Development of a Standby Rates Policy for Load Displacement Generation – Working Group Meeting

EB-2013-0004
April 5, 2013

Agenda

1. LDG and Standby rates
2. Cost Allocation Issues
3. Rate Design Issues
4. Avoided Costs
5. Hydro Ottawa's Approach
6. Jurisdictional Review Proposal

What is LDG?

The OEB's Distribution System Code states:

- "load displacement" means, in relation to a generation facility that is connected on the customer side of a connection point, that the output of the generation facility is used or intended to be used exclusively for the customer's own consumption.

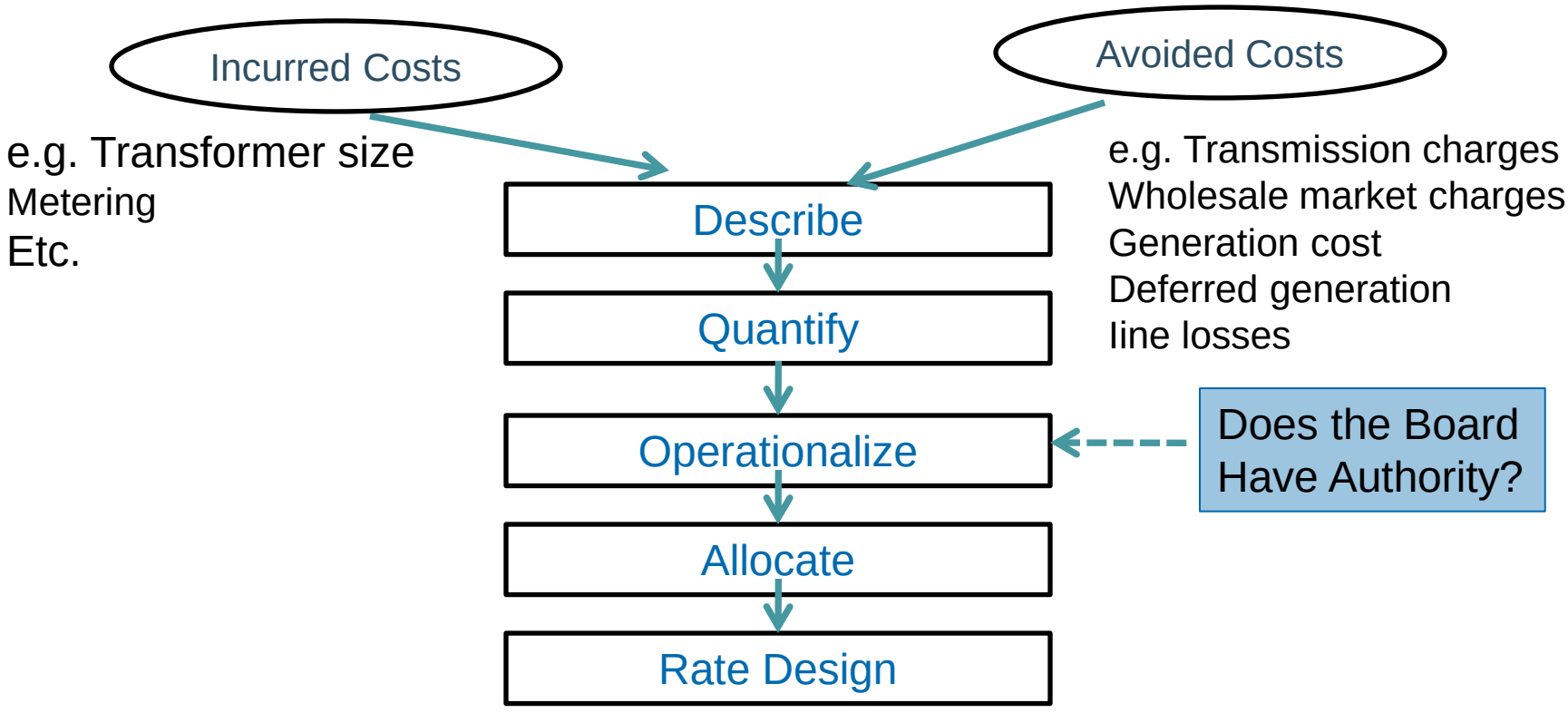
What is LDG in the Context of the Applicability of Standby Rates

- Only generation connected to a distribution system, or also to the transmission system?

