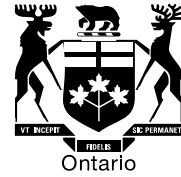


Ontario Energy Board



Staff Discussion Paper

on Distributed Generation: Rates and Connection

EB-2007-0630

July 13, 2007

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1. Introduction

1.1. Initial Proposals for the Rate/Connection Consultation

This discussion paper outlines staff's initial proposals with respect to the development of policies regarding standby rates for customers with load displacement generation, rate classification, and the recovery through distribution rates or charges of connection costs for distributed generation ("DG") in Ontario. It also identifies issues where Ontario Energy board ("OEB" or "the Board") staff believes stakeholder input would be particularly beneficial.

This discussion paper is being released at the same time as a report prepared by EES Consulting Inc. The report, entitled *Discussion Paper on Distributed Generation (DG) and Rate Treatment of DG* ("the EESC Report"), provides a comprehensive overview of DG technologies, the role of DG in the electricity sector and the treatment of DG in Ontario and selected jurisdictions around the world. It also examines the potential benefits of, and barriers to, DG, and identifies policy issues and makes recommendations for consideration by staff and interested stakeholders regarding the treatment of DG in Ontario.

Staff's views as reflected in this discussion paper have been informed by previous Board processes including the generic proceeding associated with the 2006 electricity distribution rate-setting process (proceeding RP-2005-0020/EB-2005-0529) (the "Generic 2006 EDR Proceeding"); the Board Directions on Cost Allocation Methodology for Electricity Distributors (Cost allocation Review – EB-2005-0317); the March 17, 2006 joint report by the Ontario Power Authority ("OPA") and the Board entitled "*Joint Report to the Minister of Energy: Recommendations on a Standard Offer Program for Small Generators connected to a Distribution System*" ("Joint SOP Report"); and the EESC Report.

The release of this discussion paper and the EESC Report is the first step in a consultative process that will assist the Board in determining an appropriate

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policy framework for DG, and is intended primarily to solicit input from interested parties. The policy framework that will ultimately be determined by the Board will in turn provide the basis for subsequent rate applications from electricity distributors on these matters, or the basis for potential amendments to the Board's regulatory instruments (notably the DSC).

Certain issues relating to the treatment of DG are also included in the Board's longer term Comprehensive Rate Design Review project.¹ Examination of the issues outlined in this discussion paper has been advanced to allow for the development of, at a minimum: (1) transitional policy direction on standby rates for customers with load displacement generation; (2) DG customer rate classification; and (3) the recovery of connection costs for DG. While the current initiative is intended to provide greater regulatory predictability in the short term, the results of this initiative may need to be revised depending on the outcome of the Comprehensive Rate Design Review. Alternatively, the Board may decide to defer implementation of the results of this initiative to 2010 or 2011.

1.2. Additional Areas for Input

Encouraging DG from renewable or clean energy sources is an important energy policy objective of the Government of Ontario, as evidenced most recently by the Government's June 14, 2007 announcement on the Clean Energy Standard Offer Program.

While smaller scale, local generation is becoming progressively more competitive with the emergence of new technologies, the potential benefits of DG may not materialize to the extent desired due to institutional or regulatory obstacles. Concerns beyond the rate treatment and connection cost issues that are the focus of this discussion paper and the EESC Report may need to be addressed.

¹ See the March 30, 2007 Staff Discussion Paper entitled *Rate Design for Electricity Distributors: Overview and Scoping*.

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Progress has already been made by the Board on several fronts to remove regulatory barriers to the implementation of DG and to provide a more supportive regulatory environment for DG projects. These include:

- amending the DSC to implement the net metering program;
- waiving the annual registration fee and reducing the one-time licence application fee for smaller generators;
- simplifying the generation licence application form specifically for generators participating in the Renewable Energy Standard Offer Program (“RESOP”) administered by the OPA and simplifying the generation licence application form for other generation;
- amending the DSC and the Retail Settlement Code to facilitate the connection of DG facilities and the settlement of DG facilities with RESOP contracts; and
- developing record-keeping requirements that better enable the Board to audit compliance by distributors with their obligations in relation to the connection of generation facilities.

