	114,186,538	9.59%
Entegrus Powerlines Inc.	13,465,296	15,360,450	13.17%	20,838,264	23,816,601	13.36%	34,303,560	39,177,051	13.28%
ENWIN Utilities Ltd.	24,563,149	25,234,156	2.70%	36,535,382	40,071,263	9.24%	61,098,531	65,305,420	6.66%
EPCOR Electricity Distribution Ontario Inc.	5,811,191	6,164,718	5.91%	4,985,458	5,799,345	15.12%	10,796,649	11,964,063	10.27%
ERTH Power Corporation	7,347,656	7,750,360	5.34%	8,868,332	9,821,263	10.21%	16,215,988	17,571,624	8.03%
Essex Powerlines Corporation	7,422,000	8,288,825	11.05%	10,001,626	11,184,053	11.17%	17,423,626	19,472,878	11.12%
Festival Hydro Inc.	5,861,377	6,618,860	12.15%	7,585,321	8,356,830	9.69%	13,446,698	14,975,690	10.77%
Fort Frances Power Corporation	1,607,047	1,761,801	9.19%	895,093	996,971	10.78%	2,502,140	2,758,772	9.76%
GrandBridgE Energy Inc.	31,435,323	31,809,380	1.18%	38,497,738	43,314,188	11.79%	69,933,061	75,123,569	7.16%
Greater Sudbury Hydro Inc.	14,858,594	15,279,442	2.79%	17,624,536	19,287,608	9.02%	32,483,130	34,567,050	6.22%
Grimsby Power Incorporated	3,463,611	3,773,954	8.58%	3,684,545	4,059,140	9.68%	7,148,156	7,833,094	9.15%
Halton Hills Hydro Inc.	6,794,948	7,237,095	6.30%	11,684,584	12,783,228	8.99%	18,479,532	20,020,323	8.01%
Hearst Power Distribution Company Limited	1,171,996	1,202,294	2.55%	374,730	426,586	12.96%	1,546,725	1,628,879	5.18%
Hydro 2000 Inc.	608,701	661,275	8.28%	154,376	180,250	15.50%	763,077	841,525	9.79%
Hydro Hawkesbury Inc.	1,201,692	1,200,939	-0.06%	576,622	636,901	9.94%	1,778,314	1,837,840	3.29%
Hydro One Networks Inc.	558,146,885	625,202,892	11.35%	929,006,489	1,063,475,844	13.52%	1,487,153,374	1,688,678,736	12.71%