- Threshold set based on nameplate rating of the generation facility to determine applicability of standby rates?
  - Most distributors are applying a 500 kW threshold, is this an appropriate level?
  - Possible threshold alternative: if it represents more than a certain percentage of the distributors' load (e.g. 10%).

- Should LDG be defined narrowly (as in the DSC) to only include generation that is exclusively used for the customer's own consumption?

Overview of Standby Rates for LDG Issues



Cost Allocation Issues (1)
LDCs – Current Practices

- Some distributors have a standby rate class to which they allocate costs for providing standby service to their LDG customers (resulting in standby rates that are based on the allocated costs).
- Some distributors do not have a class and therefore do not allocate costs for the provision of standby service (these distributors simply apply a monthly fixed charge and/or a volumetric charge at the prevailing GS volumetric rate) to their LDG customers.
- Some distributors bill LDG customers on a gross demand basis at the prevailing GS volumetric rate for the rate class where the customer resides (plus a monthly fixed charge in some cases). These distributors do not allocate costs to LDG customers specifically for the provision of standby service.
- Some distributors treat LDG customers as regular load customers and do not charge anything for the provision of standby service.
- Standby service refers to the provision of service for both unexpected generation shutdowns and scheduled maintenance. Note that rate design considerations related to this issue are discussed later.

Cost Allocation Issues (2)
Cost Allocation Principles and Methodology

In order to design cost-based rates, the costs associated with provision of standby service should be allocated to those customers that create the costs. The costs should be allocated on the basis of the cost causality principle to ensure fairness for the LDG customers and all of the LDCs' other customers.

- Should there be a specific standby service rate class where costs associated with the provision of standby service can be allocated to LDG customers?
- Should there be an "all-in" rate class where all of the costs associated with serving LDG customers can be allocated? (i.e. standby service plus supplemental service).
- What incurred cost items should be included in the costs allocated to the LDG customers for the provision of standby service? (i.e. More meter reading and/or billing costs due to added complexity).
- How should the incurred costs be allocated to the LDG customers (i.e. direct allocation, etc.)? Will the CA model need to be updated?

Rate Design Issues (1)
The Basics

How should the standby rates be designed?

- Should there be a fixed and variable charge?

- Should separate standby rates be designed for each of:
  - Back-Up Service – unexpected generation shut-downs;
  - Maintenance Service – generation shut-down for scheduled maintenance;

- On what billing determinant would a volumetric charge apply? Contracted amount? Nameplate capacity? Gross or net demand billing?

- Should the volumetric charge be applied every month regardless of the operation of the generation facility? Should the application of the volumetric charge or the kW amount that the volumetric charge is applied to change depending on the operation of the generation facility?

Rate Design Issues (2)
Other Rate Design Issues

- **Contracting Issues:**
- We note that most utilities allow LDG customers to contract for less reserve capacity than the nameplate rating of the LDG facility.
- Should LDG customers be allowed to do this? Should a requirement be that all distributors offer the option to contract for less reserve capacity than the nameplate rating of the LDG facility?
- **Service Option Issues:**
- Should interruptible service options be made available to LDG customers?
- Other potential service options?

Rate Design Issues (3)
Avoided Costs

- Should LDG customers receive a credit (or discount) to their standby rates for the costs avoided by the electricity system due to the existence of the LDG customer?
- What avoided costs items should be considered for the rates designed for LDG customers?
- Should only avoided costs that can be quantified and operationalized in the context of the relationship between the distributor and the LDG customer be considered?

Distributors – Avoided Costs

- **Distributors – Avoided Costs:**
  - Distributors‘ Transmission Peak shaved by the LDG
  - Distributors’ capital expansion of assets (feeders, transformers)
  - Distribution Line Losses
  - Wholesale (IESO) charges
  - Other Distribution Level Avoided Costs?
  - Can the above noted avoided costs be quantified?
  - Is there a way to stream the quantifiable avoided costs to the LDG customer?
  - Should the LDCs’ other customers be required to pay for a credit applied to the rates of the LDG customer for the distribution level avoided costs?

