Ontario Energy Board

Application of Cost Allocation for Electricity Distributors

Report of the Board

EB-2007-0667

November 28, 2007

Table of Contents

1 Introduction

1.1 Scope

This Report sets out the Board's policies in relation to specific cost allocation matters for electricity distributors, and represents the culmination of a consultation process that began several years ago. It addresses a number of issues, most significantly the relationship between the class revenue and the class total allocated costs (the "revenue-to-cost ratio"). This Report also discusses the treatment of the Monthly Service Charge, metering credits for the unmetered scattered load class, transformer credits for customer-owned transformers, and charges for the provision of standby power for customers with load displacement generation.

1.2 Background

While electricity rates have been unbundled for some time, the basic historical cost relationship among rate classes has remained largely unchanged for the past twenty years.

Consultations on cost allocation have been on-going since 2002, and have benefited from the significant involvement of, and collaboration by, stakeholders and Board staff. An important milestone in this process was the issuance, on September 29, 2006, of a report of the Board entitled *Cost Allocation: Board Directions on Cost Allocation Methodology for Electricity Distributors*,[1] which articulated a number of principles and established the cost allocation methodology to be used by distributors for the purpose of electricity rate design (the "Methodology"). To enable the Board to evaluate the Methodology, distributors were directed to use it in association with their respective approved 2006 revenue requirement for the purpose of making informational filings at the end of 2006 and through the spring of 2007.

The results of Board staff's analysis of the informational filings were set out in a staff Discussion Paper issued on June 28, 2007 and entitled *On the Implications Arising from a Review of the Electricity Distributors' Cost Allocation Filings*[2] (the "Discussion Paper"). Among other things, the Discussion Paper proposed an incremental approach for adjusting rates based on the Methodology. Interested parties were invited to comment on the Discussion Paper, and those that did so are listed in Appendix A.

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[1] Available on the Board's website at http://www.oeb.gov.on.ca/documents/cases/EB-2005-0317/report_directions_290906.pdf.

[2] Available on the Board's website at http://www.oeb.gov.on.ca/documents/cases/EB-2007-0667/staff-discussion-paper_20070628.pdf.

1.3 Approach to Cost Allocation

The establishment of specific revenue requirements through cost causality determinations is a fundamental rate-making principle. Cost allocation is key to implementing that principle. Cost allocation policies reasonably allocate the costs of providing service to various classes of consumers and, as such, provide an important reference for establishing rates that are just and reasonable.

The Board is cognizant of factors that currently limit or otherwise affect the ability or desirability of moving immediately to a cost allocation framework that might, from a theoretical perspective, be considered the ideal. These influencing factors include data quality issues and limited modelling experience, and are discussed in greater detail in section 2.3 of this Report. The Board also recognizes however, that cost allocation is, by its very nature, a matter that calls for the exercise of some judgment, both in terms of the cost allocation methodology itself and in terms of how and where cost allocation principles fit within the broader spectrum of rate setting principles that apply to – and the objectives sought to be achieved in – the setting of utility rates. The existence of the influencing factors does not outweigh the merit in moving forward on cost allocation. Rather, the Board considers that it is both important and appropriate to implement cost allocation policies at this time, and believes that the policies set out in this Report are directionally sound. With better quality data, greater experience with cost allocation modeling and further developments in relation to other rate design issues, the policies will be refined as required.

The policies set out in this Report have been informed by the Discussion Paper and the comments of interested parties on it. The Board is grateful to all that have participated in the consultations that have enabled the Board to complete this phase of its cost allocation work.

1.4 Organization of the Report

This Report is organized as follows:

- Section 2: **Revenue-to-cost Ratios – A Range Approach**, summarizes the Board's approach to revenue-to-cost ratios.
- Section 3: **Revenue-to-cost Ratios – Ranges by Rate Class**, sets out the class-specific revenue-to-cost ratio ranges that have been established for each customer class.
- Section 4: **Other Rate Matters**, discusses the treatment of the upper and lower bounds for the level of the Monthly Service Charges, metering credits for the unmetered scattered load class, transformer credits for customer-owned transformers, and charges for the provision of standby power for customers with load displacement generation.
- Section 5: **Implementation**, identifies how the policies set out in this Report are expected to be applied by distributors.

This Report includes, as applicable, descriptions of, the Board's rationale supporting its policies, relevant influencing factors and issues that require further examination.

2 Revenue-to-cost Ratios – A Range Approach

2.1 Policy Summary

This section sets out an overview of the Board's policy as it relates to revenue-to-cost ratios.

