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Report for

Ontario Energy Board

Third Generation Incentive Regulation Stretch Factor Updates for 2012 (EB-2011-0387)

December 1, 2011

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Table of Contents

Tables

Figures

Executive Summary

In November 2009, the Ontario Energy Board ("OEB") selected Power System Engineering, Inc. ("PSE") to provide cost performance evaluations of power distributors in the province of Ontario. PSE used statistical benchmarking methods to evaluate and compare the spending efficiency levels of these power distributors in three areas: distribution operations, distribution maintenance, and distribution administration, collectively known as "distribution OM&A." The total spending level in these three areas is measured by evaluating data supplied to the OEB by each power distributor.

PSE provided the 2010 rate year benchmarking results in the report "Third Generation Incentive Regulation Stretch Factor Updates for 2010" dated February 17, 2010 and provided 2011 benchmarking results in the report "Third Generation Incentive Regulation Stretch Factor Updates for 2011" dated March 7, 2011.[1] This report (the "2012 Report," or the "Report") provides a benchmarking update for the 2012 rate year.

The 2012 Report presents the results of PSE's most recent Ontario benchmarking study, which identifies the 2012 rate year efficiency cohort groupings. The Report also describes the methodology used to identify the cohorts. These efficiency cohort groupings are used in the calibration of the Third Generation Incentive Regulation stretch factors for Ontario's power distribution industry.

The 2012 updated study results are the product of incorporating new 2010 data and industry amalgamations into a pre-established benchmarking paradigm. The methodologies employed in the 2012 benchmarking study, described in Section 2 of this Report, are exactly the same as those employed in the previous updates, and are founded on methods developed in preceding consultations on the topic.[2] Similarly, the method of determining efficiency cohort groupings is the same method that was used in the previous reports. This method is described in the July 14, 2008 Report of the Board on Third Generation Incentive Regulation for Ontario's Electricity Distributors, pp. 21-23.[3] It is also summarized in Section 3 of this Report.

Based on the benchmarking results, PSE divides the Ontario local distribution companies ("Distributors") into three efficiency cohorts. Two separate benchmarking analyses are performed on the distribution OM&A data for the Distributors—an econometric benchmarking study and a cost index benchmarking study. For each benchmarking study, the Distributors are grouped into top performers, bottom performers, and middle performers.

The 2012 efficiency cohorts are summarized below. There are twelve members in cohort one, fifty-five members in cohort two, and ten members in cohort three. Table 8, found in Section 3, displays the full list of companies with their corresponding cohort grouping. The methods by

[1] http://www.oeb.gov.on.ca/OEB/_Documents/EB-2009-0392/Report_2010_Stretch_Factor_Updates.pdf

and http://www.ontarioenergyboard.ca/OEB/_Documents/Documents/Report_2011_Stretch_Factor_Updates.pdf

[2] http://www.oeb.gov.on.ca/documents/cases/EB-2006-0268/PEG_Final_Benchmarking_Report_20080320.pdf

[3] http://www.oeb.gov.on.ca/OEB/_Documents/EB-2007-0673/Report_of_the_Board_3rd_Generation_20080715.pdf

which the cohorts are determined are described briefly below Figure 1, and in more detail in Sections 1 and 2 of this Report.

Figure 1: Cohort Members

Cohort 1

- Chatham-Kent Hydro Inc.
- Festival Hydro Inc.
- Grimsby Power Incorporated
- Hydro 2000 Inc.
- Hydro Hawkesbury Inc.
- Hydro One Brampton Networks Inc.
- Kitchener-Wilmot Hydro Inc.
- Lakefront Utilities Inc.
- Middlesex Power Distribution Corporation
- Northern Ontario Wires Inc.
- Renfrew Hydro Inc.
- Waterloo North Hydro Inc.

Cohort 2

- All Distributors not in Cohort 1 or 3

Cohort 3

- Algoma Power Inc.
- Brant County Power Inc.
- Centre Wellington Hydro Ltd.
- COLLUS Power Corp.
- EnWin Utilities Ltd.
- Erie Thames Powerlines Corporation
- Port Colborne (CNP)
- Toronto Hydro-Electric System Limited
- Wellington North Power Inc.
- West Perth Power Inc.

The overall cohort into which a particular Distributor falls is based on the results of the two benchmarking studies for that Distributor. The first cohort comprises Distributors that have been

identified as top performers by both benchmarking methods. Distributors located in the third cohort group have been designated as bottom performers by both methods. All other Distributors are placed in the middle cohort.[4]

The remainder of this report provides a narrative of the two benchmarking methodologies and displays the research results. Following the Introduction, Section 2 offers a summary of the two benchmarking approaches used in designating efficiency cohort groupings. Section 2 also reveals the results for each benchmarking technique. Section 3 uses the results from the two benchmarking approaches to sort the Distributors into three efficiency cohort groupings.

[4] Hydro One Networks Inc. is automatically placed in Cohort 2 due to the unavailability of a proper peer group for the company.

1 Introduction

This report presents the methodologies and results of a benchmarking study that identifies the 2012 rate year efficiency cohort groupings for Ontario's power distribution industry. This study will be used to determine the Third Generation Incentive Regulation stretch factors for the 2012 rate year. The study results divide the Ontario industry into three efficiency cohorts, which are based on the results of two distinct benchmarking methods (econometric and unit cost index).

As a result of this study, each Ontario local Distributor will be assigned a productivity stretch factor for the 2012 rate year commensurate with their efficiency cohort group. The assigned stretch factor will be the same for all firms in a given cohort but will differ between cohorts. Those Distributors designated in Cohort 1, Cohort 2, and Cohort 3 will be assigned a stretch factor of 0.2%, 0.4%, 0.6%, respectively. A full list of cohort groupings can be found in Section 3, Table 8 of this report.

Under incentive regulation, the allowed rate of change in the price of electricity distribution rates is generally restricted by the growth in an inflation factor minus a productivity offset and a stretch factor. A lower stretch factor allows a utility to raise its rates at an amount closer to the rate of inflation. Top performers, thus, are rewarded relative to middle and bottom performers with a lower stretch factor.

PSE staff has extensive experience in utility performance benchmarking. Mr. Fenrick, the lead author of this Report, heads PSE's regulatory and internal management improvement benchmarking practice. He has authored numerous reports evaluating the cost and reliability levels of electric utilities, and has also testified on these subjects. He has presented company-specific results to utility managers, assisting them in measuring and improving the performance levels and productivity trends of their utilities.[5] Utilities have used PSE's benchmarking research to formulate strategic plans, present results to their Board of Directors, inform compensation mechanisms, and set performance goals.

PSE's performance evaluation studies have included examinations of power distribution reliability, productivity trends, OM&A costs, total costs, and more detailed expenses.[6] Our benchmarking team includes professionals in the areas of economics, smart grid technologies, and professional engineers. These studies have been sponsored by utilities, regulatory commissions, and consumer advocates.

The OEB incentive regulation stretch factor calculation process is similar to the benchmarking improvement progression PSE employs with its utility benchmarking clients. Data inputs are

[5] Increasing a utility's productivity will lower future rate increases and provide better value for customers. Management should strive to increase the productivity trends of their utilities to the extent possible, assuming optimal reliability levels, customer service, and long-term sustainability are preserved. Measuring productivity is essential to a full understanding of the impacts of past strategic decisions and informing current ones.

[6] With Distributor trial balance data no longer confidential, utility management should be able to better leverage this detailed data to derive least-cost strategies to increase utility cost performance. It should be noted, however, that only trial balance data from 2010 is available; trial balance data from 2002 to 2009 is still confidential.

gathered from the Distributors operating in Ontario, statistical benchmarking models and peer groups are created, and a report is generated from the results, leading to the designation of stretch factors reflective of the Distributors' performances.

It is important to note that Distributors are not locked into a particular cohort designation for the life of the Third Generation Incentive Regulation plan. They have an opportunity to improve cost performance annually and have this improvement reflected in updated benchmarking results and resultant stretch factors. A number of Distributors have shifted cohort groups over the last few years.

As previously indicated, both econometric and unit cost index benchmarking methods were applied to the Distributors' distribution costs. The **econometric method** uses regression analysis to fashion expected costs ("benchmark costs") after accounting for the external circumstances that vary with each Distributor. Performance is then measured by calculating the ratio of a Distributor's actual cost to the overall benchmark cost. Statistical significance is assessed to determine statistically superior and inferior cost performers.

The **unit cost indexing method** separates the Ontario Distributors into twelve peer groups based on characteristics found to be significant cost drivers in the econometric research. Examples of these characteristics include the relative sizes of the Distributors, the percentage of the Distributors' lines that are underground, and whether the Distributors are situated on the Canadian Shield.[7] A unit cost metric is then calculated for each Distributor by dividing OM&A cost by a comprehensive output index. The unit cost for each Distributor is compared to the mean of its respective peer group to determine the OM&A cost performance of each company. Based on this comparison, top and bottom quartile cost performers are identified.

Cohort groupings are directly determined by the two benchmarking results. To be in efficiency Cohort 1, a Distributor is required to attain:

- a statistically superior econometric benchmark, **and**
- a top quartile result in the unit cost index benchmarking study.

Similarly, efficiency Cohort 3 members are those utilities that are deemed statistically inferior by the econometric approach, and are in the bottom quartile of the indexing results. All remaining utilities are placed in Cohort 2.

[7] The Canadian Shield is a shield of Precambrian igneous rock that affects the cost of providing electricity service. (A "shield" is basically a large plate of mostly solid and continuous rock that is close to the earth's surface.)

2 Research Methodologies and Results

This section provides an overview of performance benchmarking, the data sample, definition of OM&A cost, and descriptions of the econometric and unit cost benchmarking methods, procedures, and results.

2.1 Overview of Benchmarking

Economic benchmarking studies allow regulators to objectively compare performance across utilities and jurisdictions.[8] Regulators can use benchmarking when assessing electric reliability, determining appropriate cost or salary levels, and in the escalation provisions of multi-year rate or revenue caps. Utility managers can use general performance benchmarking to determine their utility's overall performance compared to their peers within the industry. Specific benchmarking studies allow utilities to pinpoint areas where cost-effective improvements can be made and develop business cases for specific technologies.

Performance cost benchmarking enables a comparison between a utility's actual costs to a customized expectation of those costs. Relatively good cost performers will have actual costs below the expected amounts, whereas poor performers will have actual costs above the expected amounts.

$$Performance = \frac{Costs^{Actual}}{Costs^{Expected}} \qquad \textbf{[Equation 1]}$$

Equation 1 shows performance to be a function of two terms. Actual costs are reported directly from the utility, whereas expected costs must be estimated. If the performance is less than one, the Distributor is a better performer than predicted. Recall that the predicted value for a given utility is based on the particular circumstances for that utility—for example, if a Distributor is on the Canadian Shield, its OM&A costs will tend to be higher, and so its expected costs will be higher.

The research challenge is to calculate expected costs in a fair and accurate way, accounting for the specific advantages and disadvantages inherent in the operating circumstances of each utility. This last point is crucial. For benchmarking to accurately evaluate cost management performance, the relevant external operating conditions encountered by each utility must be adjusted for the differences among sample members. For econometric benchmarking, these differences are adjusted for through the use of regression analysis. In unit cost index benchmarking, external operating conditions are controlled by stratifying the utilities into separate peer groups.

