May 11, 2007

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Re: EB-2007-0031 – Review of Electricity Distribution Rate Design

In accordance with the Board's instructions of March 30, 2007 we are providing our written comments on the Board staff's discussion paper "Rate Design for Electricity Distributors: Overview and Scoping.

Section 3 - Principles of Rate - making

Question:

Are there any principles, beyond the generally accepted, traditional principles of rate-making listed above, that the Board should consider in designing distribution rates?

What is the new principle's importance relative to the others?

Comments:

Board staff has identified certain principles and objectives that should guide any revisions to the existing distribution rate structures. The objectives identified include energy conservation, encouragement of off-peak power usage and promotion of distributed generation.

We concur with the majority of the principles and objectives presented by Board Staff in their discussion paper, but we would point out that the achievement of certain objectives such as energy conservation and increased off-peak power usage through revisions to the distribution rate structures may be limited for some customer classes due to the relatively small portion of the customers total bill represented by existing distribution charges.

Table 1, shown below, lists the customer billing data for 2006 from London Hydro's billing statistics. The data indicates that 53% of all energy is consumed by the GS>50kW class and the Large User class and that distribution charges represent less than 7% of all amounts billed to these customers. Additionally, of this 7% portion of the total bill, approximately 50% of the existing distribution charges are already based upon a variable consumption related rate.

The data in Table 1 is specific to London Hydro, but the data presented in Table 2, which is taken from the OEB 2005 Yearbook for Ontario Distributors, would indicate that provincially there are similarities.

On a provincial basis, the GS> 50 kW and Large User classes account for 48.1% (London 53%) of total energy consumption, and they account for 25.6% (London 20.4%) of the total revenue requirement.

The OEB Yearbook data does not provide comparative information on the distribution charge percentage of the total bill by customer class.

The data would suggest that revisions to the distribution rate structures for the GS> 50 kW and Large User classes may not provide sufficient financial incentive to generate any modifications in existing consumption patterns. Increased conservation and off-peak usage for these customer classes who consume 50% or more of all energy, are more likely to result from pricing changes to the 93% portion of the bill that is comprised of commodity and other charges.

For the remaining customer classes, the distribution charge represents a larger portion of the total bill, and it is more likely that these customer classes will respond to pricing signals that may come from various rate design options.

Table 1 - London Hydro Customer Billing Data

Customer Class	% of Total Distribution Revenue Requirement	Energy Consumption %	Distribution Charges as a % of Total Bill	Commodity & Other Charges as % of Total Bill
Residential	62.6%	32.9%	25.5%	74.5%
GS < 50 KW	16.1%	12.5%	18.5%	81.5%
GS > 50 KW	18.3%	46.5%	6.4%	93.6%
Large Users	2.1%	6.5%	4.4%	95.6%
Cogeneration	.5%	0.9%	14.8%	85.2%
Street lighting	.4%	0.7%	10.5%	89.5%
Sentinel Lighting	-	0.0%	10.7%	89.3%
All customer classes	100.0%	100.0%	15.3%	84.7%

Table 2 - OEB Distributor Yearbook Data – 2005

Customer Class	% of Total Distribution Revenue Requirement	Energy Consumption %
Residential	53.8%	34.5%
GS < 50 KW	19.9%	16.8%
GS > 50 KW	23.1%	39.7%
Large Users	2.5%	8.4%
Street lighting	0.1%	0.1%
Sentinel Lighting	0.6%	0.5%

Section 4.2 - Customer Classes

Question:

What is the most appropriate basis for determining the service classifications for Ontario distribution customers?

Comments:

Board staff has provided various options for determining future customer rate classifications including classifications based on amperage or voltage levels. Existing classes are based primarily on the end user of the electricity, and are representative of the customers actual or estimated demand levels.

Since the design of distribution systems are based upon the anticipated demand levels of the customers served by those systems, we support the current customer rate classifications which are based upon customer demand levels.

The following comments with respect to voltage and amperage based rate classification options are provided by our Engineering staff, to illustrate certain issues that could arise from the usage of such classifications.

[1] Rate classification options; Staff Discussion Paper page 15; second paragraph –

With respect to the prospect of rate classifications based on a customer's connection voltage, the system voltages given in the paper are inconsistent with the accepted convention given in Table 1, *Nominal System Voltages*, of CSA Standard CAN3-C235, *Preferred Voltage Levels for AC Systems, 0 to 50,000 V*.

Rate classification based on supply voltage may produce unintended consequences for both the LDC and the transmitter. It isn't uncommon to have multiple circuits of differing voltages on a pole line or in a duct bank. If, for example, 8/13.8Y and 16/27.6Y kV circuits were available, but for reasons of facilities age, operating techniques, load density, etc. the rate class for 8/13.8Y kV was slightly greater than for the 16/27.6Y kV option, one could predict that over time, the 8/13.8Y kV facilities would be considered less desirable to the customer and either stranded or never attain their economic loading level (which has implications to transformer stations and the transmission grid).