Table 2

Total Cost by Distributor: 2021 vs. 2022

	OM&A Cost			Capital Cost			Total Cost		
	2021	2022	Percent Change	2021	2022	Percent Change	2021	2022	Percent Change
Hydro Ottawa Limited	81,235,640	94,710,464	15.35%	172,956,816	196,336,233	12.68%	254,192,456	291,046,698	13.54%
Innpower Corporation	6,512,895	6,701,222	2.85%	11,161,232	13,020,537	15.41%	17,674,127	19,721,759	10.96%
Kingston Hydro Corporation	6,636,393	7,822,958	16.45%	8,578,075	9,364,188	8.77%	15,214,468	17,187,145	12.19%
Lakefront Utilities Inc.	2,645,596	2,557,283	-3.40%	2,921,483	3,345,420	13.55%	5,567,079	5,902,703	5.85%
Lakeland Power Distribution Ltd.	5,114,415	5,713,682	11.08%	5,025,312	5,698,605	12.57%	10,139,728	11,412,287	11.82%
London Hydro Inc.	41,026,725	42,687,578	3.97%	53,734,634	61,266,225	13.12%	94,761,359	103,953,803	9.26%
Milton Hydro Distribution Inc.	11,186,491	11,803,020	5.36%	17,574,100	19,643,794	11.13%	28,760,591	31,446,814	8.93%
Newmarket-Tay Power Distribution Ltd.	11,558,179	12,940,656	11.30%	17,334,745	18,659,990	7.37%	28,892,924	31,600,646	8.96%
Niagara Peninsula Energy Inc.	17,912,140	19,048,312	6.15%	25,411,982	28,229,669	10.52%	43,324,122	47,277,981	8.73%
Niagara-on-the-Lake Hydro Inc.	3,146,520	3,219,310	2.29%	4,328,356	4,674,391	7.69%	7,474,877	7,893,702	5.45%
North Bay Hydro Distribution Limited	8,476,382	8,721,483	2.85%	11,622,911	12,798,000	9.63%	20,099,293	21,519,483	6.83%
Northern Ontario Wires Inc.	2,787,306	3,045,413	8.86%	1,388,911	1,521,717	9.13%	4,176,217	4,567,130	8.95%
Oakville Hydro Electricity Distribution Inc	18,391,124	20,114,506	8.96%	34,912,249	38,703,763	10.31%	53,303,374	58,818,269	9.85%
Orangeville Hydro Limited	3,381,843	3,664,133	8.02%	3,640,843	4,110,577	12.13%	7,022,686	7,774,710	10.17%
Oshawa PUC Networks Inc.	12,893,929	13,923,030	7.68%	22,563,393	24,901,005	9.86%	35,457,322	38,824,035	9.07%
Ottawa River Power Corporation	3,518,816	3,820,739	8.23%	2,501,631	3,073,786	20.60%	6,020,446	6,894,525	13.56%
PUC Distribution Inc.	11,544,844	10,989,235	-4.93%	12,040,385	13,613,019	12.28%	23,585,229	24,602,254	4.22%
Renfrew Hydro Inc.	1,500,880	1,476,178	-1.66%	1,208,940	1,328,170	9.41%	2,709,821	2,804,349	3.43%
Rideau St. Lawrence Distribution Inc.	2,318,119	2,610,500	11.88%	1,216,012	1,400,340	14.11%	3,534,131	4,010,840	12.65%
Sioux Lookout Hydro Inc.	1,465,654	1,451,596	-0.96%	908,898	984,062	7.95%	2,374,552	2,435,658	2.54%
Synergy North Corporation	16,069,352	19,510,824	19.41%	20,983,457	23,578,310	11.66%	37,052,809	43,089,134	15.09%
Tillsonburg Hydro Inc.	2,826,250	2,840,459	0.50%	2,613,739	2,919,055	11.05%	5,439,989	5,759,514	5.71%
Toronto Hydro-Electric System Limited	260,775,921	264,587,694	1.45%	673,197,983	772,758,080	13.79%	933,973,904	1,037,345,775	10.50%
Wasaga Distribution Inc.	3,001,623	3,269,528	8.55%	3,185,495	4,375,929	31.75%	6,187,118	7,645,457	21.16%
Welland Hydro-Electric System Corp.	6,748,528	6,919,284	2.50%	5,405,473	6,074,177	11.66%	12,154,000	12,993,461	6.68%
Wellington North Power Inc.	1,849,244	1,929,965	4.27%	1,427,673	1,566,304	9.27%	3,276,916	3,496,268	6.48%
Westario Power Inc.	6,737,082	7,767,386	14.23%	8,036,376	9,125,264	12.71%	14,773,458	16,892,650	13.40%
Average	30,174,216	32,623,338	6.67%	54,088,315	61,294,809	11.65%	84,262,531	93,918,147	9.29%
Median		7.80%	6.16%		12.51%	10.98%		10.85%	9.11%

Table 3 (A)