Board staff recognizes, however, that work may remain to be done to support the Government in achieving its objectives with respect to DG. The consultation on DG that is the subject of this discussion paper presents a timely opportunity for Board staff to also commence gathering information from stakeholders on remaining institutional or regulatory barriers to the implementation of DG initiatives, including the new Clean Energy Standard Offer Program.

2. Background

In the Generic 2006 EDR Proceeding, the Board requested submissions on whether there should be a standardized methodology for the determination of standby rates for customers with load displacement generation or whether there should be distributor-specific approaches to the design of such rates. The Board found that a standard methodology for standby rates was preferable and that standby rates should be cost-based and recognize system-wide benefits. The Board further indicated that all existing and proposed standby rates should be declared interim pending the outcome of the Cost Allocation Review for electricity distributors. In particular, the Board in its March 21, 2006 Decision with Reasons stated that (at pages 11 and 12):

The Board agrees with the submissions of various parties that distributed generation can yield system-wide benefits for electricity distribution in the Province. These benefits need to be recognized in the appropriate standby rates. It is also clear that the older standby rates may not be based on any true cost allocation principles.

It is also evident that the new standby rates proposed in this proceeding by a number of distributors do not have a proper cost foundation due to lack of available data. The Board agrees that proper costs and benefits allocation should be employed in setting these rates. However, the cost allocation process currently underway before the Board is nearing completion and its terms of reference did not specifically include this issue.

In the meantime, in order to protect the interests of all parties involved, and not to create any disincentives to investment in this important technology, all existing and proposed standby rates should be declared interim, pending further review of these important principles.

The Board believes that efficient localized generation including load displacement generation can and will provide benefits to the provincial electricity system and to ratepayers. The Board also believes that a standard methodology across all utilities is preferable, but notes that a standard methodology does not necessarily mean identical rates.

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The starting point for the development of the standard methodology would be the proper allocation of costs to those that cause the cost, as well as a quantification of the benefits. The Board will address this matter in the upcoming review of distribution rate design.

Based on this generic Decision, subsequent Decisions and Orders on individual 2006 electricity distribution rate applications declared standby rates to be interim.

In its Directions on Cost Allocation Methodology for Electricity Distributors (Cost Allocation Review – EB-2005-0317), the Board set out a common cost allocation approach for distribution costs associated with the load displacement generation rate classification. The Board stated that the intent was to accurately and reliably allocate costs to customers with load displacement generation, and indicated that the issues of whether a separate rate classification should be established, and how the allocated costs should be best recovered in future rate design, would be addressed in separate consultations.

In its Decision with Reasons in the Generic 2006 EDR Proceeding, the Board stated that the issue of revenue losses due to load displacement distributed generation could be addressed at the time the Board considers the standard methodology for setting standby rates.

In the Joint SOP Report, the Board concluded (recommendation 5.13) that it intends to consider the issue of the allocation of connection costs in relation to all generators, including those that may be eligible for the standard offer program, as part of its broader examination of electricity distribution rate design.

3. Standby Rates for Customers with Load Displacement Generation and Rate Classification

3.1. Background

At present, about fourteen electricity distributors in Ontario have standby rates for customers with load displacement generation. As noted in Board staff's November 2005 discussion paper issued in the initial phases of the development of what has now become the Renewable Energy Standard Offer Program administered by the OPA,² existing standby rates incorporate many different approaches to the establishment of the level of the charge and a variety of billing determinants, including actual or anticipated maximum demand, kilowatts of reserved capacity, kVa rating, manufacturer's rated output of the cogenerator, and various monthly service charges. Some of the rates were established prior to the restructuring of the Ontario electricity sector while others are more recent.