The Board has concluded that an incremental approach is appropriate in light of the influencing factors identified below, and that a range approach is preferable to implementation of a specific revenue-to-cost ratio. Influencing factors aside, a revenue-to-cost ratio of one may not be achievable or desirable for other reasons (for example, to accommodate different rate design objectives). In addition, as a practical matter there may be little difference between a revenue-to-cost ratio of near one and the theoretical ideal of one.

The Board has therefore adopted, with some modification, the proposal set out in the Discussion Paper of creating bands or ranges of tolerance around revenue-to-cost ratios of one. As the influencing factors are addressed over time, the Board expects that these bands will narrow and move closer to one.

The ranges established by the Board are set out in section 3, and are intended to be minimum requirements. To the extent that distributors can address influencing factors that are within their control (such as data quality), they should attempt to do so and to move revenue-to-cost ratios nearer to one. As indicated in the Report other issues such as addressing the fact that the Uniform System of Accounts is less detailed than required to accommodate the methodology and certain rate design matters are beyond the control of individual distributors. These exogenous issues also need to be addressed before moving to an appropriate specific revenue-to-cost ratio.

2.2 The Underlying Analysis

Board staff conducted an analysis of the informational cost allocation filings to evaluate the reasonableness of the results filed by each distributor. The analysis and the results are more fully described in the Discussion Paper. By way of summary, Board staff employed two different approaches to test for reasonableness, both of which used the ratio of the class revenue compared to the allocated costs to the class as a measure of reasonableness.

The first approach was a statistical cross-sectional analysis to determine if the results by rate class across distributors tended to cluster. The second examined whether the clustering or lack of clustering could be explained by the input assumptions or judgments in the Methodology. This second analysis tested the sensitivity of the results to the judgements used to categorize the most significant component of the revenue

requirement; namely, the total cost related to the shared distribution facilities (poles, lines and transformers).

2.3 Influencing Factors

In developing its policy on revenue-to-cost ratios, the Board has considered the impact of the following factors.

2.3.1 Quality of the data:

It is apparent that accounting and load data can be improved. Although the cost allocation review was conducted on the approved 2006 distribution rates and revenue requirements, many distributors did not have the details that would be needed to develop more robust cost allocations. More extensive internal accounting would improve accuracy of costs by reducing the frequency of prorating operating and depreciation expenses. Comments received from some of the distributors also suggested that the Uniform System of Accounts should be modified to capture the level of detail required for cost allocation.

In addition, load data and load analysis contribute to important cost allocators; namely, the coincident peak and the non-coincident peak. The Board recognizes the significant work done by distributors, and Hydro One Networks Inc. in particular, in obtaining a set of load data as part of the cost allocation informational filings. However, the Board acknowledges that some of the information is based on estimates from a statistical model and may not be completely representative of current loads due to sampling errors and current market characteristics.

Data improvements in the future: It is important that accounting and load data be available at the appropriate level of detail to address the need for and use of estimated or default allocations and to ensure the reasonableness of the cost allocation results. There is also a need to examine the current Uniform System of Accounts to see if there are modifications that could be made in order to provide for the level of detail required for cost allocation purposes. A general review of the Uniform System of Accounts is currently being undertaken by the Board's audit group. This work is expected to consider the need for both greater accounting detail and additional accounting guidance. In the interim, distributors should nonetheless endeavour to record accounting information at a level of detail that accommodates cost allocation data input requirements.

With respect to load data and load analysis, the Board anticipates that the installation of smart meters, with their more exact load data, will provide opportunities for better analysis in the future and, as a result, will provide better cost allocators for the cost allocation model.

2.3.2 Limited modelling experience:

The cost allocation model is complex, and the data required for the model was not always readily available for modelling. This created interpretation issues for the analysts using the model, including the appropriate aligning of costs for the different voltage levels in the model and the number of connections for street lighting. The informational filings were the first time most distributors performed a cost allocation. As distributors apply this model in subsequent filings they will develop greater expertise in the application of data to the model, which in turn will allow for a greater reliance on the outcomes.

Modelling improvements in the future: The Board anticipates that, as distributors become more familiar with cost allocation concepts, they will better understand the blending of operating statistics and practice with accounting data, and they will more effectively and consistently use the models in the preparation of their rate applications. The Board also expects distributors to review their allocation factors as better load data become available from smart meters.

2.3.3 Status of current rate classes:

The general customer classifications have been in existence for many decades and the rate structures have been in place since the early 2000s. The current cost allocation methodology and model are based on these classes and structures. The introduction of smart metering will provide additional data and new ways to examine class structures. Any changes in customer classification or load data could have a significant impact on future cost allocation studies.