Summary of Cost Performance Results

	Cost Efficiency Assessment						Difference from 2019-2021
	2019	2020	2021	2022	2019-2021	2020-2022	
Alectra Utilities Corporation	0.1%	-4.4%	-6.9%	-9.1%	-3.7%	-6.8%	-3.1%
Algoma Power Inc.	64.3%	61.9%	63.7%	61.1%	63.3%	62.2%	-1.1%
Atikokan Hydro Inc.	6.6%	2.8%	-0.9%	-1.9%	2.8%	0.0%	-2.8%
Bluewater Power Distribution Corporation	0.3%	-4.5%	-7.6%	-8.0%	-3.9%	-6.7%	-2.8%
Burlington Hydro Inc.	-11.7%	-13.0%	-11.7%	-13.5%	-12.1%	-12.8%	-0.6%
Canadian Niagara Power Inc.	15.6%	11.0%	11.8%	9.7%	12.8%	10.8%	-2.0%
Centre Wellington Hydro Ltd.	-1.1%	-11.2%	-16.7%	-16.6%	-9.7%	-14.8%	-5.2%
Chapleau Public Utilities Corporation	25.4%	18.9%	4.0%	5.5%	16.1%	9.5%	-6.6%
Cooperative Hydro Embrun Inc.	-51.3%	-54.7%	-62.4%	-72.8%	-56.1%	-63.3%	-7.2%
Elexicon Energy Inc.	-1.0%	-4.3%	-2.9%	-3.6%	-2.7%	-3.6%	-0.9%
E.L.K. Energy Inc.	-47.4%	-59.0%	-49.1%	-32.4%	-51.8%	-46.8%	5.0%
Enova Power Corp.	-8.0%	-10.7%	-8.4%	-1.3%	-9.0%	-6.8%	2.2%
Entegrus Powerlines Inc.	-21.0%	-25.4%	-28.7%	-26.9%	-25.0%	-27.0%	-2.0%
ENWIN Utilities Ltd.	-10.1%	-15.3%	-22.4%	-26.8%	-15.9%	-21.5%	-5.6%
EPCOR Electricity Distribution Ontario Inc.	-3.9%	-9.8%	-16.5%	-16.0%	-10.1%	-14.1%	-4.0%
ERTH Power Corporation	1.3%	-1.5%	-4.8%	-6.5%	-1.7%	-4.3%	-2.6%
Essex Powerlines Corporation	-19.2%	-23.8%	-31.6%	-31.6%	-24.8%	-29.0%	-4.1%
Festival Hydro Inc.	5.9%	1.6%	-3.4%	-2.4%	1.4%	-1.4%	-2.8%
Fort Frances Power Corporation	-5.1%	-11.4%	-12.8%	-11.0%	-9.8%	-11.7%	-2.0%
GrandBridge Energy Inc.	-12.9%	-11.2%	-11.6%	-13.9%	-11.9%	-12.2%	-0.3%
Greater Sudbury Hydro Inc.	5.1%	3.0%	1.4%	-3.8%	3.2%	0.2%	-3.0%

Table 3 (A)

Summary of Cost Performance Results

	Cost Efficiency Assessment						Difference from 2019-2021
	2019	2020	2021	2022	2019-2021	2020-2022	
Grimsby Power Incorporated	-31.8%	-34.5%	-38.5%	-38.5%	-34.9%	-37.2%	-2.3%
Halton Hills Hydro Inc.	-30.3%	-33.8%	-35.7%	-37.2%	-33.3%	-35.6%	-2.3%
Hearst Power Distribution Company Limited	-28.7%	-31.6%	-30.5%	-33.8%	-30.3%	-32.0%	-1.7%
Hydro 2000 Inc.	-22.4%	-18.0%	-16.8%	-14.8%	-19.0%	-16.5%	2.5%
Hydro Hawkesbury Inc.	-69.3%	-66.4%	-65.3%	-71.0%	-67.0%	-67.6%	-0.6%
Hydro One Networks Inc.	17.3%	17.0%	18.1%	20.3%	17.5%	18.5%	1.0%
Hydro Ottawa Limited	20.4%	19.8%	19.5%	23.1%	19.9%	20.8%	0.9%
Innpower Corporation	-5.3%	-6.8%	-5.2%	-6.2%	-5.8%	-6.1%	-0.3%
Kingston Hydro Corporation	-3.8%	-6.8%	-12.8%	-10.9%	-7.8%	-10.2%	-2.4%
Lakefront Utilities Inc.	-24.4%	-27.2%	-27.0%	-31.0%	-26.2%	-28.4%	-2.2%
Lakeland Power Distribution Ltd.	-14.2%	-16.9%	-19.6%	-16.8%	-16.9%	-17.7%	-0.9%
London Hydro Inc.	-5.8%	-6.3%	-5.7%	-6.5%	-5.9%	-6.2%	-0.2%
Milton Hydro Distribution Inc.	-18.7%	-23.7%	-26.8%	-28.1%	-23.1%	-26.2%	-3.1%
Newmarket-Tay Power Distribution Ltd.	-9.8%	-15.9%	-17.6%	-17.5%	-14.4%	-17.0%	-2.6%
Niagara Peninsula Energy Inc.	1.1%	-2.8%	-7.8%	-10.2%	-3.2%	-7.0%	-3.8%
Niagara-on-the-Lake Hydro Inc.	-9.5%	-12.7%	-13.1%	-16.2%	-11.8%	-14.0%	-2.2%
North Bay Hydro Distribution Limited	1.9%	-2.2%	-3.6%	-3.5%	-1.3%	-3.1%	-1.8%
Northern Ontario Wires Inc.	-38.2%	-42.1%	-45.7%	-45.1%	-42.0%	-44.3%	-2.3%
Oakville Hydro Electricity Distribution Inc.	0.3%	-3.8%	-6.4%	-6.6%	-3.3%	-5.6%	-2.3%
Orangeville Hydro Limited	-20.7%	-28.8%	-29.6%	-28.4%	-26.3%	-28.9%	-2.6%
Oshawa PUC Networks Inc.	-12.0%	-16.6%	-16.8%	-18.9%	-15.1%	-17.4%	-2.3%