Certain customers' services are based upon space considerations and/or general commercial availability of equipment. For instance, if a residential customer with a 100A service panel decides to add a basement addition, they may need to increase the service panel to a 200A frame to allow for additional breakers, however, the load will most likely remain below 100A. A distributor would not want to restrict a customer's "sizing for convenience" to avoid moving to another rate class. Another issue with voltage-base rate design and why customers may choose this class is that presumably one would think that the higher the voltage the lower the rate due to the fact that less distribution assets are utilized. This method may lead to cost allowances such as we have now for transformers. In fact, that means that the distributor would receive less revenue for customers that are connected to less voltage. Notwithstanding this point, the reduction in the amount of distribution assets required may be only minimal given the need for minimum system requirements.

[2] Rate classification options; Staff Discussion Paper page 15; final paragraph –

With respect to the prospect of rate classifications based on the "*ampere rating of the customer's service entrance equipment*", while this approach may appeal to academics, several real world circumstances make this approach inequitable, the cause of ambiguity, or both. One needs to consider that:

- A customer's service entrance panel is selected to meet the maximum loading requirements given in Section 8, *Circuit Loading and Demand Factors*, of the Ontario Electrical Safety Code.

- Service entrance panels are constructed in discrete ratings, e.g. 200 A, 400 A, 600 A, 800A, 1200 A, etc. due to standards and market forces.

Without delving into detailed design principles, suppose the calculated demand for an example building is 150 A. The electrical designer would select a service entrance panel with a 200 A rating. If the calculated demand for an adjacent building was for example 175 A, the electrical designer would opt for a 400 A rated service entrance panel to abide by the Code's loadability requirements (i.e. at 175 A, the requisite margin on a 200 A panel is insufficient to meet the Code requirements). The described service entrance panel rating approach suggests that the second customer (with a 400 A rated panel)

should be contributing twice as much as the first customer (with a 200 A rated panel), where in fact the second customer's load and hence utilization of the upstream distribution system is only (25 A / 150 A =) 16% greater that that of the first customer.

Another complication arises with multi-tenant, multi-metered complexes, especially in cases where the over-current protection element (i.e. fuse) has a lower current rating than the service entrance panel or sub-panel, as illustrated in Figure 1. As an example, for the supply to tenant #2, it isn't clear whether their distribution tariff would be based on the 300 A rating of the fuse, the 400 A rating of the sub-panel, or some other allocation based on the 600 A rating of the fuse or 800 A rating of the panel for the main service disconnect. More potential confusion would arise with larger services that use circuit breakers – should one use the frame rating, or one of the current pick-up values for the various instantaneous or time-over-current elements?

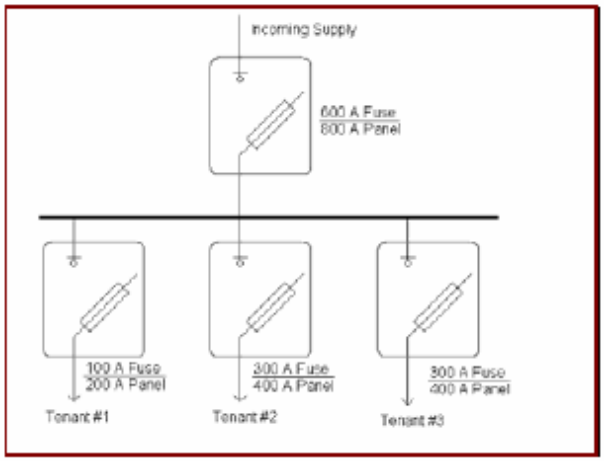

Figure 1, Typical Service Entrance Panels for Multi-Tenant Multi-Metered Building

Ironically, the present distributor method of installing revenue meters with a demand element addresses all the shortcomings previously described. The demand element precisely indicates the rating of the service entrance panel that would be appropriate in a world where a continuous spectrum of panel ratings was available (as opposed to the limited discrete ratings in the marketplace) and the conservative design margins dictated by the Code didn't apply. Assuming the customers' actual loads are consistent with the design calculations, the demand reading for the first customer would indicate that (in a world of continuous service entrance panel ratings and requisite design margins) a 150 A panel would be the ideal rating for the first customer, and the demand reading for the second
customer would indicate that a 175 A panel would be the ideal rating for the second customer.

Note: Although peak demand is normally expressed in kW or kVA, it is mathematically related to the circuit current.

In summary, the present peak demand methodology achieves what is attempted by the service entrance panel ampere rating approach in a manner that is indisputable and equitable to all customers.

Section 4.2 - Customer Classes

Question:

Should sub-classifications be maintained? If so, what is the most appropriate method to allocate diversity benefits?

Comments:

Sub-classes have been used in the General Service categories to identify customers that exceed certain demand levels. With the assumption made in the discussion paper that all customers will have meters capable of measuring each individual customers demand, the need to create sub classes within a given customer class would presumably not exist for the purpose of designing rates based on customer demand requirements.