In addition, the levels of the standby charges were not designed to explicitly reflect any potential benefits associated with the presence of load displacement generation.

3.2. Initial Proposals and Issues Identified for Comment

Staff sees merit in the recommendations set forth in the EESC Report regarding standby rates for customers with load displacement generation. In particular, staff supports the following considerations for setting and designing standby rates:

- in keeping with cost causality principles, rates should be designed to reflect the costs, net of any offsetting benefits;

² Staff Discussion Paper: Standard Offer Program for Eligible Distributed Generation, November 17, 2005, at p. 14: available at http://www.oeb.gov.ca/documents/cases/EB-2005-0463/standard_offer-staffpaper-171105.pdf

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- the rate structure should be simple and understandable for customers, and cost effective for electricity distributors to implement and administer; and
- rates should not create artificial barriers to DG.

In addition, staff is of the view that the rate structure should reflect the following components:

- a monthly demand charge that recovers the costs of having the transmission and distribution system available when needed; and
- a monthly customer charge that recovers customer-related costs.

While standby rates may differ across electricity distributors, staff is also of the view that, unless otherwise justified, the rate structure and the methodology used to calculate the rate should be consistent.

Staff notes that the EESC Report includes, as part of the recommended considerations for setting and designing standby rates, the objectives of: (1) encouraging reduced redundancy of installed capacity; (2) operating of DG facilities during on-peak hours; and (3) utilization of excess grid capacity during off-peak hours. In addition, the EESC Report recommends that rates be differentiated on the basis of delivery voltage provided to the load displacement generation customer (i.e., primary, secondary, or sub transmission levels). While staff believes that these recommendations merit further consideration, analysis at this juncture should be tempered with the understanding that these fundamental questions will be evaluated as part of the broader Comprehensive Rate Design Review.

During the Generic 2006 EDR Proceeding, the electricity distributors proposed to charge the same rate for standby service as would be charged if electricity were actually being supplied to the load. Their stated rationale was that their costs are

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the same regardless of whether the load is used or not. On this subject, staff has identified the following as issues in relation to which input would be of assistance.

- *What might be a reasonable billing determinant for recovering demand-related costs? For example, the demand charge could be calculated on the basis of the annual contract demand, or alternatively be based on the maximum demand for back up service.*
- *Should standby charges be further differentiated between backup, maintenance and supplemental services? As stated in the EESC Report, backup service is defined as electrical energy delivered by the electricity distributor during unscheduled outages of the customer's onsite generator, while maintenance service represents electrical energy delivered during a scheduled outage. Supplemental service is defined as electrical energy delivered by the electricity distributor when the output of the onsite generator is less than the customer's maximum demand.*
- *Are there other issues that should be considered by the Board?*

With regard to the potential benefits of DG, the Board, in its Decision with Reasons in the Generic 2006 EDR Proceeding, recognized the increasing importance of DG and quoted the potential benefits as set out in the report of the Energy Conservation and Supply Task Force.³ That Task Force Report stated the following:

³ Energy Conservation and Supply Task Force, *Tough Choices: Addressing Ontario's Power Needs*, Final Report to the Minister (January 2004), at page 54: available at <http://www.energy.gov.on.ca/english/pdf/electricity/TaskForceReport.pdf>.

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By supplying power near load it is possible to avoid or defer transmission and distribution investments that would otherwise be needed to supply electricity to the load. Reductions in transmission and distribution losses may also occur due to reduced transmission and distribution distances. At times of system stress, DG can enhance system reliability.

The EESC Report recommends that a process be established for determining the benefits of larger load displacement generators and that this process should be initiated as part of the standardized connection agreement between the distributor and the customer with load displacement generation. This process would be customer specific and could take into consideration factors such as location, design and operation of a larger customer with load displacement generation. The EESC Report also identifies two conceptual methods that could be used to quantify the benefits of load displacement generation: (1) a marginal cost approach; and (2) an incremental cost approach. The marginal cost approach would consist of quantifying the marginal costs of capital investments and avoided operating expenses. This would then be used to calculate the benefit of the reduced capacity needs or operating costs. Under the incremental cost approach, the electricity distributor's revenue requirement would be calculated with and without the customer with load displacement generation. The reduction in the revenue requirement, if any, would represent the benefits attributable to the customer with load displacement generation.