[8] The term "benchmarking" originates with the practice of cobblers, who would draw an outline of a foot on a board or bench, so that they could compare the shoe they were making to the desired foot size.

2.2 Ontario Data Sample

For the 2012 update, the study includes 77 utilities, which are listed in Table 1. This sample size is the same as the 2011 update and smaller than the 2010 update. The reduction in number from 2010 is due to mergers of industry members. In such cases, data for the individual companies have been combined to form one successor firm. The individual merged companies cease to be included in the benchmarking analysis.

The sample period for the 2012 update is 2002-2010. This nine-year period allows a large sample to be developed, which increases the precision of the parameter estimates in the econometric model.

Table 1: Ontario Power Distributors Included in this Report

List of Ontario Power Distributors

Algoma Power Inc.
Atikokan Hydro Inc.
Bluewater Power Distribution Corporation
Brant County Power Inc.
Brantford Power Inc.
Burlington Hydro Inc.
Cambridge and North Dumfries Hydro Inc.
Centre Wellington Hydro Ltd.
Chapleau Public Utilities Corporation
Chatham-Kent Hydro Inc.
Clinton Power Corporation
COLLUS Power Corp.
Cooperative Hydro Embrun Inc.
E.L.K. Energy Inc.
Enersource Hydro Mississauga Inc.
EnWin Utilities Ltd.
Erie Thames Powerlines Corporation
Espanola Regional Hydro Distribution Corporation
Essex Powerlines Corporation
Festival Hydro Inc.
Fort Erie - Eastern Ontario Power (CNP)
Fort Frances Power Corporation
Greater Sudbury Hydro Inc.
Grimsby Power Incorporated
Guelph Hydro Electric Systems Inc.
Haldimand County Hydro Inc.
Halton Hills Hydro Inc.
Hearst Power Distribution Company Limited
Horizon Utilities Corporation
Hydro 2000 Inc.
Hydro Hawkesbury Inc.
Hydro One Brampton Networks Inc.
Hydro One Networks Inc.
Hydro Ottawa Limited
Innisfil Hydro Distribution Systems Limited
Kenora Hydro Electric Corporation Ltd.
Kingston Hydro Corporation
Kitchener-Wilmot Hydro Inc.
Lakefront Utilities Inc.
Lakeland Power Distribution Ltd.
London Hydro Inc.
Middlesex Power Distribution Corporation
Midland Power Utility Corporation
Milton Hydro Distribution Inc.
Newmarket - Tay Power Distribution Ltd.
Niagara Peninsula Energy Inc.
Niagara-on-the-Lake Hydro Inc.
Norfolk Power Distribution Inc.
North Bay Hydro Distribution Limited
Northern Ontario Wires Inc.
Oakville Hydro Electricity Distribution Inc.
Orangeville Hydro Limited
Orillia Power Distribution Corporation
Oshawa PUC Networks Inc.
Ottawa River Power Corporation
Parry Sound Power Corporation
Peterborough Distribution Incorporated
Port Colborne (CNP)
PowerStream Inc.
PUC Distribution Inc.
Renfrew Hydro Inc.
Rideau St. Lawrence Distribution Inc.
Sioux Lookout Hydro Inc.
St. Thomas Energy Inc.
Thunder Bay Hydro Electricity Distribution Inc.
Tillsonburg Hydro Inc.
Toronto Hydro-Electric System Limited
Veridian Connections Inc.
Wasaga Distribution Inc.
Waterloo North Hydro Inc.
Welland Hydro-Electric System Corp.
Wellington North Power Inc.
West Coast Huron Energy Inc.
West Perth Power Inc.
Westario Power Inc.
Whitby Hydro Electric Corporation
Woodstock Hydro Services Inc.

2.3 Definition of Cost

The costs examined in this report are defined as total distribution OM&A expenses. This data was provided to PSE by the Ontario Energy Board. The data source was built from information submitted by each utility via the OEB Reporting and Record-keeping Requirements ("RRR").[9]

2.4 Econometric Benchmarking Methods and Results

This section begins with a brief overview, in general terms, of the econometric benchmarking approach. It is followed by the benchmarking results.

2.4.1 Econometric Benchmarking 101

The econometric approach to benchmarking allows the researcher to fashion an appropriate target (or benchmark) for an examined metric. Econometric benchmarking predicts costs which are customized for the specific operating conditions encountered by each utility. This prediction is interpreted as the expected costs of a utility with identical characteristics, and "average" relative performance.

The established benchmark cost can be compared to a company's actual cost, to determine performance, as shown in Equation 2 below.

$$Performanœ = \frac{OM\ \&\ A\ Cost^{Actual}}{OM\ \&\ A\ Cost^{\text{Model Prediction}}} \qquad \textbf{[Equation 2]}$$

The model prediction of the cost level is attained by choosing a functional form, based on theory, and using regression analysis to estimate the parameters embedded within this functional form. This approach not only allows for simultaneous consideration of multiple cost drivers, but also permits statistical testing of these variables and estimation of their respective impact on cost. A *simplified* illustrative functional form is offered below.

$$Expected\ Cost = a + b * No.of\ Customers + c * Percent\ undergrounding \qquad \textbf{[Equation 3]}$$

If the researcher postulates that OM&A costs are only linearly influenced by the number of customers and the percent of lines underground, Equation 3 would be the functional form. The coefficient "*a*" is the intercept term; its interpretation is that it costs money to be in business even if output is zero. The coefficient "*b*" signifies the cost of adding an additional customer, and the coefficient "*c*" shows the cost of increasing the percentage of undergrounded lines.

The researcher would then collect a data sample and use regression analysis to estimate the values of these model parameters. The signs[10] of the estimates would need to conform to theory, and hypothesis testing would be conducted to assure the researcher that these variables are

[9] http://www.oeb.gov.on.ca/OEB/Industry/Media+Room/Publications/RRR+Reports/Yearbook+of+Distributors

[10] In our example, a positive sign for *b* would indicate that as the number of customers goes up, the expected total cost also goes up. A negative sign would indicate that as that value rises, the expected total cost decreases. The coefficient on the number of customers would always have a positive sign, but those for other variables (e.g. "percentage of line undergrounded") might have negative signs. See Figure 2.

indeed statistically significant cost drivers. The values of *a*, *b*, and *c* serve as "weights" to determine the magnitude of the impact of each variable on expected cost.

Equation 3, although simplified, shows the advantage of the econometric benchmarking approach because it permits the simultaneous consideration of multiple variables. The researcher can test the significance of hypothetical cost drivers and incorporate them into the analysis. The econometric approach can also be used to better inform peer group selection.

The graph below depicts the impact of undergrounding on O&M cost.[11] The x-axis is a measure of the amount of undergrounding; the y-axis is cost per customer. This figure reveals the relationship between undergrounding and distribution O&M expenses. As undergrounding increases, cost per customer tends to decline. The econometric method is able to capture this tendency and incorporate it in the expected cost value of each company.

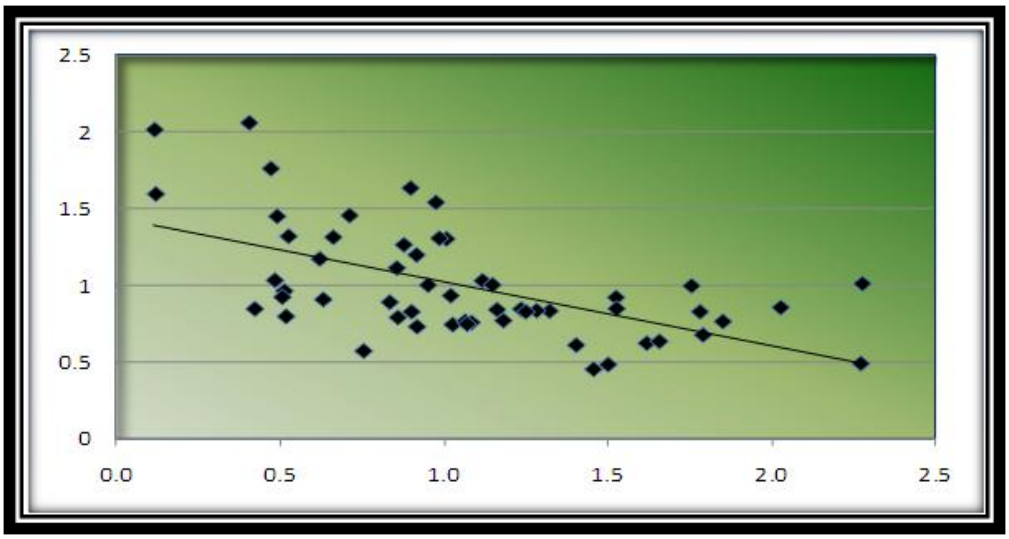

Figure 2: O&M Cost Impacts of Underground Lines

Estimation is enhanced by taking the natural log of each variable. This transforms the parameter estimates from marginal cost to cost elasticity estimates. Cost elasticity measures the *percentage* change in cost relative to a *percentage* change in the cost driver. For example, with this transformation, the interpretation of *b* in Equation 3 is: if the number of customers increases by 10 percent, then cost is predicted to increase by *b* times 10 percent. If *b* equals 0.5, then a 10 percent increase in customers is estimated to increase cost by 5 percent.

Econometric benchmarking is further advanced by the inclusion of additional relevant variables. Each explanatory variable allows for an explicit adjustment of the differing circumstances found within the sampled utilities.

[11] This graph is based on undergrounding and operation and maintenance expenses of U.S. investor-owned power distributors. Recent research by PSE has quantified the impact of underground lines on both cost and reliability levels.

For example, in the econometric model estimated for this report, seven distinct variables are used to formulate the estimated benchmark OM&A level. These factors reflect business or service territory conditions and are shown in Figure 3.

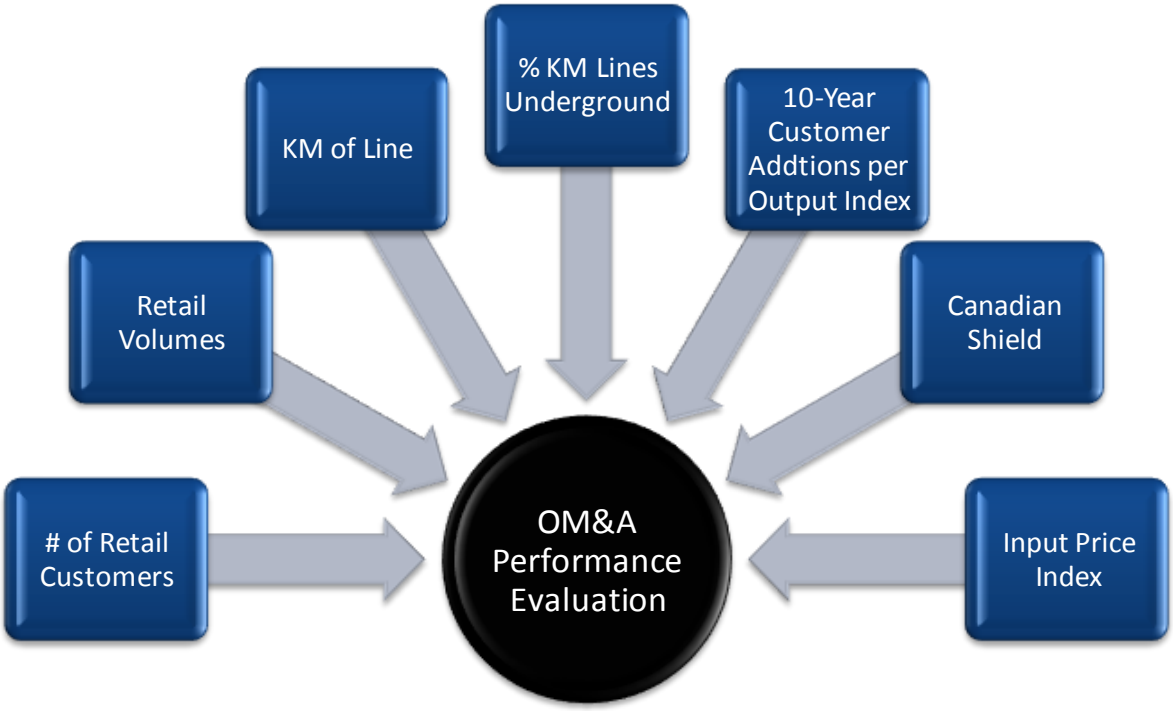

Figure 3: Variables Used to Estimate OM&A Level

After the variables are chosen, industry data is collected. The econometric approach enables a large sample, since utilities with vastly differing operating conditions can be integrated into the analysis. As the econometric method adjusts for numerous conditions, a sample with varied operating conditions actually enhances the evaluation. This contrasts with the unit cost indexing approach, which requires utilities with similar characteristics, so that peer groups can be created. For example, Hydro One Networks in Ontario lacks a suitable comparison group needed to perform benchmarking using the unit cost indexing method. However, Hydro One Networks can be included in the econometric benchmarking study, because that approach can accommodate dissimilar utilities within the analysis.

