Q. **Reference: Chapter 6, Sections 6.6 and 6.7; Exhibit 17**

Hydro proposes material changes to the Island Industrial rate design intended to provide customers with marginal-cost price signals and opportunities to modify their demand, energy consumption and load factor. Hydro proposes more limited changes to the Newfoundland Power wholesale rate design.

a) Explain whether Hydro assessed the relative ability of Island Industrial customers and Newfoundland Power's residential customers to respond to the respective proposed rate structures and avoid or reduce billed costs. If not, explain why.

b) Provide a table that identifies the rate-design options available to Island Industrial customers to reduce their bills under the proposed rate and explain whether each option is expected to produce a corresponding reduction in Hydro's system costs or foregone revenues.

c) For each identified rate-response opportunity, quantify: i) the forecast reduction in total industrial customer bills; ii) the corresponding reduction in Hydro's costs or increase in net system revenues; and iii) any residual revenue requirement that remains to be recovered from customers.

d) Explain how Hydro ensures that reductions in Island Industrial bills resulting from changes in billing demand, load factor, timing of consumption or movement between rate blocks do not shift recovery of fixed or embedded system costs to Newfoundland Power.

e) Explain whether Hydro considered rate-design changes for Newfoundland Power or residential customers that would provide comparable opportunities to reduce bills through economically beneficial changes in demand or consumption. If not, explain why.

f) Explain how Hydro determined that the proposed rate structures result in an equitable sharing of fixed and embedded system costs between customers with substantial ability to alter their billing determinants and residential customers with more limited ability to do so.

This response was provided by Christensen Associates Energy Consulting.

A. **a)** Newfoundland and Labrador Hydro ("Hydro") did not assess relative ability to respond by class but did not need to conduct such an assessment to review the viability of an hours of use ("HOU") design for Island Industrial Customers. The issue was solely whether the HOU design could offer improved service to these customers relative to the standard tariff while preserving revenue sufficiency and thus protecting other customers, including Newfoundland Power Inc.

b) The rate design options of significance appear to be two in number, perhaps rendering a table unnecessary.

- First, customers can control their bills under the HOU design by maximizing their load factor while modifying their loads, which typically means controlling their peak demand (and implicitly avoiding unplanned increases in their Power on Order) as they increase or decrease usage.
- Second, because the Block 2 energy price is seasonal, customers can plan shutdowns for maintenance or inventory reduction in the Winter season and can explore offsetting production increases in the Non-Winter season. Control of peak demand reduces costs that would otherwise be incurred by the utility, and the cost reduction is passed on to the customer in bill reductions. Seasonal changes in consumption change utility costs and revenues similarly when the customer is reducing or increasing Block 2 consumption without changing Block 1 consumption.

c) A customer who improves their load factor will reduce their cost to serve in proportion to their bills. Both before and after the change in load factor, the customer will face a rate where the customer will have a bill that is close to their cost to serve, as demonstrated by the customer results in the report. This implies that there will likely be no significant residual revenue requirement to be covered by other classes. For illustrative impacts in response to defined load and demand changes, please refer to Hydro's response to CA-NLH-186.

d) Under the HOU design, the customer's bill becomes predominantly a customer-specific lump sum that varies little from month to month within each season. The customer's Power

on Order determines the demand charge and the amount of Block 1 consumption. Changes in consumption that do not affect load factor result in changes in billing of Block 2 energy that match forecasted marginal cost. (Actual marginal cost can depart from forecasted marginal cost, of course; a posted energy price of a standard tariff can do the same.) Should the customer change their load factor by significantly reducing consumption without reducing peak demand, they might eliminate their Block 2 consumption and reduce their Block 1 consumption, whose price is not marginal cost-based. This would lead to a revenue shortfall, but this would not necessarily translate into increased revenue requirement for other classes.

e) Hydro's Utility rate already offers similar opportunities to Newfoundland Power. That utility can design rates for their customers that offer seasonal pricing of tail block load so that Hydro's marginal costs are passed through to their customers. Hydro does not determine Newfoundland Power's rates but is always open to facilitating Utility rate revisions that would enable Newfoundland Power to improve the efficiency of its retail pricing. A theoretical limit of such rate design would see Hydro's marginal costs transmitted to Newfoundland Power, which in turn would transmit those same marginal costs, adjusted for losses. to its customers. This strategy would connect pricing for retail customers functionally with forecasted marginal costs in North American markets. Newfoundland Power does not need to parallel its rate designs to that of Hydro's utility rate, but that rate provides marginal cost-based pricing that might be of use to Newfoundland Power in its own rate design.

f) Hydro's proposed HOU design, which is oriented to recovery of fixed costs via fixed pricing and customer-specific lump sum charges from Island Industrial customers, will provide equitable sharing of costs provided that revenue requirements are allocated to class with roughly equal revenue/cost ratios. If one class is more price responsive than another, then marginal cost-based energy pricing will achieve response not otherwise available and will appropriately value that response. Given that HOU pricing provides seasonal variation in energy price only (as opposed to, say, hourly price variation) the price response advantage of Island Industrial customers is limited in the short run. Longer-run response will be reflected in class billing determinants and cost-to-serve share in future COS studies.

Essentially, the improvement in price efficiency for one class delivers direct benefits to customers in that class and indirect benefits to customers in other classes by virtue of overall cost reductions for the utility.