Transmission – Avoided Costs

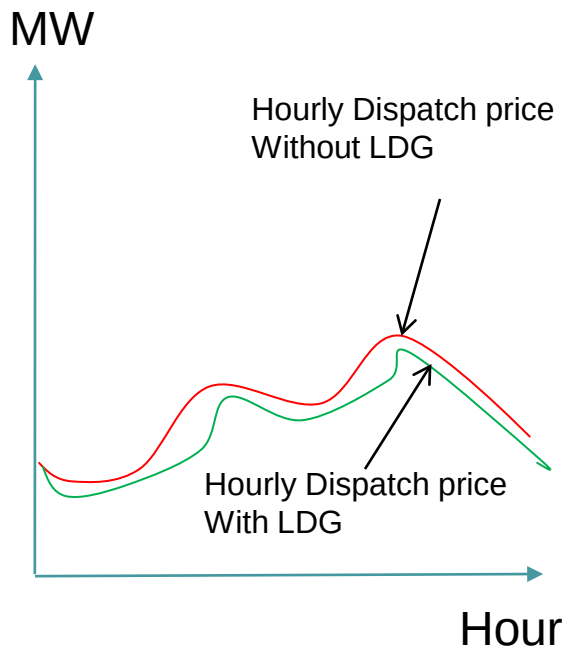
- **Transmission – Avoided Costs:**
  - Transmission Line Losses
  - Transmission capital expansion of assets (lines, transformers)
  - Voltage Support
  - Other Transmission Level Avoided Costs?
    - Can the above noted avoided costs be quantified?
    - Is there a way to stream the quantifiable avoided costs to the LDG customer?
    - Should the LDCs' other customers be required to pay for a credit applied to the rates of the LDG customer for the transmission level avoided costs? If so, why? If not, why not?
    - Should these avoided costs be paid by another group of customers? i.e. should all Ontario customers be required to pay for these avoided costs?

Generation – Avoided Costs (1)

- **Generation – Avoided Costs:**
  - Avoided Generation Capacity
    - Threshold aggregation issues – system tends to add capacity in (relatively large) increments whereas (relatively small) distributed LDG capacity displacement is closer to a continuous variable.
      - E.g. Up to 250MW of statistically dependable LDG has no impact on deferred capacity, after 250MW deferred costs are pro-rated among eligible LDG.
  - Other Generation Level Avoided Costs?
    - Changing the dispatch order to lower cost generation
      - E.g. Lower load to allow hydraulic plant rather than gas
      - In practice depends on specific character of system and specific operating conditions. E.g. in many hours in Ontario LDG replaces one type of gas plant with another.
  - Can the above noted avoided costs be quantified?
  - Is there a way to stream the quantifiable avoided costs to the LDG customer?
  - Should the LDCs' other customers be required to pay for a credit applied to the rates of the LDG customer for the transmission level avoided costs? If so, why? If not, why not?
  - Should these avoided costs be paid by another group of customers? i.e. should all Ontario customers be required to pay for these avoided costs?

Generation – Avoided Costs (2)
Generated Energy Avoided Cost

- The theoretically-correct approach is to simulate the impact on generation dispatch of each LDG (every 5 minutes)
  - The avoided cost is the difference in the 5 minute price multiplies by the MW not withdrawn due to LDG
- Are LDG avoided costs material enough?
- Is some averaging procedure reasonable?
  - Average over several LDGs
    - Over hours / days / selected hours (e.g. Peak)



Generation – Avoided Costs (3)
Avoided Cost of Generation Capacity

- In theory the value of avoided generation capacity is the discounted net present value of the system without the incremental generation over the period during which capacity is avoided

- In Ontario this would be determined by OPA
  - IPSP as modified by LTEP

- LDG would be treated the same as energy efficiency – a probabilistic determination of dependable displaced load

Hydro Ottawa's Approach

- Thoughts on Hydro Ottawa's approach?

- ***Standby Charges***

Hydro Ottawa proposed Standby Charges as part of its 2008 Rate Application. They were approved by the OEB on an interim basis. The Standby Charge applies to all customers with load displacement generators with a total combined nameplate rating greater than or equal to 500 kVA. The purpose of the Standby Charge is to recover the cost of providing reserved capacity to these customers and to eliminate cross-subsidization by other customers. Hydro Ottawa's distribution rates are designed based on the principle of continuous use. When customers displace load with generation, the expected revenue to recover capital, operating, maintenance and administration costs are not realized and the burden falls on other customers to subsidize those revenue shortfalls.

Due to the nature of Hydro Ottawa's distribution system and its embedded generators, site-specific Standby Charges are not practical. Generators are installed in very dense urban environments and determining what specific assets are related to each site is simply too difficult to assess. Hydro Ottawa is proposing to use class-specific charges instead.