2.4.2 Methods Used in this Report

The exact methods used in this report are detailed in previous reports. The methods are reiterated in this section in a compressed format.[12] This section discusses items such as the functional form of the OM&A econometric model, included variables, estimation procedures, and 2012 rate year parameter estimates.

[12] For more detail on the benchmarking approaches please see: http://www.oeb.gov.on.ca/documents/cases/EB-2006-0268/PEG_Final_Benchmarking_Report_20080320.pdf

2.4.2.1 Functional Form

The functional form used in this report is identical to that used in last year's update. It is a "quadratic" functional form, which has the following general formula:

$$\ln C = \alpha_o + \sum_i \alpha_i \ln Y_i + \sum_j \alpha_j \ln W_j + \sum_\ell \alpha_\ell \ln Z_\ell + \alpha_t T + \frac{1}{2}\left[\sum_i \gamma_i \ln Y_i \ln Y_i + \sum_j \gamma_j \ln W_j \ln W_j\right] + \varepsilon. \qquad \textbf{[Equation 4]}$$

Here, Y_i denotes one of several variables that quantify output and W_j denotes the input price. The *Z*-variables denote the additional business conditions, *T* is a trend variable, and ε denotes the error term. The $\alpha's$ and $\gamma's$ represent the econometric model parameter. In this model they are elasticities that capture the impact of each variable on OM&A costs, in percent terms.

2.4.2.2 Included Variables

There are seven explanatory variables included in the OM&A econometric model. These variables can be separated into three categories. The first category is an **output category** which quantifies the amount of output put forth by each Distributor. Explanatory variables in the output category are:

- the number of customers,
- total volumes (kilowatt hours), and
- total kilometers of line.

The second category consists of an **input price index**, which is an external measure of the composite market price of procuring inputs. This input price encapsulates both service area-specific labour and non-labour price estimations. The weighting for the input price index was, on average, a fifty percent weight on a customized estimate of labour price specific to each Distributor, and a fifty percent weight on the non-labour price input price.[13] The non-labour input price is based on the gross domestic product implicit price index ("GDP-IPI") of Ontario.[14] Thus, the non-labour price does not vary by Distributor, but by year. In contrast, the labour price component of the input price index varies by Distributor and by year.

The labour price for each Distributor is calculated by averaging employment income, by level of educational attainment, in various Ontario cities. This data was gathered from the 2001 census. A mapping of Distributors to the cities used in the analysis formed the basis for the labour price assignment. Labour price values are then escalated for years subsequent to 2001 by adjusting the index for labour cost trends in Ontario.

[13] Prior to 2010, labor cost data was confidential. This necessitated the 50/50 weighting within the input price index.

[14] The Ontario GDP-IPI for 2010 was not available at the time this research was conducted. This report therefore used the Canadian GDP-IPI FDD for 2010 instead. These indexes historically have grown at similar growth rates.

The third category of explanatory variables is the **business condition category**, also known as Z-variables. This category consists of:

- the percent of distribution lines underground,
- ten year customer growth divided by an output index,[15] and
- a binary variable reflecting whether most or all of the service territory of the utility is on the Canadian Shield.

The percentage of distribution lines underground is calculated by dividing the reported amount of underground kilometers of line by the total reported kilometers of line. As previously discussed, a higher prevalence of underground lines tends to reduce OM&A unit costs. Thus, the parameter estimate in the econometric model is expected to have a negative sign.

$$\%\ Underground = \frac{KM\ of\ line\ underground}{Total\ KM\ of\ line} \qquad \textbf{[Equation 5]}$$

The second business condition variable is the ten-year customer growth variable. OEB provided data on the number of customers served by each Distributor (or predecessor utilities) in 1992 and 1997. The number of customers in each year was then estimated based on the 1992, 1997, and the sample data of 2002 through 2010.

The higher the value of the ten-year customer growth variable, the more recent customer additions. This also means that the higher this variable is, the younger the distribution system is (because distribution lines are being built to serve the new customers). Thus this variable also serves as a proxy for the age of the distribution system. We expect OM&A expenses to be lower for a younger system, so the parameter estimate for this variable is hypothesized to be negative. The variable is calculated by taking the current year's number of customers and subtracting the number of customers ten years ago. This difference is then divided by a measure of the size of the utility inclusive of number of customers, volumes, and kilometers of line. This allows us to normalize or scale the ten year customer growth based on the size of each Distributor.

$$Ten\ Year\ Customer\ Growth = \frac{N_t - N_{t-10}}{Output\ Index} \qquad \textbf{[Equation 6]}$$

The third business condition variable, a binary variable, indicates whether most or all of the Distributor's service territory is located on the Canadian Shield. If the Distributor is determined to be on the Canadian Shield, it receives a value of "1", likewise, if it is not on the Shield it receives a value of "0" in the econometric dataset. This variable is developed using a map from an authoritative text on Ontario's geography.[16] The Canadian Shield is a physiographic region characterized by shallow, rocky soils and numerous lakes. The land is unsuited for agriculture and is typically forested. We would expect OM&A costs to be higher for Distributors located on the Shield. Correspondingly, the estimated model coefficient value should have a positive sign.

[15] Customer information derived from the prior regulator is assembled to calculate ten year customer growth numbers, which allowed the construction of this variable.

[16] L.J. Chapman and D.F. Putnam, "The Physiography of Southern Ontario," Toronto: University of Toronto Press, 1996.

The latest year of available values of the included model variables for each utility are presented in Table 2. This table presents the actual reported data by each company through the latest available year. Please note that OM&A costs are reported in thousands of dollars.

Table 2: Size and Scope of Included Variables[17]

Size and Scope of Variables Used in Econometric Research by LDC

LDC	OM&A Cost ('000)	Customers	Total Volume (MWh)	Kilometers of Line	Input Price Index	Percent Lines Underground	Canadian Shield	Customer Growth/ Output Index
Algoma Power Inc.	8,688	11,612	181,305	1,848	1.109	0.2%	Yes	254
Atikokan Hydro Inc.	1,000	1,663	22,578	92	1.177	0.5%	Yes	-1,711
Bluewater Power Distribution Corporation	10,402	35,688	1,042,583	752	1.275	23.7%	No	668
Brant County Power Inc.	3,999	9,667	277,058	320	1.195	11.9%	No	2,164
Brantford Power Inc.	7,519	37,654	920,628	508	1.195	47.6%	No	2,084
Burlington Hydro Inc.	14,024	64,329	1,646,384	1,727	1.343	48.7%	No	2,836
Cambridge and North Dumfries Hydro Inc.	9,581	50,890	1,472,569	1,111	1.305	36.3%	No	2,632
Centre Wellington Hydro Ltd.	1,758	6,463	148,965	147	1.256	46.9%	No	2,996
Chapleau Public Utilities Corporation	549	1,306	26,168	27	1.193	3.7%	Yes	-1,718
Chatham-Kent Hydro Inc.	6,632	32,033	720,716	883	1.218	32.2%	No	240
Clinton Power Corporation	559	1,639	29,771	21	1.225	19.0%	No	365
COLLUS Power Corp.	3,988	15,533	313,058	339	1.137	37.8%	No	3,320
Cooperative Hydro Embrun Inc.	467	1,958	29,136	27	1.387	44.4%	No	6,443
E.L.K. Energy Inc.	2,072	11,205	238,626	149	1.431	40.3%	No	2,347
Enersource Hydro Mississauga Inc.	45,021	192,960	7,708,675	5,167	1.398	65.0%	No	2,409
EnWin Utilities Ltd.	22,195	84,866	2,585,491	1,179	1.431	39.5%	No	1,118
Erie Thames Powerlines Corporation	4,367	14,373	417,666	270	1.225	21.5%	No	1,355
Espanola Regional Hydro Distribution Corporation	1,047	3,300	61,011	137	1.193	8.0%	Yes	209
Essex Powerlines Corporation	5,535	28,183	562,667	476	1.431	54.4%	No	2,074
Festival Hydro Inc.	3,915	19,579	572,327	277	1.197	33.2%	No	1,481
Fort Erie - Eastern Ontario Power (CNP)	5,516	19,196	341,203	704	1.179	7.8%	No	1,029
Fort Frances Power Corporation	1,315	3,777	79,740	84	1.177	9.5%	Yes	15
Greater Sudbury Hydro Inc.	7,588	46,710	930,393	944	1.193	22.6%	Yes	249
Grimsby Power Incorporated	1,806	10,151	179,606	241	1.343	28.2%	No	3,323
Guelph Hydro Electric Systems Inc.	9,914	50,250	1,626,356	1,065	1.256	59.9%	No	3,232
Haldimand County Hydro Inc.	6,774	20,971	457,442	1,723	1.195	5.2%	No	707
Halton Hills Hydro Inc.	4,509	20,790	490,643	1,404	1.371	38.8%	No	2,279
Hearst Power Distribution Company Limited	804	2,734	73,848	68	1.193	16.2%	Yes	-9
Horizon Utilities Corporation	40,611	234,464	5,696,035	3,415	1.343	54.8%	No	1,113
Hydro 2000 Inc.	296	1,196	23,153	21	1.087	14.3%	No	1,456
Hydro Hawkesbury Inc.	861	5,496	152,091	66	1.087	15.2%	No	1,760
Hydro One Brampton Networks Inc.	18,726	134,228	3,777,081	2,823	1.398	71.4%	No	5,579
Hydro One Networks Inc.	547,947	1,203,030	23,408,001	120,921	1.323	3.5%	Yes	1,018
Hydro Ottawa Limited	55,336	300,664	7,594,977	5,414	1.387	50.3%	No	2,720
Innisfil Hydro Distribution Systems Limited	3,882	14,707	231,788	753	1.312	18.6%	No	2,040
Kenora Hydro Electric Corporation Ltd.	1,704	5,580	105,584	98	1.252	10.2%	Yes	-826
Kingston Hydro Corporation	5,981	26,944	715,855	361	1.136	35.5%	No	263
Kitchener-Wilmot Hydro Inc.	12,761	86,611	1,829,523	1,866	1.305	44.2%	No	3,086
Lakefront Utilities Inc.	2,094	9,571	247,158	115	1.201	17.4%	No	2,695
Lakeland Power Distribution Ltd.	3,117	9,439	203,653	355	1.212	18.9%	Yes	1,204
London Hydro Inc.	29,866	146,974	3,376,719	2,774	1.225	50.8%	No	2,211
Middlesex Power Distribution Corporation	1,701	7,859	211,490	125	1.218	20.8%	No	1,687
Midland Power Utility Corporation	1,878	6,914	207,342	149	1.117	25.5%	No	1,926
Milton Hydro Distribution Inc.	5,616	29,142	728,497	938	1.343	38.6%	No	8,042
Newmarket - Tay Power Distribution Ltd.	6,861	32,911	687,145	1,071	1.355	45.0%	No	2,936
Niagara Peninsula Energy Inc.	13,722	51,048	1,193,712	1,950	1.179	24.6%	No	2,320
Niagara-on-the-Lake Hydro Inc.	1,759	7,882	178,009	342	1.179	29.5%	No	2,328
Norfolk Power Distribution Inc.	4,880	18,940	368,751	768	1.195	14.1%	No	2,171
North Bay Hydro Distribution Limited	4,965	23,754	566,702	611	1.112	15.9%	Yes	396
Northern Ontario Wires Inc.	2,043	6,026	123,365	370	1.237	1.4%	Yes	-836
Oakville Hydro Electricity Distribution Inc.	11,209	62,674	1,535,802	1,439	1.371	61.6%	No	4,020
Orangeville Hydro Limited	2,576	11,256	247,978	176	1.355	41.5%	No	2,487
Orillia Power Distribution Corporation	4,204	12,862	309,111	313	1.312	20.8%	No	1,180
Oshawa PUC Networks Inc.	9,052	52,710	1,090,938	955	1.398	41.2%	No	2,240