Rate classes in the future: An initiative is currently under way to examine the rate design for electricity distributors (consultation process EB-2007-003) (the "Rate Review"). The Rate Review covers both customer classification and rate structure issues, and its results could affect the way in which rates are set in the future.

2.3.4 Managing the movement of rates closer to allocated costs:

A principle of rate making is that rate stability in most instances is desirable. Rates should not be constructed in a manner that leads to subsequent counter directional changes. The Board considers it appropriate to avoid premature movement of rates in circumstances where subsequent applications of the model or changes in circumstances could lead to a directionally different movement. Rate instability of this nature is confusing to consumers, frustrates their energy cost planning and undermines their confidence in the rate making process.

Another principle of rate making is the avoidance of rate shock. Proposed rate changes should consider the ability of consumers to react to their new costs. In aligning rate levels closer to costs, reducing a high revenue-to-cost ratio for any one class requires an offsetting increase to one or more other classes. Such

realignments could result in large rate increases, particularly when combined with other plans that affect the distributor's revenue requirement.

The Board expects to address these concerns as and when they arise in the context of individual rate applications. Distributors should endeavour to move their revenue-to-cost ratios closer to one if this is supported by improved cost allocations. However, if a large increase is required to move closer to one, rate mitigation plans should be proposed by the distributor. Distributors should not move their revenue-to-cost ratios further away from one.

3 Revenue-to-cost Ratios – Ranges by Rate Class

This section sets out the revenue-to-cost ratios established by the Board for different rate classes.

3.1 Residential Class

The Board has concluded that, for the Residential Class, the appropriate range within which the revenue-to-cost ratio should fall is +/- 15% of 1.00 (i.e., 0.85 to 1.15).

The Residential Class comprises customers that use electricity exclusively in a separate metered living accommodation, which is typically a detached home, town home or premises within a building such as a triplex. When viewed cross-sectionally, the revenue-to-cost ratios reflected in the informational filings clustered closely around a common value. The sensitivity analysis supported a narrow range for variances in allocated costs.

The Discussion Paper proposed a range of +/- 20% centred on revenue-to-cost ratios of 1.00. Some participants commented that the Residential Class range should be narrower. The Board notes that the analysis tends to support a greater statistical confidence in the outcomes of the Residential Class cost allocations. There is also greater homogeneity in this class, and less likelihood that changes to rate classifications would affect the overall costs assigned to this type of customer. The range established by the Board is therefore narrower than that proposed in the Discussion Paper.

3.2 General Service Less Than 50 kW Class

The Board has concluded that, for the General Service less than 50 kW Class (the "GS<50 Class"), the appropriate range within which the revenue-to-cost ratio should fall is +/- 20% of 1.00 (i.e., 0.80 to 1.20).

The GS<50 Class comprises non-residential customers whose monthly average peak demand is less than 50 kW. Typically, these accounts are for commercial, institutional, industrial and bulk-metered apartment buildings or condominiums. When viewed cross-sectionally, the revenue-to-cost ratios reflected in the informational filings clustered closely around a common value. The sensitivity analysis tended to support a relatively narrow range for variances in allocated costs.

The Discussion Paper proposed a range of +/- 20% centred on a revenue-to-cost ratio of 1.00. Most participants agreed with this range. However, some participants also commented that the GS<50 Class should have a narrower range. The Board notes that this Class is less homogenous than the Residential Class. In addition, the 50 kW boundary that separates this Class from the General Service 50 to 4,999 kW Class is

somewhat arbitrary. The widespread introduction of smart or interval metering for customers in both this class and the next larger class will provide a better basis on which to re-examine both class structures as part of the Rate Review. For these reasons, the Board believes that the +/- 20% band proposed in the Discussion Paper is appropriate.

3.3 General Service 50 to 4,999 kW Class

The Board has concluded that, for the General Service 50 to 4,999 kW Class (the "GS≥50 Class")the appropriate range within which the revenue-to-cost ratio should fall is -20% to +80% of 1.00 (i.e., 0.80 to 1.80).

The GS≥50 Class comprises all subclasses whose monthly average peak demand falls within the range of 50 kW to 4,999 kW. The customers are typically large industrial, commercial, multiple dwelling and institutional buildings. The cross-sectional analysis of the revenue-to-cost ratios reflected in the informational filings did not reveal any clustering. Distributors with such customers generally had revenue-to-cost ratios significantly above 120%. The sensitivity analysis also indicated large changes in the revenue-to-cost ratios as assumptions in the methodology changed.