Table 3 (A)

Summary of Cost Performance Results

	Cost Efficiency Assessment						Difference from 2019-2021
	2019	2020	2021	2022	2019-2021	2020-2022	
Oshawa PUC Networks Inc.	-12.0%	-16.6%	-16.8%	-18.9%	-15.1%	-17.4%	-2.3%
Ottawa River Power Corporation	-18.9%	-24.3%	-28.8%	-25.6%	-24.0%	-26.2%	-2.3%
PUC Distribution Inc.	5.5%	1.1%	1.8%	-3.0%	2.8%	0.0%	-2.8%
Renfrew Hydro Inc.	1.1%	-2.5%	-3.1%	-8.4%	-1.5%	-4.7%	-3.2%
Rideau St. Lawrence Distribution Inc.	-11.2%	-15.4%	-15.4%	-11.3%	-14.0%	-14.0%	0.0%
Sioux Lookout Hydro Inc.	-19.0%	-25.8%	-35.1%	-41.9%	-26.6%	-34.3%	-7.6%
Synergy North Corporation	6.2%	0.5%	-0.8%	5.0%	2.0%	1.6%	-0.4%
Tillsonburg Hydro Inc.	3.7%	-5.5%	-9.8%	-15.1%	-3.9%	-10.2%	-6.3%
Toronto Hydro-Electric System Limited	52.8%	52.9%	53.2%	52.8%	53.0%	52.9%	0.0%
Wasaga Distribution Inc.	-42.9%	-46.6%	-56.7%	-45.8%	-48.7%	-49.7%	-1.0%
Welland Hydro-Electric System Corp.	-25.4%	-30.3%	-32.6%	-35.7%	-29.5%	-32.9%	-3.4%
Wellington North Power Inc.	6.7%	2.9%	-4.0%	-9.8%	1.9%	-3.6%	-5.5%
Westario Power Inc.	-7.7%	-11.1%	-10.3%	-6.2%	-9.7%	-9.2%	0.5%
Average	-7.8%	-11.6%	-13.8%	-14.2%	-11.1%	-13.2%	-2.1%
Median	-6.8%	-11.1%	-12.3%	-12.4%	-9.7%	-12.0%	-2.3%
Max	64.3%	61.9%	63.7%	61.1%	63.3%	62.2%	5.0%
Min	-69.3%	-66.4%	-65.3%	-72.8%	-67.0%	-67.6%	-7.6%

Table 3 (B)

Summary of the Impact of Revised Data on Cost Performance Results

Distributors with approved 2019, 2020, and/or 2021 data revisions for the 2022 data update	2019 Cost Performance			2020 Cost Performance			2021 Cost Performance			2019-2021 Average Cost Performance*		
	As Previously Calculated	As Revised	Difference	As Previously Calculated	As Revised	Difference	As Previously Calculated	As Revised	Difference	As Previously Calculated	As Revised	Difference
Bluewater Power Distribution Corporation	0.3%	na	na	-4.5%	-4.5%	na	-7.6%	-7.8%	0.12%	-3.9%	-4.0%	-0.04%
ERTH Power Corporation	1.3%	na	na	-1.5%	-1.5%	0.00%	-4.8%	-4.8%	0.02%	-1.7%	-1.7%	-0.01%
Espanola Regional Hydro Distribution Corporation	-17.2%	na	na	-25.5%	-25.5%	0.00%	-29.2%	-21.5%	-7.72%	-24.0%	-21.4%	2.57%
Energy+ Inc.	-14.1%	na	na	-14.4%	-14.4%	na	-13.6%	-13.8%	0.11%	-14.1%	-14.1%	-0.04%
Festival Hydro Inc.	5.9%	na	na	1.6%	1.6%	0.02%	-3.4%	-3.3%	-0.07%	1.4%	1.4%	0.02%
Fort Frances Power Corporation	-5.1%	na	na	-11.4%	-11.4%	na	-12.8%	-12.7%	-0.08%	-9.8%	-9.7%	0.03%
Kingston Hydro Corporation	-3.8%	-8.2%	4.41%	-6.8%	-12.2%	5.42%	-12.8%	-19.2%	6.31%	-7.8%	-11.7%	-3.91%
London Hydro Inc.	-5.8%	na	na	-6.3%	-6.3%	na	-5.7%	-5.5%	-0.16%	-5.9%	-5.9%	0.05%
Ottawa River Power Corporation	-18.9%	na	na	-24.3%	-24.3%	na	-28.8%	-28.7%	-0.03%	-24.0%	-24.0%	0.01%