[17] Values reflect the latest year of available data for each Distributor. For most companies, this is 2010.

Continued

Size and Scope of Variables Used in Econometric Research by LDC

LDC	OM&A Cost ('000)	Customers	Total Volume (MWh)	Kilometers of Line	Input Price Index	Percent Lines Underground	Canadian Shield	Customer Growth/ Output Index
Ottawa River Power Corporation	2,324	10,475	188,245	148	1.023	12.8%	Yes	1,130
Parry Sound Power Corporation	1,202	3,377	84,789	129	1.252	8.5%	Yes	690
Peterborough Distribution Incorporated	6,301	35,012	801,058	552	1.129	30.4%	No	1,462
Port Colborne (CNP)	3,557	9,169	191,475	315	1.179	5.4%	No	145
PowerStream Inc.	64,989	325,540	8,334,777	7,381	1.398	65.4%	No	4,048
PUC Distribution Inc.	8,378	32,870	683,758	733	1.109	16.0%	Yes	382
Renfrew Hydro Inc.	1,041	4,155	95,702	55	1.023	3.6%	No	653
Rideau St. Lawrence Distribution Inc.	1,665	5,818	107,840	94	1.183	10.6%	No	237
Sioux Lookout Hydro Inc.	1,157	2,754	70,416	211	1.177	2.8%	Yes	107
St. Thomas Energy Inc.	3,385	16,419	298,006	247	1.225	36.0%	No	2,938
Thunder Bay Hydro Electricity Distribution Inc.	12,132	49,508	942,525	1,178	1.177	19.9%	Yes	353
Tillsonburg Hydro Inc.	2,145	6,700	185,242	156	1.262	34.6%	No	1,707
Toronto Hydro-Electric System Limited	212,352	700,386	24,746,000	9,990	1.398	57.8%	No	938
Veridian Connections Inc.	20,481	112,569	2,543,042	2,301	1.405	44.6%	No	2,791
Wasaga Distribution Inc.	2,200	12,046	120,927	240	1.312	47.9%	No	6,191
Waterloo North Hydro Inc.	9,691	51,914	1,425,236	1,547	1.305	31.5%	No	2,754
Welland Hydro-Electric System Corp.	4,712	21,411	424,293	441	1.179	25.4%	No	563
Wellington North Power Inc.	1,245	3,613	96,062	76	1.191	13.2%	No	1,566
West Coast Huron Energy Inc.	1,293	3,770	139,239	65	1.305	20.0%	No	469
West Perth Power Inc.	949	2,049	59,974	36	1.197	30.6%	No	1,406
Westario Power Inc.	4,369	22,007	447,097	515	1.077	28.0%	No	1,584
Whitby Hydro Electric Corporation	8,558	39,669	864,572	1,051	1.405	52.5%	No	4,745
Woodstock Hydro Services Inc.	3,655	15,074	374,160	248	1.262	37.5%	No	1,926

2.4.2.3 Estimation Procedures

Econometric benchmarking performance results are calculated by taking three-year averages of the most recently available scores. For nearly all of the Ontario Distributors, this entails a 2008-2010 average.[18]

The software package used for the econometric modeling, GAUSS, is the same software package used in previous updates. The use of GAUSS allows for custom estimation procedures to be developed. In the case of this research, corrections for groupwise heteroskedasticity were developed. This allowed for more precision in coefficient estimates relative to an Ordinary Least Squares regression.

2.4.2.4 2012 Rate Year Parameter Estimates

Parameter estimates are provided in Table 3. All parameter estimates are correctly signed, and are plausible in magnitude. For example, we would expect the parameter for the number of customers to have a positive value, because OM&A costs rise when the number of consumers goes up. All first order variables are statistically different from zero, at a 95% confidence level.

The model PSE developed quantifies the relationship between OM&A cost and the included variables. As expected, as outputs (customers, volumes, kilometer of line) increase, so does predicted OM&A cost. Similarly, higher input prices result in higher expected OM&A costs, all

[18] Clinton Power Corporation lacks data for 2008. For modeling purposes 2008 values are determined as the average of 2007 and 2009 values.

else being equal. OM&A expenses tend to be higher the older a system is, and if the system is on the Canadian Shield. Expenses tend to decrease as the percent of underground lines increase.

The adjusted R^2 statistic is also reported in Table 3. This is a measure of the explanatory power of the model relative to the overall variation in sampled OM&A costs. A value of 1.0 indicates that all variation in OM&A expenses among Distributors is explained by the model, whereas a value of 0.0 indicates that none of the variation is explained. The R^2 value for the 2012 update is 0.981. The number of observations is calculated by multiplying nine years (2002-2010) by 77 utilities, resulting in 693 observations. Seven observations were either missing data or had implausible data values and so were discarded, leaving 686.

Table 3: Econometric Parameter Estimates

Econometric Model of OM&A Expenses

VARIABLE KEY

N= Number of Customers
V= Total Volumes
M= Total Kilometers of Line
W= Input Price Index
UN= Percent of Distribution Lines Underground
CG= 10 Year Customer Growth / Output Index
CS= Canadian Shield (binary)

EXPLANATORY VARIABLE	PARAMETER ESTIMATE	T-STATISTIC	EXPLANATORY VARIABLE	PARAMETER ESTIMATE	T-STATISTIC
N	0.511	15.18	**W**	0.454	5.56
NN	-0.091	-5.18	**WW**	-1.405	-2.56
V	0.332	10.60	**UN**	-0.120	-11.94
VV	0.080	5.39			
			CG	-0.064	-10.08
M	0.126	5.79			
MM	0.012	1.34	**CS**	0.014	2.62
MCS	0.004	1.81			
Constant	16.359	831.55			
Trend	0.021	7.68			

Other Results

Rbar-Squared	0.981
Sample Period	2002-2010
Number of Observations	686

2.4.3 Econometric Benchmarking Results

The OM&A performance evaluations are presented in Table 4. The table shows the ratio of the average actual OM&A costs of each company in the last three years to the model's benchmark cost projections over the same years. In other words, it indicates how the company's **actual** costs compare to the **predicted** costs for a company with its characteristics.

Table 4 ranks the Distributors according to their ratios. A lower ratio of actual cost to predicted cost implies better performance. The results in Table 4 form the basis for deciding whether a Distributor is a superior performer (shown in green), an average performer, or an inferior performer (shown in red). The cut-off point for calling a Distributor superior or inferior is based on the "p-value" of each Distributor, which is a statistical measure of confidence regarding its rank on the cost performance continuum.

If a Distributor is a good cost performer with a p-value between 0 and 0.10, the hypothesis of average performance is rejected in favor of a statistically superior performer designation. Likewise, if a Distributor is a poor cost performer with a p-value between 0 and 0.10, the hypothesis of average performance is rejected in favor of a statistically inferior performer designation. Fifteen Distributors fit into the statistically superior classification while, seventeen fall under the statistically inferior classification.

As a reminder, this was just the first of two benchmarking studies performed on the Distributors. A Distributor must fall into the "superior" group in both benchmarking methods to be classified in Cohort 1. Similarly, a Distributor must fall into the "inferior" group in both benchmarking methods to be classified in Cohort 3. Section 2.5 describes the second benchmarking method: unit cost indexing.

Table 4: Econometric Benchmarking Results

Performance Rankings Based on Econometric Benchmarks

	Years Benchmarked	Actual/Predicted[1]	P-Value	Rank[1]
Hydro Hawkesbury Inc.	2008-2010	**0.600**	0.000	1
Northern Ontario Wires Inc.	2008-2010	**0.754**	0.006	2
Chatham-Kent Hydro Inc.	2008-2010	**0.777**	0.013	3
Hydro One Brampton Networks Inc.	2008-2010	**0.781**	0.014	4
Kitchener-Wilmot Hydro Inc.	2008-2010	**0.785**	0.016	5
Grimsby Power Incorporated	2008-2010	**0.786**	0.017	6
Waterloo North Hydro Inc.	2008-2010	**0.788**	0.017	7
Hydro 2000 Inc.	2008-2010	**0.799**	0.023	8
North Bay Hydro Distribution Limited	2008-2010	**0.820**	0.039	9
Middlesex Power Distribution Corporation	2008-2010	**0.825**	0.044	10
Renfrew Hydro Inc.	2008-2010	**0.829**	0.048	11
Cambridge and North Dumfries Hydro Inc.	2008-2010	**0.836**	0.056	12
Festival Hydro Inc.	2008-2010	**0.839**	0.060	13
Halton Hills Hydro Inc.	2008-2010	**0.857**	0.086	14
Lakefront Utilities Inc.	2008-2010	**0.865**	0.100	15
Oshawa PUC Networks Inc.	2008-2010	**0.868**	0.105	16
Greater Sudbury Hydro Inc.	2008-2010	**0.895**	0.162	17
Niagara-on-the-Lake Hydro Inc.	2008-2010	**0.903**	0.182	18
Oakville Hydro Electricity Distribution Inc.	2008-2010	**0.904**	0.186	19
Veridian Connections Inc.	2008-2010	**0.918**	0.223	20
Peterborough Distribution Incorporated	2008-2010	**0.918**	0.224	21
E.L.K. Energy Inc.	2008-2010	**0.923**	0.240	22
Horizon Utilities Corporation	2008-2010	**0.924**	0.241	23
Hearst Power Distribution Company Limited	2008-2010	**0.931**	0.264	24
Kingston Hydro Corporation	2008-2010	**0.937**	0.281	25
Newmarket - Tay Power Distribution Ltd.	2008-2010	**0.957**	0.349	26
Guelph Hydro Electric Systems Inc.	2008-2010	**0.959**	0.356	27
PUC Distribution Inc.	2008-2010	**0.960**	0.357	28
Milton Hydro Distribution Inc.	2008-2010	**0.963**	0.370	29
Welland Hydro-Electric System Corp.	2008-2010	**0.966**	0.380	30
Rideau St. Lawrence Distribution Inc.	2008-2010	**0.975**	0.413	31
Hydro Ottawa Limited	2008-2010	**0.977**	0.417	32
Essex Powerlines Corporation	2008-2010	**0.983**	0.440	33
Espanola Regional Hydro Distribution Corporation	2008-2010	**0.984**	0.445	34
Wasaga Distribution Inc.	2008-2010	**0.991**	0.468	35
Haldimand County Hydro Inc.	2008-2010	**0.996**	0.486	36
Ottawa River Power Corporation	2008-2010	**0.996**	0.487	37
Kenora Hydro Electric Corporation Ltd.	2008-2010	**1.005**	0.482	38
Burlington Hydro Inc.	2008-2010	**1.007**	0.477	39
Orangeville Hydro Limited	2008-2010	**1.007**	0.475	40