Based upon the methodology employed in the cost allocation informational filings, Board staff should consider whether or not sub classes are required to segregate customers based upon the portions of the distribution system (bulk , primary , secondary) that are used by them.

Section 5 - Rate Design

Fixed and Variable Rates

As the Board staff paper correctly indicates, extremely few costs of the distributor are truly variable. Existing revenues collected through fixed and variable rates are not representative of the fixed and variable cost structures of the distributor, and thus decisions made by the regulator with respect to the portions of the revenue requirement that will be collected through fixed and variable components, are based upon factors other than the distributors cost structures.

100 % Fixed Monthly Service Rate

A 100% fixed rate would provide a high level of revenue certainty to the distributor, and would be more in-line with the distributors actual cost structures. A 100% fixed rate would likely reduce the risk factor element incorporated into the distributors cost of capital.

Opponents of this rate structure would argue that it provides no benefits to customers who undertake conservation measures, but this argument needs to be assessed in the context of what portion of the customer's total bill is represented by the distribution charge as indicated in our earlier comments under section 3.

Disadvantages to a 100% fixed rate are that it is a total departure from the user pay principle in that low volume and high volume users within the same rate class carry an equal burden of costs. From a societal perspective, this type of rate structure may result in costs being shifted to those customers who are least able to afford it.

100 % Variable Rate

A 100% variable rate bears no relationship to the fixed versus variable cost components that comprise the distributors cost structures, as most costs are fixed in nature.

A 100% variable rate increases the rate recovery uncertainty and thereby the risk levels of the distributor. Consumption fluctuations due to changing weather patterns, energy conservation and local economic conditions may cause significant revenue fluctuations both positive and negative to the distributor and significant cost variations positive or negative on the customer side.

A Balancing of the Fixed and Variable Rate Components

Adoption of a 100% fixed or 100% variable rate would fulfill many of the principles outlined by Board Staff on pages 9 and 10 of their discussion paper, but neither rate structure can address them all.

A balancing of the fixed and variable components is required to address all of the principles outlined by Board Staff. Current rate structures are based upon a combination of fixed and variable components, but there is a wide range of percentage splits across Ontario of fixed versus variable.

These variations understandably cause confusion from the customer's perspective, and it would be desirable to limit the range of fixed charges across the province, but it is likely that limiting the range of fixed charges will only generate a much wider variation in the range of variable rates due to the need to generate the same revenue requirement. Thus the customer's confusion on the fixed charge element may simply be transferred over to the variable charge rate component, but the customer at least would have more ability to control the total charge by limiting their consumption.

In summary, we believe the best approach is one in which the fixed charge element is contained provincially within a limited range and the total revenue generated by fixed charges is sufficient enough to provide some element of revenue certainty for the utility.

5.6 Rate Harmonization

Question

Is one single rate order (or a few regional rate orders) to be used by all distributors a desirable outcome.

Comments

Rate harmonization on a provincial or regional basis as suggested in the Board staffs paper would result in considerable cross subsidization of costs between the low and high density portions of the territory covered by the rate order. The concept presented in the discussion paper would for many customers not meet the principle that rates must be "fair" IE: They should avoid cross subsidies and follow the principle of cost causality; namely, that those who cause the costs should pay them.

5.7 Designer Power

Question

Should distributors offer various levels of service?

Comments

If customers are willing to pay for added security of supply then the distributor would be in some instances, setting up preferred areas. While a number of customers have indicated the preference of such areas, in our experience few customers are willing to pay the additional costs and increased rates associated with the additional security provided.

The other aspect to consider in designing these preferred areas is that the fill rate is going to be based upon customer uptake. If the demand for such security does not match the installed demand then this may lead to stranded assets. It may in some ways act as a detriment to economic development for those customers that prefer the location but require a general level of service.

5.9 Locational Pricing

Question

Should the Board investigate locational rates for any customers connected to a distribution system?

Comments

We do not support the development of locational rates from the perspective of geographic location within a distributor's service territory since such rates would be discriminatory in their application. We do support the usage of rates based upon the connection to the bulk, primary or secondary portions of the distribution system as they reflect the principles applied in the cost allocation process.

5.10 Impact of the Simplified Bill

Question

Given the simplified bill, can a conservation and /or demand management effect be achieved through distribution rate design?

Comments

The current simplified bill combines fixed distribution charges, variable distribution charges, variable transmission network and variable transmission connection charges onto one line called "delivery".

The current simplified bill presentation makes the majority of costs on the delivery line directly linked to the customer's demand or consumption level. A revised bill that separates this line into transmission and distribution charges would reduce rather than increase the pricing signal to the customer created through revisions to the distribution rate structure, as the customer would be become more aware of the fact that the distribution charge is a relatively small component of the total bill, and only a small portion of the delivery charge line is represented by variable distribution costs.

All of the above comments are respectfully submitted for your consideration.

Sincerely,

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