The Discussion Paper proposed an asymmetrical range around 1.00 of -20% to +80%. A number of participants agreed with this proposal, noting concerns about the effects on other classes if the range were made too narrow too quickly. Given the heterogeneity of this Class it is difficult to assess the directional impact the intended abatement of the aforementioned influencing factors will have on its constituent's rates. Due to the potential for undesirable rate instability, for other classes as well as members of this class, the Board believes that the adoption of a narrower band than that proposed in the Disscussion Paper would be inappropriate at this time.

3.4 General Service Unmetered Scattered Load Class

The Board has concluded that, for the General Service Unmetered Scattered Load Class (the "USL Class"), the appropriate range within which the revenue-to-cost ratio should fall is +/ 20% of 1.00 (i.e., 0.80 to 1.20).

Unmetered scattered loads ("USL") are accounts for unmetered applications such as bus shelters, telecommunications and cable amplifiers, billboards and the like, where the billing determinant can be established by applying the operating hours to the operating loads. The majority of distributors charge USL customers on the basis of the GS<50 rate schedule (possibly with a modification of the Monthly Service Charge). A few distributors have a stand alone rate schedule for the USL Class. With few data points, the analysis for distributors with a stand alone USL Class was inconclusive.

The Discussion Paper proposed that the range for the USL Class not differ from that of the GS<50 Class. Most participants did not specifically comment on this staff proposal. While one participant submitted its own analysis, the resulting comments were primarily

related to rate design issues. The Board believes that, for cost allocation purposes, all USL customers should be treated the same regardless of whether they are in a separate rate class or are classified in the GS<50 Class. Given that the majority of distributors charge USL customers on the basis of the GS<50 Class rate schedule, the range is set to be the same as that for the GS<50 Class; namely, +/- 20% centred on a revenue-to-cost ratio of 1.00.

3.5 Large User Class

The Board has concluded that, for the Large User Class, the appropriate range within which the revenue-to-cost ratio should fall is +/- 15% of 1.00 (i.e., 0.85 to 1.15).

This Class comprises very large customers whose monthly average peak demand is equal to or greater than 5,000 kW. They are typically large industrial customers. The cross-sectional analysis of the revenue-to-cost ratios reflected in the information filings did not reveal any clustering. Distributors with such customers generally had revenue-to-cost ratios significantly above 120%. The sensitivity analysis also indicated large changes in the revenue-to-cost ratios as assumptions in the methodology changed.

The Discussion Paper proposed an asymmetrical range around 1.00 of -20% to +180%. Some participants proposed narrower bands than the one proposed in the Discussion Paper. The Board notes that customers within this Class have been interval metered for many years, which results in better load data. The relative size of customers in this class means that better operating and cost data are available. The Board therefore considers the results of the cost allocation model for the Large User Class more reliable than the results in the case of the GS≥50 Class. The Board has therefore adopted a narrower range for this Class than the one proposed in the Discussion Paper.

3.6 Street Lighting and Sentinel Lighting Classes

The Board has concluded that, for both the Street Lighting Class and the Sentinel Lighting Class, the appropriate range within which the revenue-to-cost ratio should fall is -30% to +20% of 1.00 (i.e., 0.70 to 1.20).

Staff's analysis treated these two Classes together due to their similarities; namely, there is no metering, and the load profiles are similar, responding to the lack of daylight. In the cross-sectional analysis of the revenue-to-cost ratios reflected in the informational filings, there was a strong tendency to cluster at a very low ratio around 30%. However, these Classes are sensitive to changes in the assumptions in the model.

The Discussion Paper proposed an asymmetrical range of -30% to +20% around 1.00. Comments from participants suggested that the model over-represents costs for street lighting. If this is correct, the resulting revenue-to-cost ratio would tend to be understated, probably with a value below 1.00.

The Board agrees with staff's analysis and with the comments of participants to the effect that the Street Lighting and Sentinel Lighting Classes present significant issues that need to be resolved in respect to the allocation of costs and the model's sensitivity to changes in assumptions. The Board has therefore adopted the range proposed in the Discussion Paper.

4 Other Rate Matters

4.1 Other Rate Matters

The review of the informational cost allocation filings considered other rate design matters. This section discusses the treatment of the fixed rate component (Monthly Service Charge ("MSC")) of the distribution rate as well as metering credits for the USL Class, transformer credits for customer-owned transformers, and charges for the provision of standby power for customers with load displacement generation.

4.2 The Monthly Service Charge

4.2.1 Lower Bound for the Monthly Service Charge

The Discussion Paper proposed that the floor for the MSC be the avoided costs. Staff's rationale for this proposal was that these costs are not subject to other cost allocation judgments (such as the minimum plant) and therefore there can be a higher level of confidence in the associated outcomes. These are costs defined as meter-related, billing, and collection costs. Many participants agreed with this proposal. One participant commented that the costs associated with a service drop should also be included in the avoided cost calculation. The Methodology was specific about the definition of avoided costs and the Board is not persuaded to depart from that definition at this time. The Board remains of the view that the use of avoided costs, as defined in the Methodology, is an appropriate basis for establishing the minimum or floor amount for the MSC at this time.