(continued from previous page)

Performance Rankings Based on Econometric Benchmarks

	Years Benchmarked	Actual/Predicted[1]	P-Value	Rank[1]
Innisfil Hydro Distribution Systems Limited	2008-2010	**1.011**	0.461	41
Sioux Lookout Hydro Inc.	2008-2010	**1.013**	0.453	42
Westario Power Inc.	2008-2010	**1.017**	0.441	43
St. Thomas Energy Inc.	2008-2010	**1.021**	0.428	44
Thunder Bay Hydro Electricity Distribution Inc.	2008-2010	**1.027**	0.405	45
Cooperative Hydro Embrun Inc.	2008-2010	**1.033**	0.386	46
Enersource Hydro Mississauga Inc.	2008-2010	**1.042**	0.356	47
Brantford Power Inc.	2008-2010	**1.046**	0.345	48
Woodstock Hydro Services Inc.	2008-2010	**1.048**	0.339	49
Norfolk Power Distribution Inc.	2008-2010	**1.052**	0.326	50
London Hydro Inc.	2008-2010	**1.066**	0.286	51
PowerStream Inc.	2008-2010	**1.071**	0.270	52
Atikokan Hydro Inc.	2008-2010	**1.076**	0.259	53
Parry Sound Power Corporation	2008-2010	**1.087**	0.229	54
Bluewater Power Distribution Corporation	2008-2010	**1.104**	0.188	55
Whitby Hydro Electric Corporation	2008-2010	**1.113**	0.172	56
Lakeland Power Distribution Ltd.	2008-2010	**1.114**	0.168	57
Fort Erie - Eastern Ontario (CNP)	2008-2010	**1.119**	0.159	58
Midland Power Utility Corporation	2008-2010	**1.120**	0.158	59
Chapleau Public Utilities Corporation	2008-2010	**1.138**	0.125	60
EnWin Utilities Ltd.	2008-2010	**1.157**	0.098	61
Tillsonburg Hydro Inc.	2008-2010	**1.158**	0.096	62
Niagara Peninsula Energy Inc.	2008-2010	**1.165**	0.087	63
Fort Frances Power Corporation	2008-2010	**1.172**	0.080	64
Centre Wellington Hydro Ltd.	2008-2010	**1.185**	0.066	65
Wellington North Power Inc.	2008-2010	**1.198**	0.054	66
Orillia Power Distribution Corporation	2008-2010	**1.201**	0.052	67
Clinton Power Corporation	2009,2010	**1.219**	0.040	68
West Coast Huron Energy Inc.	2008-2010	**1.223**	0.037	69
Hydro One Networks Inc.	2008-2010	**1.227**	0.034	70
COLLUS Power Corp.	2008-2010	**1.231**	0.033	71
Erie Thames Powerlines Corporation	2008-2010	**1.258**	0.021	72
Port Colborne (CNP)	2008-2010	**1.259**	0.021	73
Toronto Hydro-Electric System Limited	2008-2010	**1.316**	0.008	74
West Perth Power Inc.	2008-2010	**1.414**	0.001	75
Brant County Power Inc.	2008-2010	**1.423**	0.001	76
Algoma Power Inc.	2008-2010	**1.550**	0.000	77

[1] Lower values imply better performance.

2.5 Unit Cost Indexing Methods and Results

This section begins with a brief overview, in general terms, of the unit cost benchmarking approach. It is followed by information specific to the benchmarking methods found in this report.

2.5.1 Unit Cost Benchmarking 101

When implementing the unit cost index benchmarking approach, the analyst calculates the ratio of the relevant statistic being measured (e.g., OM&A cost) to a measure of output (e.g., number of customers). This ratio is compared to the mean metric of a group of firms sharing similar business and operating conditions to the company being investigated. This group of firms is called a peer group. The peer group's mean serves as an estimate for the expected unit cost of the target utility. If a firm's unit cost ratio is below the peer group average, it is classified as an above average performer, but if the unit cost ratio of a company is above the peer group average, it is classified as a below-average cost performer.

$$Performanœ = \frac{OM\ \&\ A\ Unit\ Cost^{\ Actual}}{OM\ \&\ A\ Unit\ Cost^{\ PeerGroup\ Average}} \qquad \textbf{[Equation 7]}$$

As is the case for the econometric approach, multiple outputs can be measured, instead of just one, when comparing firms to each other. Thus, multiple outputs can be aggregated into one output index. A multi-output index can incorporate the cost impacts inherent in multiple output measures such as the number of customers, volumes, or kilometers of line. The weights for each individual output measure can be derived from the cost elasticity measurements of the econometric model. A multi-output index is used in this research, and will be discussed in further detail in Section 2.5.2.

It should be noted that the unit cost indexing approach does not explicitly adjust for the fact that utilities encounter significantly different external circumstances. Adjustments for heterogeneous conditions rest solely upon the selection of an appropriate peer group. Therefore, peer group selection must be done with care. This is the reason for dividing the Ontario industry into twelve peer groups. These groups are based on significant cost drivers which are identified in the econometric research.

2.5.2 Methods Used in this Report

The Ontario power distribution industry is divided into twelve separate peer groups.[19] The peer groups were based on the criteria of location, size, geography, percent undergrounding, and customer growth. The original determination of peer groups was based on 2002 through 2006 data, and will remain constant through the end of the Third Generation Incentive Regulation plan, except where industry amalgamations necessitate adjustments. These variables were

[19] This number includes the "Large Northern" peer group which only consists of one utility, Hydro One Networks. No other Ontario power Distributors are similar enough to offer a fair comparison to Hydro One Networks using the unit cost indexing approach.

identified on the basis of the previously estimated OM&A econometric model. Table 5 displays the peer groups and the variable data that is used in the development of peer group divisions.

A unit cost index is constructed for each Distributor and for each year of available data. The construction of this index has total OM&A expenses as the numerator and a multi-output index as the denominator. This unit cost index is constructed according to Equation 8 for utility *h* in year *t*.

$$\text{Unit Cost}_{h,t} = Cost_{h,t} / Output\ Index_{\text{h,t}} \quad \textbf{[Equation 8]}$$

The output index in Equation 8 is calculated by weighting up the identified outputs and creating a composite output index. The estimated output elasticities for customers, volumes, and kilometers of lines are 0.51, 0.33, and 0.13, respectively. The corresponding elasticity weights are 0.53, 0.34, and 0.13 and sum to 1.[20] Equation 9 offers the formula for calculating this output index.

$$\ln \text{Output } Index_{\text{h,t}} = \sum_i se_i \cdot (\ln Y_{i,h,t} . - \overline{\ln Y_{i,t}}) \quad \textbf{[Equation 9]}$$

Here for each company h in year *t*,

$Y_{i,h,t}$ = quantity of output dimension *i*

$\overline{\ln Y_{i,t}}$ = sample mean of the logged quantity of output dimension *i* provided by all utilities

se_i = share of output dimension *i* in the sum of the econometric estimates of the cost elasticities of the output quantities.

[20] The weights are derived by summing the output elasticities and dividing each component output elasticity by this sum.

Table 5: Peer Group Divisions

Peer Groups for Ontario LDCs

Peer Group Designation & Distributor	Customers[1]	% Under-grounding[1]	Canadian Shield	Customer Growth/Output Index[1]
Small Northern Low Undergrounding				
Algoma Power Inc.	11,612	0.2%	Yes	254
Atikokan Hydro Inc.	1,663	0.5%	Yes	-1,711
Chapleau Public Utilities Corporation	1,306	3.7%	Yes	-1,718
Espanola Regional Hydro Distribution Corporation	3,300	8.0%	Yes	209
Fort Frances Power Corporation	3,777	9.5%	Yes	15
Northern Ontario Wires Inc.	6,026	1.4%	Yes	-836
Parry Sound Power Corporation	3,377	8.5%	Yes	690
Renfrew Hydro Inc.	4,155	3.6%	No	653
Sioux Lookout Hydro Inc.	2,754	2.8%	Yes	107
Small Northern Medium Undergrounding				
Hearst Power Distribution Company Limited	2,734	16.2%	Yes	-9
Kenora Hydro Electric Corporation Ltd.	5,580	10.2%	Yes	-826
Lakeland Power Distribution Ltd.	9,439	18.9%	Yes	1,204
Ottawa River Power Corporation	10,475	12.8%	Yes	1,130
Mid-Size Northern				
Greater Sudbury Hydro Inc.	46,710	22.6%	Yes	249
North Bay Hydro Distribution Limited	23,754	15.9%	Yes	396
PUC Distribution Inc.	32,870	16.0%	Yes	382
Thunder Bay Hydro Electricity Distribution Inc.	49,508	19.9%	Yes	353
Large Northern				
Hydro One Networks Inc.	1,203,030	3.5%	Yes	1,018
Small Southern Low & Medium Undergrounding				
Brant County Power Inc.	9,667	11.9%	No	2,164
Clinton Power Corporation	1,639	19.0%	No	365
Hydro 2000 Inc.	1,196	14.3%	No	1,456
Hydro Hawkesbury Inc.	5,496	15.2%	No	1,760
Lakefront Utilities Inc.	9,571	17.4%	No	2,695
Port Colborne (CNP)	9,169	5.4%	No	145
Rideau St. Lawrence Distribution Inc.	5,818	10.6%	No	237
Wellington North Power Inc.	3,613	13.2%	No	1,566
Small Southern Medium-High Undergrounding				
Middlesex Power Distribution Corporation	7,859	20.8%	No	1,687
Midland Power Utility Corporation	6,914	25.5%	No	1,926
Tillsonburg Hydro Inc.	6,700	34.6%	No	1,707
West Coast Huron Energy Inc.	3,770	20.0%	No	469
West Perth Power Inc.	2,049	30.6%	No	1,406
Small Southern Medium-High Undergrounding with Rapid Growth				
Centre Wellington Hydro Ltd.	6,463	46.9%	No	2,996
Cooperative Hydro Embrun Inc.	1,958	44.4%	No	6,443
Grimsby Power Incorporated	10,151	28.2%	No	3,323
Niagara-on-the-Lake Hydro Inc.	7,882	29.5%	No	2,328
Orangeville Hydro Limited	11,256	41.5%	No	2,487
Mid-size Southern Low & Medium Undergrounding				
Fort Erie - Eastern Ontario Power (CNP)	19,196	7.8%	No	1,029
Haldimand County Hydro Inc.	20,971	5.2%	No	707
Innisfil Hydro Distribution Systems Limited	14,707	18.6%	No	2,040
Norfolk Power Distribution Inc.	18,940	14.1%	No	2,171
Orillia Power Distribution Corporation	12,862	20.8%	No	1,180