* The impact of revisions are not cumulative with revisions from previous updates. Other submitted changes were either not used in the 2019-2021 calculations or resulted in no net change to the amounts being used.

Table 4

Summary of Stretch Factor Assignments

	2019-2021		2020-2022		Change in Stretch Factor
	Benchmarking Performance	Stretch Factor	Benchmarking Performance	Stretch Factor	
Alectra Utilities Corporation	-3.7%	0.30	-6.8%	0.30	NO
Algoma Power Inc.	63.3%	0.60	62.2%	0.60	NO
Atikokan Hydro Inc.	2.8%	0.30	0.0%	0.30	NO
Bluewater Power Distribution Corporation	-3.9%	0.30	-6.7%	0.30	NO
Burlington Hydro Inc.	-12.1%	0.15	-12.8%	0.15	NO
Canadian Niagara Power Inc.	12.8%	0.45	10.8%	0.45	NO
Centre Wellington Hydro Ltd.	-9.7%	0.30	-14.8%	0.15	YES
Chapleau Public Utilities Corporation	16.1%	0.45	9.5%	0.30	YES
Cooperative Hydro Embrun Inc.	-56.1%	0.00	-63.3%	0.00	NO
Elexicon Energy Inc.	-2.7%	0.30	-3.6%	0.30	NO
E.L.K. Energy Inc.	-51.8%	0.00	-46.8%	0.00	NO
Enova Power Corp.	-9.0%	0.30	-6.8%	0.30	NO
Entegrus Powerlines Inc.	-25.0%	0.00	-27.0%	0.00	NO
ENWIN Utilities Ltd.	-15.9%	0.15	-21.5%	0.15	NO
EPCOR Electricity Distribution Ontario Inc.	-10.1%	0.15	-14.1%	0.15	NO
ERTH Power Corporation	-1.7%	0.30	-4.3%	0.30	NO
Essex Powerlines Corporation	-24.8%	0.15	-29.0%	0.00	YES
Festival Hydro Inc.	1.4%	0.30	-1.4%	0.30	NO
Fort Frances Power Corporation	-9.8%	0.30	-11.7%	0.15	YES
GrandBridge Energy Inc.	-11.9%	0.15	-12.2%	0.15	NO

Table 4

Summary of Stretch Factor Assignments

	2019-2021		2020-2022		Change in Stretch Factor
	Benchmarking Performance	Stretch Factor	Benchmarking Performance	Stretch Factor	
Greater Sudbury Hydro Inc.	3.2%	0.30	0.2%	0.30	NO
Grimsby Power Incorporated	-34.9%	0.00	-37.2%	0.00	NO
Halton Hills Hydro Inc.	-33.3%	0.00	-35.6%	0.00	NO
Hearst Power Distribution Company Limited	-30.3%	0.00	-32.0%	0.00	NO
Hydro 2000 Inc.	-19.0%	0.15	-16.5%	0.15	NO
Hydro Hawkesbury Inc.	-67.0%	0.00	-67.6%	0.00	NO
Hydro One Networks Inc.	17.5%	0.45	18.5%	0.45	NO
Hydro Ottawa Limited	19.9%	0.45	20.8%	0.45	NO
Innpower Corporation	-5.8%	0.30	-6.1%	0.30	NO
Kingston Hydro Corporation	-7.8%	0.30	-10.2%	0.15	YES
Lakefront Utilities Inc.	-26.2%	0.00	-28.4%	0.00	NO
Lakeland Power Distribution Ltd.	-16.9%	0.15	-17.7%	0.15	NO
London Hydro Inc.	-5.9%	0.30	-6.2%	0.30	NO
Milton Hydro Distribution Inc.	-23.1%	0.15	-26.2%	0.00	YES
Newmarket-Tay Power Distribution Ltd.	-14.4%	0.15	-17.0%	0.15	NO
Niagara Peninsula Energy Inc.	-3.2%	0.30	-7.0%	0.30	NO
Niagara-on-the-Lake Hydro Inc.	-11.8%	0.15	-14.0%	0.15	NO
North Bay Hydro Distribution Limited	-1.3%	0.30	-3.1%	0.30	NO
Northern Ontario Wires Inc.	-42.0%	0.00	-44.3%	0.00	NO
Oakville Hydro Electricity Distribution Inc.	-3.3%	0.30	-5.6%	0.30	NO