Alternatively, in order to simplify the benefit calculation and facilitate rate implementation for smaller customers with load displacement generation, the EESC Report identifies as options the use of a reduced revenue to cost ratio as a proxy for determining the potential benefits, or the establishment of a generic crediting process that would apply to smaller customers with load displacement generation.

The EESC Report further recommends that any benefits provided to customers with load displacement generation be recovered from all customers based on the cost allocation methodology used to allocate similar costs.

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On the issue of benefits, staff notes the absence of any widely applied methodology used to quantify the benefits of load displacement generation. The following have been identified by staff as issues in relation to which input would be of assistance.

- *How should any distribution and transmission benefits provided by load displacement generation be identified and quantified?*
- *Should a different approach be adopted depending on the size of the customer?*
- *Should any benefit provided to customers with load displacement generation be recovered from all customers? If so, on what basis should this be done?*
- *Are there other operational or implementation issues that should be considered by the Board?*

With respect to rate classification, the EESC Report proposes the creation of a separate class for customers with load displacement generation with generation capacity above 500 kW, and where the customer generates more than 10% of its total load. Customers with load displacement generation that do not meet these criteria (e.g., generation capacity less than 500 kW, or greater than 500 kW but making up less than 10% of the customer's total load) would remain in the distributor's current rate classification. The rationale underpinning the 500 kW threshold is that it would allow for special treatment of larger customers while limiting the administrative burden on electricity distributors associated with having to identify all customers with load displacement generation.

Staff sees merit in establishing a separate rate class for customers with load displacement generation in order to support a cost-based approach for setting rates, and to potentially facilitate the implementation of credits that would reflect the benefits associated with such generation. On this subject, staff has identified the following as issues in relation to which input would be of assistance.

- *Is a separate classification warranted and, if so, should it apply to all customers with load displacement generation, or to a subset of these customers as suggested in the EESC Report?*
- *Are there other criteria that should be used to justify a separate rate classification for a subset of these customers?*
- *What would be an appropriate threshold for a generator rate class?*

4. Revenue Losses Due to Load Displacement Generation

4.1. Background

Electricity distributors can be exposed to revenue losses when a customer installs generation facilities that displace load that would otherwise have been purchased from the distributor. Lower demand and energy volumes can affect revenue, until the time that they can be reflected in the determination of rates through rebasing.

During the Generic 2006 EDR Proceeding, a distributor stated that it should be able to recover the foregone revenue resulting from a customer's installation of load displacement generation in the intervening period between re-setting distribution rates. The party accordingly sought approval to establish a variance account that would capture revenue losses resulting from such an occurrence.

In response, other parties argued that potential lost revenue would be mitigated in part by the standby rates that a customer with load displacement generation will pay to the electricity distributor. In addition, some parties stated that electricity distributors are generally aware of impending load loss due to the installation of a load displacement generation project within a six- to twelve-month notice period, and that the size is often very small.

In its Decision with Reasons in the Generic 2006 EDR Proceeding, the Board stated the following (at page 13):

The extent to which distributed generation will develop is not clear. Nor for that matter, is the degree to which the utilities can forecast the revenue consequences. Nonetheless, the promotion of this investment is an important element of the Government's policy. To the extent that the regulatory process can support that policy, it should. One step, as indicated previously, is to establish the correct standby rates that reflect both the costs and benefits of this investment.

The other is to ensure that the utility remains whole. It is true that standby rates may mitigate lost revenue if in fact those standby rates are properly set. The Board believes that it is premature at this time to establish deferral accounts to record foregone revenues due to unforeseen load losses arising from distributed generation. This matter can be addressed at the time the Board considers the standard methodology for standby rates.