continued

Peer Groups for Ontario LDCs

Peer Group Designation & Distributor	Customers[1]	% Under-grounding[1]	Canadian Shield	Customer Growth/Output Index[1]
Mid-size Southern Medium-High Undergrounding				
Bluewater Power Distribution Corporation	35,688	23.7%	No	668
Chatham-Kent Hydro Inc.	32,033	32.2%	No	240
COLLUS Power Corp.	15,533	37.8%	No	3,320
E.L.K. Energy Inc.	11,205	40.3%	No	2,347
Erie Thames Powerlines Corporation	14,373	21.5%	No	1,355
Essex Powerlines Corporation	28,183	54.4%	No	2,074
Festival Hydro Inc.	19,579	33.2%	No	1,481
Kingston Hydro Corporation	26,944	35.5%	No	263
Niagara Peninsula Energy Inc.	51,048	24.6%	No	2,320
Peterborough Distribution Incorporated	35,012	30.4%	No	1,462
St. Thomas Energy Inc.	16,419	36.0%	No	2,938
Wasaga Distribution Inc.	12,046	47.9%	No	6,191
Welland Hydro-Electric System Corp.	21,411	25.4%	No	563
Westario Power Inc.	22,007	28.0%	No	1,584
Woodstock Hydro Services Inc.	15,074	37.5%	No	1,926
Large City Southern Medium-High Undergrounding				
EnWin Utilities Ltd.	84,866	39.5%	No	1,118
Hydro Ottawa Limited	300,664	50.3%	No	2,720
Toronto Hydro-Electric System Limited	700,386	57.8%	No	938
Veridian Connections Inc.	112,569	44.6%	No	2,791
Large City Southern High Undergrounding				
Enersource Hydro Mississauga Inc.	192,960	65.0%	No	2,409
Horizon Utilities Corporation	234,464	54.8%	No	1,113
Hydro One Brampton Networks Inc.	134,228	71.4%	No	5,579
London Hydro Inc.	146,974	50.8%	No	2,211
PowerStream Inc.	325,540	65.4%	No	4,048
Mid-size GTA Medium-High & High Undergrounding				
Brantford Power Inc.	37,654	47.6%	No	2,084
Burlington Hydro Inc.	64,329	48.7%	No	2,836
Cambridge and North Dumfries Hydro Inc.	50,890	36.3%	No	2,632
Guelph Hydro Electric Systems Inc.	50,250	59.9%	No	3,232
Halton Hills Hydro Inc.	20,790	38.8%	No	2,279
Kitchener-Wilmot Hydro Inc.	86,611	44.2%	No	3,086
Milton Hydro Distribution Inc.	29,142	38.6%	No	8,042
Newmarket - Tay Power Distribution Ltd.	32,911	45.0%	No	2,936
Oakville Hydro Electricity Distribution Inc.	62,674	61.6%	No	4,020
Oshawa PUC Networks Inc.	52,710	41.2%	No	2,240
Waterloo North Hydro Inc.	51,914	31.5%	No	2,754
Whitby Hydro Electric Corporation	39,669	52.5%	No	4,745

[1] Peer groups are identical to those proposed in the Original Report.

2.5.3 Unit Cost Indexing Results

The OM&A performance evaluations for each year of available data are presented in Table 6. That table reports the ratio of the average actual OM&A unit cost index of each company in the last three years to the peer group's average OM&A unit cost index over the same years. A lower ratio of actual unit cost to peer group unit cost implies better performance. Table 7 ranks each power Distributor according to this ratio.

Two lines have been drawn on Table 7 demarcating the first quartile and the fourth quartile. The utilities on the top (efficiency rankings 1-19) are labeled as top quartile cost performers. The utilities on the bottom (efficiency rankings 58-76) are classified as bottom quartile cost performers according to the unit cost benchmarking method.[21] Hydro One Networks is not included in Table 7, given its lack of suitable peers in Ontario.

The overall process used to calculate the unit cost indexing results is shown in Figure 4 below.

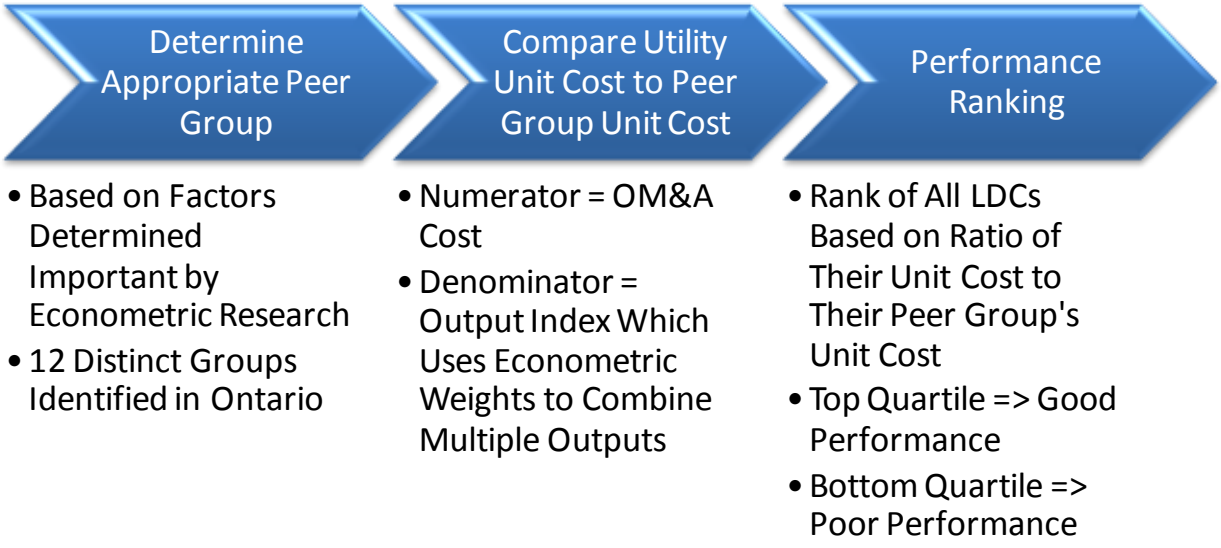

Figure 4: Process for Calculating Unit Cost Indexing Results

[21] This is calculated by dividing 76 by 4. This puts 19 Distributors in each of the four quartiles.

Table 6: Unit OM&A Cost Indexes by Peer Group

Unit OM&A Cost Indexes

	2005	2006	2007	2008	2009	2010	Average of Last 3 Available Years[1]	Average / Group Average[1] [A]	Percentage Differences[1] [A - 1]
Small Northern Low Undergrounding									
Renfrew Hydro Inc.	0.788	0.971	1.065	1.184	1.190	1.209	1.194	**0.670**	-33.0%
Northern Ontario Wires Inc.	1.061	1.133	1.222	1.329	1.378	1.396	1.367	**0.767**	-23.3%
Espanola Regional Hydro Distribution Corporation	1.040	1.340	1.329	1.364	1.478	1.423	1.422	**0.798**	-20.2%
Parry Sound Power Corporation	1.198	1.247	1.224	1.403	1.448	1.453	1.435	**0.805**	-19.5%
Sioux Lookout Hydro Inc.	1.259	1.286	1.411	1.496	1.522	1.556	1.525	**0.856**	-14.4%
Fort Frances Power Corporation	1.233	1.269	1.366	1.498	1.615	1.619	1.577	**0.885**	-11.5%
Chapleau Public Utilities Corporation	1.816	1.741	2.259	2.106	1.759	2.007	1.957	**1.098**	9.8%
Atikokan Hydro Inc.	1.475	1.478	1.813	2.299	2.555	2.888	2.581	**1.448**	44.8%
Algoma Power Inc.	2.664	2.742	2.808	2.991	2.971	2.986	2.983	**1.674**	67.4%
Group Average							**1.782**		
Small Northern Medium Undergrounding									
Hearst Power Distribution Company Limited	0.766	0.844	0.883	1.017	1.266	1.238	1.173	**0.911**	-8.9%
Ottawa River Power Corporation	0.949	1.022	1.150	1.168	1.198	1.156	1.174	**0.911**	-8.9%
Lakeland Power Distribution Ltd.	0.811	0.964	0.868	1.201	1.322	1.423	1.315	**1.021**	2.1%
Kenora Hydro Electric Corporation Ltd.	1.052	1.083	1.218	1.375	1.579	1.519	1.491	**1.157**	15.7%
Group Average							**1.288**		
Mid-Size Northern									
North Bay Hydro Distribution Limited	0.844	1.089	0.956	0.976	0.937	0.914	0.943	**0.895**	-10.5%
Greater Sudbury Hydro Inc.	0.953	1.013	1.680	1.115	1.169	0.780	1.021	**0.970**	-3.0%
PUC Distribution Inc.	0.992	0.971	1.102	1.023	1.112	1.190	1.108	**1.053**	5.3%
Thunder Bay Hydro Electricity Distribution Inc.	0.947	0.995	1.096	1.108	1.137	1.170	1.138	**1.081**	8.1%
Group Average							**1.053**		
Large Northern									
Hydro One Networks Inc.	0.951	1.139	1.336	1.547	1.704	1.790	1.680	**1.000**	0.0%
Group Average							**1.680**		
Small Southern Low & Medium Undergrounding									
Hydro Hawkesbury Inc.	0.596	0.562	0.608	0.652	0.649	0.719	0.673	**0.533**	-46.7%
Lakefront Utilities Inc.	0.839	0.899	0.918	0.924	0.950	1.028	0.967	**0.766**	-23.4%
Hydro 2000 Inc.	1.127	0.898	0.948	0.973	1.067	1.224	1.088	**0.861**	-13.9%
Clinton Power Corporation	1.176	1.535	1.726	0.000	1.759	1.794	1.184	**0.937**	-6.3%
Rideau St. Lawrence Distribution Inc.	1.123	1.149	1.202	1.301	1.413	1.450	1.388	**1.098**	9.8%
Wellington North Power Inc.	1.101	1.162	1.140	1.468	1.440	1.491	1.466	**1.161**	16.1%
Brant County Power Inc.	1.379	1.525	0.664	1.377	1.763	1.644	1.595	**1.262**	26.2%
Port Colborne (CNP)	1.965	1.979	2.160	1.812	1.714	1.711	1.746	**1.382**	38.2%
Group Average							**1.263**		
Small Southern Medium-High Undergrounding									
Middlesex Power Distribution Corporation	1.075	0.943	0.908	0.905	0.970	0.967	0.947	**0.758**	-24.2%
Midland Power Utility Corporation	0.997	1.108	1.082	1.100	1.135	1.124	1.120	**0.896**	-10.4%
Tillsonburg Hydro Inc.	1.357	0.965	0.956	0.990	1.316	1.349	1.218	**0.976**	-2.4%
West Coast Huron Energy Inc.	1.430	1.464	1.209	1.292	1.456	1.361	1.369	**1.096**	9.6%
West Perth Power Inc.	0.893	1.144	1.105	1.279	1.507	1.985	1.590	**1.273**	27.3%
Group Average							**1.249**		
Small Southern Medium-High Undergrounding with Rapid Growth									
Grimsby Power Incorporated	0.784	0.752	0.823	0.878	0.911	0.871	0.887	**0.837**	-16.3%
Niagara-on-the-Lake Hydro Inc.	0.769	0.848	0.940	0.941	0.992	0.929	0.954	**0.901**	-9.9%
Orangeville Hydro Limited	0.870	0.874	0.938	1.040	1.027	1.098	1.055	**0.996**	-0.4%
Centre Wellington Hydro Ltd.	1.038	1.050	1.062	1.118	1.203	1.223	1.181	**1.116**	11.6%
Cooperative Hydro Embrun Inc.	1.042	1.052	1.151	1.155	1.166	1.331	1.217	**1.150**	15.0%
Group Average							**1.059**		