Table 4

Summary of Stretch Factor Assignments

	2019-2021		2020-2022		Change in Stretch Factor
	Benchmarking Performance	Stretch Factor	Benchmarking Performance	Stretch Factor	
Orangeville Hydro Limited	-26.3%	0.00	-28.9%	0.00	NO
Oshawa PUC Networks Inc.	-15.1%	0.15	-17.4%	0.15	NO
Ottawa River Power Corporation	-24.0%	0.15	-26.2%	0.00	YES
PUC Distribution Inc.	2.8%	0.30	0.0%	0.30	NO
Renfrew Hydro Inc.	-1.5%	0.30	-4.7%	0.30	NO
Rideau St. Lawrence Distribution Inc.	-14.0%	0.15	-14.0%	0.15	NO
Sioux Lookout Hydro Inc.	-26.6%	0.00	-34.3%	0.00	NO
Synergy North Corporation	2.0%	0.30	1.6%	0.30	NO
Tillsonburg Hydro Inc.	-3.9%	0.30	-10.2%	0.15	YES
Toronto Hydro-Electric System Limited	53.0%	0.60	52.9%	0.60	NO
Wasaga Distribution Inc.	-48.7%	0.00	-49.7%	0.00	NO
Welland Hydro-Electric System Corp.	-29.5%	0.00	-32.9%	0.00	NO
Wellington North Power Inc.	1.9%	0.30	-3.6%	0.30	NO
Westario Power Inc.	-9.7%	0.30	-9.2%	0.30	NO

Table 5

Stretch Factor Assignments by Group

Group I (16 Distributors)		Group II (14 Distributors)		Group III (19 Distributors)		Group IV (3 Distributors)	Group V (2 Distributors)
Stretch Factor = 0%		Stretch Factor = 0.15%		Stretch Factor = 0.30%		Stretch Factor = 0.45%	Stretch Factor = 0.60%
Cooperative Hydro Embrun Inc.	Lakefront Utilities Inc.	Burlington Hydro Inc.	Kingston Hydro Corporation	Alectra Utilities Corporation	London Hydro Inc.	Canadian Niagara Power Inc.	Algoma Power Inc.
E.L.K. Energy Inc.	Milton Hydro Distribution Inc.	Centre Wellington Hydro Ltd.	Lakeland Power Distribution Ltd.	Atikokan Hydro Inc.	Niagara Peninsula Energy Inc.	Hydro One Networks Inc.	Toronto Hydro-Electric System Limited
Entegrus Powerlines Inc.	Northern Ontario Wires Inc.	ENWIN Utilities Ltd.	Newmarket-Tay Power Distribution Ltd.	Bluewater Power Distribution Corporation	North Bay Hydro Distribution Limited	Hydro Ottawa Limited	
Essex Powerlines Corporation	Orangeville Hydro Limited	EPCOR Electricity Distribution Ontario Inc.	Niagara-on-the-Lake Hydro Inc.	Chapleau Public Utilities Corporation	Oakville Hydro Electricity Distribution Inc.		
Grimsby Power Incorporated	Ottawa River Power Corporation	Fort Frances Power Corporation	Oshawa PUC Networks Inc.	Elexicon Energy Inc.	PUC Distribution Inc.		
Halton Hills Hydro Inc.	Sioux Lookout Hydro Inc.	GrandBridge Energy Inc.	Rideau St. Lawrence Distribution Inc.	Enova Power Corp.	Renfrew Hydro Inc.		
Hearst Power Distribution Company Limited	Wasaga Distribution Inc.	Hydro 2000 Inc.	Tillsonburg Hydro Inc.	ERTH Power Corporation	Synergy North Corporation		
Hydro Hawkesbury Inc.	Welland Hydro-Electric System Corp.			Festival Hydro Inc.	Wellington North Power Inc.		
				Greater Sudbury Hydro Inc.	Westario Power Inc.		
				Innpower Corporation			