4.2. Initial Proposals and Issues Identified for Comment

Different methods could be used to compensate electricity distributors for revenue losses resulting from a customer's installation of load displacement generation during the intervening period between re-setting distribution rates. They include:

- charging an exit fee to a load leaving the system;
- setting a standby rate to recover distribution system costs where the monthly demand charge is calculated based on a demand level mutually agreed to by both parties and is applied to those months when the load displacement generation facility is in operation;
- establishing a contracted level of demand that includes both the normal operation and the demand required when the load displacement generation is not available; or

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- establishing a variance account for further disposition that captures the net revenue loss associated with such a customer.

While the options described above are designed to keep electricity distributors whole or minimize the extent of revenue loss due to a customer with load displacement generation, they differ both in terms of the timing associated with cost recovery, and targeted customer groups. For example, the first option, charging an exit fee, is based on a user pay approach, and would provide short term relief to an affected electricity distributor.

The second option, an agreed monthly demand charge, is also customer specific and addresses the exposure to lost revenue through the setting and design of the standby charge and the determination of an appropriate billing determinant. Under this option, a customer with load displacement generation would continue to be treated as a load customer. The costs of the assets standing ready to be used if and when the generation facility is unavailable would be recovered through a standby rate with a billing determinant based on the maximum incremental load that the customer with load displacement generation could place on the system. While this approach addresses the exposure to potential revenue loss, it could be perceived as a barrier to the development of DG.

The third option merely establishes a contractual agreement between the distributor and the customer that would guarantee a level of load for billing purposes.

Under the fourth option, the net revenue loss would be captured in a variance account and recovered from all ratepayers. While this option has been accepted in other jurisdictions on the basis that load displacement generation provides benefits that are for the common good, this approach also results in the greatest level of cross-subsidization across ratepayers.

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Staff has identified the following as issues in relation to which input would be of assistance regarding the question of revenue losses due to load displacement generation.

- *Has net revenue loss due to customers with load displacement generation been material?*
- *How might net revenue loss be quantified?*
- *How might the Board determine an appropriate method to compensate electricity distributors for such revenue loss? Consideration should be given to a consistent approach between revenue loss caused by customers with load displacement generation and revenue loss caused by other load customers due to factors such as economic conditions. In evaluating each of the options presented above, consideration should also be given to the incentive regulate framework under which electricity distributors are currently operating.*

5. Recovery of Connection Costs

5.1. Background

At present, under the DSC, a person that provides distributed generation to the electricity system is responsible for paying the direct costs of connecting their facilities to the distribution network, and the costs, if any, associated with system reinforcement beyond the connection point. The DSC also provides for a refund of system reinforcement costs where a subsequent generator connection obtains the benefit of reinforcements paid for by the earlier generator.

Distributed generators that connect directly to a distribution system are required to pay connection costs up front. The costs of the assets to serve generators are considered user pay fees, and are not added to the rate base of the distributor. In contrast, connection costs for residential class load customers, including

customers with load displacement generation behind the meter, are recovered from all distribution customers through rates (a capital contribution may also be required if the net present value of the projected capital and maintenance costs are in excess of the net present value of the projected revenue for distribution services). Load customers in other rate classes are charged connection costs up front, as may be specified in the distributor's Conditions of Service. This approach is used in virtually every jurisdiction in the world.⁴ It should be noted, however, that in the United Kingdom, in order to facilitate the connection of DG facilities, Ofgem has been involved in a rate re-design exercise to develop charging models that would include generator connection assets in rate base, and levy use-of-system charges for generation.⁵

In the Joint SOP Report, economic siting of generation was cited as an issue for the design of a rate model. One option identified was to make the generation model similar to the load model. That would entail the inclusion of connection costs in rate base and require generators to pay use-of-system charges. Another identified option consisted of allowing distributors to pay for and add to rate base reinforcement costs when the generation connection that triggered the reinforcement is an alternative to network investment. The Board expressed concerns that removing the obligation on generators to pay for all connection costs will result in uneconomic projects going forward. If costs are socialized, neither the generator or the distributor have an incentive to look for economic siting or connection.