4.2.2 Upper Bound for the Monthly Service Charge

The Methodology set a ceiling for the MSC based on the avoided costs plus the allocated customer costs. The Discussion Paper proposed that the ceiling for the MSC be 120% of this level. Some participants believed that the results of the sensitivity analysis were not an appropriate basis for setting an upper bound.

The Board considers it to be inappropriate to make significant changes to the ceiling for the MSC at this time, given the number of issues that remain to be examined. The appropriateness of the methodologies cited above, used to set the MSC is an issue that will be examined within the scope of the Rate Review. The Rate Review will also examine the role of rate design in achieving various objectives, including conservation of energy. Both of these undertakings will have determinative impacts on the fixed/variable ratio policy.

In the interim, the Board does not expect distributors to make changes to the MSC that result in a charge that is greater than the ceiling as defined in the Methodology for the MSC. Distributors that are currently above this value are not

required to make changes to their current MSC to bring it to or below this level at this time.

4.3 Certain Specific Credits and Charges

The following were identified in the Methodology as questions to be addressed through the review of the informational filings:

1. Should one provincial rate be set for a metering credit for USL?
2. Should one province-wide rate be set for a transformer credit for customers that own their own transformers?
3. Should one province-wide rate be set for a load displacement generation standby charge?

The cost allocation model was designed to specifically determine these rate components on a distributor-specific basis, with the intent of being able to reflect each distributor's costs as opposed to having one standard credit or charge for all distributors.

The Discussion Paper indicated that the setting of an average province-wide value would not be appropriate, principally due to the variability in the results using the cost allocations. Most participants commented that these credits and charges should be determined on a distributor-by-distributor basis.

These credits and charges are expected to be the subject of review as part of the Rate Review. In addition, the standby charge for customers with load displacement generation facilities is also being considered as part of the current initiative regarding distributed generation rates, rate classification and the recovery of connection costs for distributed generation (consultation process EB-2007-0630).

Given the variability of the results and the fact that these credits and charges are the subject of either or both of the above-noted ongoing initiatives, the Board does not consider it appropriate to set a province-wide rate for any of these three items at this time. In the interim, these credits and charges will continue to be set on a case-by-case basis.

5 Implementation

The cost allocation policies reflected in this Report should be followed by distributors whenever they apply for rates on a cost of service basis. To the extent that the application of these cost allocation policies results in a significant shift in the rate burden amongst classes relative to the status quo, distributors should be prepared to address potential mitigation measures. Except as noted below, these cost allocation policies will not apply in relation to applications for rate adjustments based on the Board's incentive regulation mechanism ("IRM").

The Board recognizes that some distributors whose rates will be rebased for 2008 will have filed their rate applications prior to the issuance of this Report while others should be filing soon. However, the Board does not expect that there are significant practical impediments to applying the cost allocation policies to these cost of service applications. The policies do not affect a distributor's overall revenue requirement calculation. In addition, the Board's *Filing Requirements for Transmission and Distribution Applications*[3] already provide for the filing of a completed cost allocation study based on updated forecast year data, and distributors have for some time had a model that they can use for that purpose.

Updating and applying cost allocations in a manner that reflects the cost allocation policies set out in this Report should therefore not, in most cases, require a significant incremental effort by distributors. To the extent that it is determined by the Board that accommodation of these policies is impractical in any given case and can reasonably be deferred, the cost allocation issue may be addressed in the context of the distributor's 2009 IRM rate application.

[3] Available on the Board's website at http://www.oeb.gov.on.ca/html/en/industryrelations/rulesguidesandforms_regulatory.htm#filreq

Appendix A

The following distributors and other interested parties filed comments on the Board staff Discussion Paper, issued on June 28, 2007. Their comments are available on the Board's website at www.oeb.gov.on.ca.[4]

Association of Major Power Consumers in Ontario
Coalition of Large Distributors
Electricity Distributors Association
Energy Cost Management Inc.
Energy Probe Research Foundation
EnWin Utilities Ltd.
Federation of Ontario Cottagers' Associations
Hydro One Networks Inc.
London Hydro
London Property Management Association
Power Workers' Union
Rogers Cable Communications Inc.
School Energy Coalition
Mr. William Harper

[4] http://www.oeb.gov.on.ca/html/en/industryrelations/ongoingprojects_costallocation_review.htm