continued

Unit OM&A Cost Indexes

	2005	2006	2007	2008	2009	2010	Average of Last 3 Available Years[1]	Average / Group Average[1] [A]	Percentage Differences[1] [A - 1]
Mid-size Southern Low & Medium Undergrounding									
Norfolk Power Distribution Inc.	0.940	0.934	1.106	1.255	1.086	1.139	1.160	**0.923**	-7.7%
Innisfil Hydro Distribution Systems Limited	0.925	0.985	1.054	1.149	1.179	1.217	1.182	**0.941**	-5.9%
Haldimand County Hydro Inc.	1.014	1.080	1.365	1.369	1.228	1.253	1.284	**1.022**	2.2%
Fort Erie - Eastern Ontario Power (CNP)	1.271	1.440	1.491	1.355	1.191	1.328	1.291	**1.028**	2.8%
Orillia Power Distribution Corporation	1.157	1.128	1.214	1.308	1.350	1.436	1.365	**1.086**	8.6%
Group Average							**1.256**		
Mid-size Southern Medium-High Undergrounding									
Chatham-Kent Hydro Inc.	0.671	0.678	0.696	0.759	0.782	0.916	0.819	**0.791**	-20.9%
Festival Hydro Inc.	0.717	0.801	0.791	0.820	0.848	0.882	0.850	**0.820**	-18.0%
Peterborough Distribution Incorporated	0.763	0.864	0.894	0.967	0.907	0.851	0.908	**0.877**	-12.3%
Kingston Hydro Corporation	0.925	0.834	0.832	0.910	0.928	1.019	0.952	**0.919**	-8.1%
Essex Powerlines Corporation	1.132	1.105	1.023	0.977	0.945	0.964	0.962	**0.929**	-7.1%
Westario Power Inc.	0.964	0.953	0.912	1.088	1.002	0.929	1.006	**0.971**	-2.9%
E.L.K. Energy Inc.	0.562	0.828	0.863	0.976	1.134	0.916	1.009	**0.974**	-2.6%
St. Thomas Energy Inc.	0.946	1.073	1.016	0.989	1.075	1.062	1.042	**1.006**	0.6%
Welland Hydro-Electric System Corp.	0.809	0.752	0.968	0.985	1.111	1.056	1.050	**1.014**	1.4%
Wasaga Distribution Inc.	0.921	0.982	0.962	1.005	1.047	1.111	1.054	**1.018**	1.8%
Woodstock Hydro Services Inc.	0.930	0.961	0.993	1.019	1.075	1.109	1.068	**1.031**	3.1%
Niagara Peninsula Energy Inc.	1.038	1.039	0.986	1.077	1.097	1.125	1.099	**1.061**	6.1%
Bluewater Power Distribution Corporation	1.030	1.103	1.045	1.069	1.211	1.221	1.167	**1.126**	12.6%
COLLUS Power Corp.	0.812	0.973	1.012	1.111	1.228	1.216	1.185	**1.144**	14.4%
Erie Thames Powerlines Corporation	1.329	1.275	1.528	1.477	1.331	1.294	1.367	**1.320**	32.0%
Group Average							**1.036**		
Large City Southern Medium-High Undergrounding									
Hydro Ottawa Limited	0.586	0.707	0.678	0.825	0.831	0.827	0.828	**0.841**	-15.9%
Veridian Connections Inc.	0.805	0.846	0.747	0.834	0.814	0.835	0.828	**0.841**	-15.9%
EnWin Utilities Ltd.	1.042	1.086	1.045	1.144	1.100	1.140	1.128	**1.146**	14.6%
Toronto Hydro-Electric System Limited	0.862	0.855	0.925	1.069	1.138	1.251	1.153	**1.171**	17.1%
Group Average							**0.984**		
Large City Southern High Undergrounding									
Hydro One Brampton Networks Inc.	0.512	0.556	0.523	0.610	0.604	0.592	0.602	**0.745**	-25.5%
Horizon Utilities Corporation	0.752	0.662	0.746	0.812	0.845	0.811	0.823	**1.018**	1.8%
PowerStream Inc.	0.706	0.661	0.707	0.789	0.820	0.866	0.825	**1.021**	2.1%
London Hydro Inc.	0.702	0.768	0.801	0.849	0.883	0.937	0.890	**1.101**	10.1%
Enersource Hydro Mississauga Inc.	0.794	0.833	0.877	0.870	0.982	0.851	0.901	**1.115**	11.5%
Group Average							**0.808**		
Mid-size GTA Medium-High & High Undergrounding									
Kitchener-Wilmot Hydro Inc.	0.606	0.660	0.670	0.705	0.698	0.688	0.697	**0.830**	-17.0%
Waterloo North Hydro Inc.	0.735	0.754	0.726	0.752	0.734	0.763	0.750	**0.892**	-10.8%
Oakville Hydro Electricity Distribution Inc.	0.799	0.857	0.801	0.735	0.770	0.787	0.764	**0.909**	-9.1%
Cambridge and North Dumfries Hydro Inc.	0.598	0.594	0.683	0.751	0.833	0.787	0.790	**0.941**	-5.9%
Guelph Hydro Electric Systems Inc.	0.738	0.742	0.847	0.834	0.824	0.797	0.818	**0.974**	-2.6%
Milton Hydro Distribution Inc.	0.776	0.757	0.768	0.824	0.834	0.806	0.821	**0.977**	-2.3%
Oshawa PUC Networks Inc.	0.665	0.677	0.730	0.833	0.840	0.825	0.833	**0.991**	-0.9%
Halton Hills Hydro Inc.	0.762	0.911	0.823	0.971	0.782	0.840	0.864	**1.029**	2.9%
Newmarket - Tay Power Distribution Ltd.	0.805	0.802	0.790	0.890	0.913	0.926	0.910	**1.083**	8.3%
Burlington Hydro Inc.	0.766	0.831	0.861	0.907	0.923	0.926	0.919	**1.093**	9.3%
Whitby Hydro Electric Corporation	0.867	0.909	0.947	0.930	0.966	0.970	0.955	**1.137**	13.7%
Brantford Power Inc.	0.883	0.784	0.965	0.962	0.982	0.942	0.962	**1.145**	14.5%
Group Average							**0.840**		
AVERAGE: ALL COMPANIES	**0.974**	**1.017**	**1.061**	**1.103**	**1.164**	**1.185**	**1.151**		

[1] Lower values imply better performance

Table 7: Performance Rankings Based on Unit Cost Indexes

Updated Performance Rankings Based on Unit Cost Indexes

	Average / Group Average[1] [A]	Percentage Differences[1] [A - 1]	Efficiency Ranking [1]
Hydro Hawkesbury Inc.	**0.533**	-46.7%	1
Renfrew Hydro Inc.	**0.670**	-33.0%	2
Hydro One Brampton Networks Inc.	**0.745**	-25.5%	3
Middlesex Power Distribution Corporation	**0.758**	-24.2%	4
Lakefront Utilities Inc.	**0.766**	-23.4%	5
Northern Ontario Wires Inc.	**0.767**	-23.3%	6
Chatham-Kent Hydro Inc.	**0.791**	-20.9%	7
Espanola Regional Hydro Distribution Corporation	**0.798**	-20.2%	8
Parry Sound Power Corporation	**0.805**	-19.5%	9
Festival Hydro Inc.	**0.820**	-18.0%	10
Kitchener-Wilmot Hydro Inc.	**0.830**	-17.0%	11
Grimsby Power Incorporated	**0.837**	-16.3%	12
Hydro Ottawa Limited	**0.841**	-15.9%	13
Veridian Connections Inc.	**0.841**	-15.9%	14
Sioux Lookout Hydro Inc.	**0.856**	-14.4%	15
Hydro 2000 Inc.	**0.861**	-13.9%	16
Peterborough Distribution Incorporated	**0.877**	-12.3%	17
Fort Frances Power Corporation	**0.885**	-11.5%	18
Waterloo North Hydro Inc.	**0.892**	-10.8%	19
North Bay Hydro Distribution Limited	**0.895**	-10.5%	20
Midland Power Utility Corporation	**0.896**	-10.4%	21
Niagara-on-the-Lake Hydro Inc.	**0.901**	-9.9%	22
Oakville Hydro Electricity Distribution Inc.	**0.909**	-9.1%	23
Hearst Power Distribution Company Limited	**0.911**	-8.9%	24
Ottawa River Power Corporation	**0.911**	-8.9%	25
Kingston Hydro Corporation	**0.919**	-8.1%	26
Norfolk Power Distribution Inc.	**0.923**	-7.7%	27
Essex Powerlines Corporation	**0.929**	-7.1%	28
Clinton Power Corporation	**0.937**	-6.3%	29
Cambridge and North Dumfries Hydro Inc.	**0.941**	-5.9%	30
Innisfil Hydro Distribution Systems Limited	**0.941**	-5.9%	31
Greater Sudbury Hydro Inc.	**0.970**	-3.0%	32
Westario Power Inc.	**0.971**	-2.9%	33
E.L.K. Energy Inc.	**0.974**	-2.6%	34
Guelph Hydro Electric Systems Inc.	**0.974**	-2.6%	35
Tillsonburg Hydro Inc.	**0.976**	-2.4%	36
Milton Hydro Distribution Inc.	**0.977**	-2.3%	37
Oshawa PUC Networks Inc.	**0.991**	-0.9%	38
Orangeville Hydro Limited	**0.996**	-0.4%	39