⁴ Commission of Energy Regulation, Electricity Tariff Design Review: International Comparisons, March 2004.

⁵ Ofgem, Design of electricity distribution charges: Consultation on the longer term charging framework, May 2005.

5.2. Initial Proposals and Issues Identified for Comment

The costs of connection can be material for a small DG facility and have been cited as a barrier to development.

Some generators have argued that they should not have to pay deep connection costs because they are not properly compensated for the benefits (e.g., avoided transmission costs, reduced line losses, and ancillary services) that they bring to the distribution system. In the absence of relief from connection costs, they have suggested, as an alternative, that electricity distributors could finance the costs of connection and recover them through a rate that would be applicable to a class of DG.

In response to staff's discussion paper issued in the context of the Comprehensive Rate Design Review referred to above, a stakeholder commented that load customers on a distribution system should not subsidize generator costs through their distribution rates. It was argued that, if there is a province-wide policy to subsidize generator connection costs, these costs should be socialized throughout the province, and not within the service area of a particular distributor. It was also argued that the recovery of DG connection costs through rates would present an undesirable business risk to electricity distributors in the event that a generator curtails its use of the system or becomes insolvent. Another interested party indicated that "while generator customers pay the entire cost of connection up front, load customers' connection costs are recovered over time by the distributor through rates as specified in the Distribution System Code, sections 3.1.4 and 3.1.5. Charging the same rates to these two customer types has the result of double-charging distributed generators for their connection costs."

Staff appreciates the views expressed by certain parties that the existing method for recovering connection costs for a DG facility may represent a barrier to entry.

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Staff believes that connection costs for a DG facility should be paid for or recovered in a fair and nondiscriminatory manner. In other words, the treatment of DG connection costs should not be misaligned with Province-wide system benefits that may result from increased DG. The status quo, by which generation customers pay directly and load customers pay through rates, addresses the following objectives: (1) minimizing cross-subsidization; (2) minimizing the level of connection costs; and (3) minimizing electricity distributors' exposure to stranded costs. It does not, however, attempt to recognize system benefits that may be provided by increased DG.

Input on the following issues would be of assistance with respect to the treatment of connection costs.

- *What alternatives to the status quo should be considered and what is the rationale for each of these options?*
- *If connection costs are socialized, is there a risk of uneconomic DG projects going forward? If so, how can that risk be mitigated or avoided? Would this approach affect the incentive for distributors to design economic connections?*

6. Other Aspects

There may be rate-related issues associated with DG that have not been specifically addressed in this discussion paper or the EESC Report. Board staff is therefore interested in comments on the following.

- *Are there other rate-related issues associated with DG that should be addressed, or that should be addressed more fully? Is the experience in other jurisdictions on those issues relevant to the Ontario situation?*

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- *Are there unidentified barriers or is separate treatment required for embedded generation projects or for projects falling below the threshold of a new rate class?*

As noted earlier, Board staff is using this opportunity to also commence gathering information from stakeholders on perceived regulatory and institutional barriers to implementation of DG initiatives, such as the Clean Energy Standard Offer Program. Comments received will be considered by the Board for future action as appropriate. To the extent that the comments relate to matters that are outside the authority of the Board, those comments will be shared with the appropriate third party. Staff has therefore identified the following as a further issue on which stakeholder input would be beneficial.

- *What are the institutional or regulatory barriers to implementation of DG? How might such barriers best be addressed?*
- *Are there DG-related issues, other than those relating to the rate or connection cost treatment of DG facilities that need to be addressed? Is the experience in other jurisdictions on those issues relevant to the Ontario situation?*