- **Rate Structure**

The Standby Charge is composed of a standby monthly service charge for administration and a standby distribution volumetric rate based on the Contract Backup Demand as determined by the methodology outlined below

Standby Monthly Service Charge – A monthly fixed charge applied to cover the incremental cost of monitoring, billing and administration related to providing standby facilities.

Standby Distribution Volumetric Rate – A rate per kW or kVA of Billed Backup Demand. The Billed Backup Demand quantity will be equal to or less than the Contract Backup Demand depending on whether the reserved capacity was required during the billing period. The standby distribution volumetric rate would be equal to the class-specific distribution volumetric rate.

- **Customer Classification**

The rate classification of customers with load displacement generators will be net of the connected generation. The 12-month average demand used to determine customer classifications will be the demand based on meter readings.

- **Contract Backup Demand**

The Contract Backup Demand can be determined by using the full nameplate value of the generating plant or a lesser amount as agreed to by the customer and Hydro Ottawa. The customer can elect to contract for a lesser amount if it intends to shed load when the generation is not available. This will reduce the customer's monthly cost but may expose them to the Backup Overrun Adjustment if the contracted amount is exceeded. If a customer determines that no backup capacity is required, it must still sign a Standby Facilities Contract indicating that it has elected not to contract for backup capacity. Backup Overrun Adjustments will be applied if the customer is forced to use standby capacity for which it has not contracted. Hydro Ottawa reserves the right to impose a Contract Backup Demand if a customer fails to meet its obligations.

- **Determination of Billed Backup Demand**

The Contract Backup Demand establishes a ceiling for Billed Backup Demand (excluding Backup Overrun Adjustments). The following three examples illustrate how the volumetric component of the Standby Charge is determined. The examples that follow assume that the regular distribution volumetric charges apply to the metered peak demand. The Standby Charge is intended to supplement demand shortfalls introduced by the generation.

Example 1 – Generation ON for entire period

In this case the Billed Backup Demand would be equal to the Contract Backup Demand. The Contract Backup Demand replaces demand that would have been captured by Hydro Ottawa's interval metering had the generation been off.

Example 2 – Generation OFF for entire period

In this case the Billed Backup Demand would be zero. The customer is billed based on the peak demand registered on Hydro Ottawa's interval meters.

Example 3 – Generation ON and OFF during period (No Backup Overruns)

In this example the Billed Backup Demand is:

Contract Demand – (Metered Peak generator OFF – Metered Peak generator ON)

This assumes that the difference between the generator OFF peak and the generator ON peak is less then the contracted amount; if not, the customer is subject to a Backup Overrun Adjustment.

- **Backup Overrun Adjustment**

The Backup Overrun Adjustment is to ensure customers contract for the appropriate amount of standby capacity. Customers must meet contract requirements by shedding load if they have contracted for an amount less then the nameplate rating. The Backup Overrun Adjustment is calculated as follows:

(Generator OFF Peak – Generator ON Peak) – Contract Backup Demand

If the Contract Backup Demand is less than the difference between the two peaks, a charge will apply.

Backup Overrun Adjustments are determined by reviewing interval data prior to and immediately after a generator change-of-status. The instantaneous demand difference with the generator on and off is determinative of the standby capacity used and any overrun used. The Backup Overrun Adjustments never exceed the nameplate rating of the generating plant; consequently, the Backup Overrun Adjustment only applies to customers that have contracted for Backup Demand less then the generator nameplate rating.

Contract Backup Demand is reviewed on a quarterly basis. If a customer has exceeded the Contract Backup Demand (Backup Overrun Adjustment) in any of the three preceding billing periods, the Contract Backup Demand will be increased to the highest monthly level of utilization that occurred in those three months.

The Backup Overrun Adjustment is assessed at the same rate as the Billed Backup Demand.

Cost Allocation and Rate Design Issues

- Any other issues that will need to be addressed which were missed in the presentation?

Jurisdictional Review Proposal

- Elenchus recommends that it complete a review of the following jurisdictions in regards to their treatment of LDG customers:
  - United Kingdom
  - New Zealand
  - Australia
  - California
  - Texas
  - PJM
  - New York
  - Alberta

- Elenchus is of the view that the above noted jurisdictions are the most relevant for Ontario (as these jurisdictions' have formerly integrated but now restructured electricity systems).