Updated Performance Rankings Based on Unit Cost Indexes

	Average / Group Average[1] [A]	Percentage Differences[1] [A - 1]	Efficiency Ranking [1]
St. Thomas Energy Inc.	**1.006**	0.6%	40
Welland Hydro-Electric System Corp.	**1.014**	1.4%	41
Wasaga Distribution Inc.	**1.018**	1.8%	42
Horizon Utilities Corporation	**1.018**	1.8%	43
Lakeland Power Distribution Ltd.	**1.021**	2.1%	44
PowerStream Inc.	**1.021**	2.1%	45
Haldimand County Hydro Inc.	**1.022**	2.2%	46
Fort Erie - Eastern Ontario Power (CNP)	**1.028**	2.8%	47
Halton Hills Hydro Inc.	**1.029**	2.9%	48
Woodstock Hydro Services Inc.	**1.031**	3.1%	49
PUC Distribution Inc.	**1.053**	5.3%	50
Niagara Peninsula Energy Inc.	**1.061**	6.1%	51
Thunder Bay Hydro Electricity Distribution Inc.	**1.081**	8.1%	52
Newmarket - Tay Power Distribution Ltd.	**1.083**	8.3%	53
Orillia Power Distribution Corporation	**1.086**	8.6%	54
Burlington Hydro Inc.	**1.093**	9.3%	55
West Coast Huron Energy Inc.	**1.096**	9.6%	56
Chapleau Public Utilities Corporation	**1.098**	9.8%	57
Rideau St. Lawrence Distribution Inc.	**1.098**	9.8%	58
London Hydro Inc.	**1.101**	10.1%	59
Enersource Hydro Mississauga Inc.	**1.115**	11.5%	60
Centre Wellington Hydro Ltd.	**1.116**	11.6%	61
Bluewater Power Distribution Corporation	**1.126**	12.6%	62
Whitby Hydro Electric Corporation	**1.137**	13.7%	63
COLLUS Power Corp.	**1.144**	14.4%	64
Brantford Power Inc.	**1.145**	14.5%	65
EnWin Utilities Ltd.	**1.146**	14.6%	66
Cooperative Hydro Embrun Inc.	**1.150**	15.0%	67
Kenora Hydro Electric Corporation Ltd.	**1.157**	15.7%	68
Wellington North Power Inc.	**1.161**	16.1%	69
Toronto Hydro-Electric System Limited	**1.171**	17.1%	70
Brant County Power Inc.	**1.262**	26.2%	71
West Perth Power Inc.	**1.273**	27.3%	72
Erie Thames Powerlines Corporation	**1.320**	32.0%	73
Port Colborne (CNP)	**1.382**	38.2%	74
Atikokan Hydro Inc.	**1.448**	44.8%	75
Algoma Power Inc.	**1.674**	67.4%	76

[1] Lower values imply better performance

[2] Hydro One Networks Inc. is alone in its peer group and is omitted here

3 Efficiency Cohort Groupings

A company will be in efficiency Cohort 1 if it is statistically superior based on the econometric benchmarking results (found in Table 4), and in the top quartile of the unit cost benchmarking rankings (found in Table 7). A company will be in efficiency Cohort 3 if it is statistically inferior based on the econometric benchmarking results, and in the bottom quartile of the unit cost benchmarking rankings. All remaining companies are placed in efficiency Cohort 2. PSE's analysis of Distributors' OM&A cost performance indicates that there are twelve firms in Cohort 1, fifty-five firms in Cohort 2, and ten firms in cohort three.

No peer group has been identified for Hydro One Networks Inc. for the purposes of unit cost benchmarking. The Board has previously determined that distributors that rank superior or inferior in only one evaluation will be assigned to the middle cohort. For this reason, Hydro One Networks Inc. has been assigned to Cohort 2.[22]

Figure 5 below details the nine companies which changed cohorts from the 2011 update to the 2012 update.

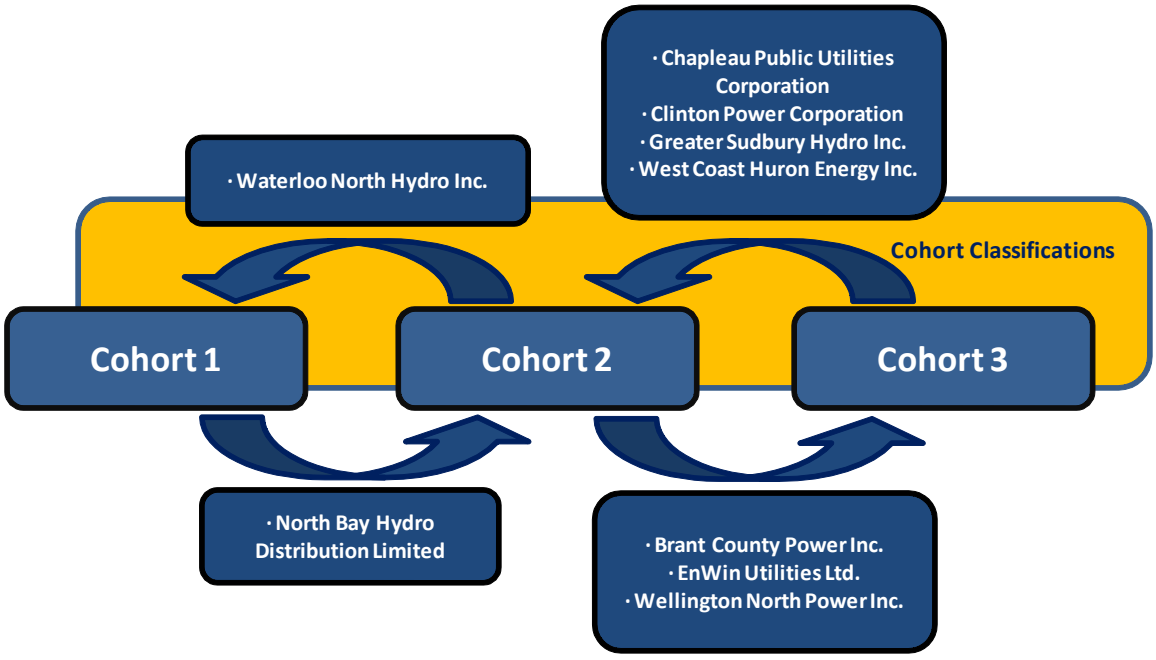

Figure 5: Cohort Changes from 2011 Update to 2012 Update

Table 8 below presents the full sample of Ontario power Distributors and their corresponding efficiency cohorts for the 2012 update.

[22] Please see the Board's report (referenced on page 1) dated July 14, 2008 page 22 regarding this issue.

Table 8: Efficiency Cohort Groupings

Efficiency Cohort Grouping Results

Company	Cohort
Chatham-Kent Hydro Inc.	1
Festival Hydro Inc.	1
Grimsby Power Incorporated	1
Hydro 2000 Inc.	1
Hydro Hawkesbury Inc.	1
Hydro One Brampton Networks Inc.	1
Kitchener-Wilmot Hydro Inc.	1
Lakefront Utilities Inc.	1
Middlesex Power Distribution Corporation	1
Northern Ontario Wires Inc.	1
Renfrew Hydro Inc.	1
Waterloo North Hydro Inc.	1
Atikokan Hydro Inc.	2
Bluewater Power Distribution Corporation	2
Brantford Power Inc.	2
Burlington Hydro Inc.	2
Cambridge and North Dumfries Hydro Inc.	2
Chapleau Public Utilities Corporation	2
Clinton Power Corporation	2
Cooperative Hydro Embrun Inc.	2
E.L.K. Energy Inc.	2
Enersource Hydro Mississauga Inc.	2
Espanola Regional Hydro Distribution Corporation	2
Essex Powerlines Corporation	2
Fort Erie - Eastern Ontario Power (CNP)	2
Fort Frances Power Corporation	2
Greater Sudbury Hydro Inc.	2
Guelph Hydro Electric Systems Inc.	2
Haldimand County Hydro Inc.	2
Halton Hills Hydro Inc.	2
Hearst Power Distribution Company Limited	2
Horizon Utilities Corporation	2
Hydro One Networks Inc.[1]	2
Hydro Ottawa Limited	2
Innisfil Hydro Distribution Systems Limited	2
Kenora Hydro Electric Corporation Ltd.	2
Kingston Hydro Corporation	2
Lakeland Power Distribution Ltd.	2

(continued from previous page)

Efficiency Cohort Grouping Results

Company	Cohort
London Hydro Inc.	2
Midland Power Utility Corporation	2
Milton Hydro Distribution Inc.	2
Newmarket - Tay Power Distribution Ltd.	2
Niagara Peninsula Energy Inc.	2
Niagara-on-the-Lake Hydro Inc.	2
Norfolk Power Distribution Inc.	2
North Bay Hydro Distribution Limited	2
Oakville Hydro Electricity Distribution Inc.	2
Orangeville Hydro Limited	2
Orillia Power Distribution Corporation	2
Oshawa PUC Networks Inc.	2
Ottawa River Power Corporation	2
Parry Sound Power Corporation	2
Peterborough Distribution Incorporated	2
PowerStream Inc.	2
PUC Distribution Inc.	2
Rideau St. Lawrence Distribution Inc.	2
Sioux Lookout Hydro Inc.	2
St. Thomas Energy Inc.	2
Thunder Bay Hydro Electricity Distribution Inc.	2
Tillsonburg Hydro Inc.	2
Veridian Connections Inc.	2
Wasaga Distribution Inc.	2
Welland Hydro-Electric System Corp.	2
West Coast Huron Energy Inc.	2
Westario Power Inc.	2
Whitby Hydro Electric Corporation	2
Woodstock Hydro Services Inc.	2
Algoma Power Inc.	3
Brant County Power Inc.	3
Centre Wellington Hydro Ltd.	3
COLLUS Power Corp.	3
EnWin Utilities Ltd.	3
Erie Thames Powerlines Corporation	3
Port Colborne (CNP)	3
Toronto Hydro-Electric System Limited	3
Wellington North Power Inc.	3
West Perth Power Inc.	3

[1] Hydro One Networks is only being evaluated by the econometric benchmarking approach and is automatically assigned to Cohort 2.

About PSE's Economics and Market Research Group

Founded in 1974, PSE is a full-service consulting firm. PSE's benchmarking experience includes research for regulatory purposes and utility management improvement. Our benchmarking team consists of economists, planning and design engineers, rate and financial analysts, communications infrastructure consultants, and smart grid technology experts. In addition to our statistical cost research, PSE's Economics and Market Research group has expertise in the areas of demand response, energy efficiency, value-based reliability planning, T&D reliability benchmarking, merger valuations, load forecasting, load research, survey design, alternative regulation, and cost of service studies. For more information on PSE and a full list of services, visit our website at www.powersystem.org.

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Mr. Fenrick has over a decade of consulting experience in the evaluation of utility cost and reliability efficiency. He leads PSE's benchmarking and economic study practice areas. He has provided expert witness testimony on performance benchmarking and authored numerous reports on the topic. He is the conference chair for a semi-annual EUCI conference on measuring and improving the cost and reliability performance of electric distributors. Mr. Fenrick has evaluated performance relating to electric and gas distribution, power transmission, power plant performance, and water distribution. These evaluations have been conducted for utilities, regulatory agencies, and consumer advocates. Mr. Fenrick earned a BS in Economics (Mathematical Emphasis) and a Master's in Applied Economics, both from the University of Wisconsin-Madison.

Lullit Getachew, Senior Economist

Dr. Getachew has experience in conducting research and analysis in support of benchmarking projects for energy utilities. She has written a number of academic journal articles on benchmarking and performance evaluation. She has also prepared studies and reports for performance-based regulation of transmission and distribution energy businesses, undertaken total and operation cost benchmarking, prepared reports for rate settlements, and marketed flexibility in rate designs. Dr. Getachew earned her PhD in Economics at Rice University, her Master's in Law and Diplomacy at the Fletcher School at Tufts University, and her BA *magna cum laude* from Mount Holyoke College.

Jeff Smith, Economist

Mr. Smith earned his Master's in Applied Economics from Marquette University. Since that time, Mr. Smith has been an economist in the utilities industry and has worked on numerous benchmarking and demand-side management projects. He has vast experience in database development and preparation.