Q. **Reference: Chapter 6, Sections 6.7.1 to 6.7.3; Exhibit 17**

Hydro proposes to reduce the Island Industrial demand charge from $10.73/kW per month to $5.50/kW per month while increasing recovery of embedded demand costs through the First Block Energy rate.

a) Explain why Hydro considers maintaining a demand charge equal to that proposed for Newfoundland Power to be an appropriate rate design objective for the Island Industrial class.

b) Explain why Hydro proposes to reduce the Island Industrial demand charge from $10.73/kW per month to $5.50/kW per month when the embedded average demand cost for the class is $17.54/kW per month.

c) Identify and explain the marginal capacity cost, avoided capacity cost, or other capacity-related information considered in establishing the proposed demand charge.

d) For each alternative demand charge level evaluated, provide: i) the associated First Block Energy rate; ii) the amount and percentage of embedded demand costs recovered through the demand charge; iii) the amount and percentage of embedded demand costs recovered through the First Block Energy rate; iv) annual class revenue by rate component; and v) the resulting overall class bill impact.

e) Explain how the proposed reduction in the demand charge is expected to affect Island Industrial customers' incentives to reduce or manage: i) monthly billing demand; ii) system coincident peak demand; and iii) demand during periods of limited system capacity.

A. *This response was provided by Christensen Associates Energy Consulting.*

a) Newfoundland and Labrador Hydro considers the block design of the Utility rate and the proposed Hours of Use ("HOU") design of the Island Industrial rate to be similar in that they

offer the customer a marginal cost-based price for load increments and decrements from their expected levels of consumption, while retaining the full revenue recovery objective. In this case, similarity of demand price across rates enhances similarity of structure.

b) Since demand-related cost recovery occurs via the demand charge and the block 1 energy charge, and the combined total is treated by the customer as a lump sum, adherence of the demand price to demand-related cost to serve is not as important as it is in the case of a simple customer-demand-energy rate. In the simplest version of the HOU design, a demand price can be zero, and the block 1 price can recover all fixed costs. From the customer's perspective, the price signal that they get is to control peak demand and to manage load in response to the marginal cost-based block 2 energy price.

c) Since the demand price is related to revenue recovery only, it was not necessary to refer to estimates of marginal capacity cost, while embedded cost was a component of revenue requirement.

d) Components of Demand Cost Recovery and Annual Class Revenue for Alternative Demand Prices Under the Proposed HOU Design with a block boundary of 300 Hours of Use:

Demand Price	$0.00	$5.50	$12.00	$17.54
Block 1 Energy Price	$0.08540	$0.06694	$0.04512	$0.02652
Demand-Related Cost	$19,218,192	$19,218,192	$19,218,192	$19,218,192
Demand Cost Recovery	$19,218,192	$19,218,192	$19,218,192	$19,218,192
via Demand Charge	$0	$6,025,800	$13,147,200	$19,218,192
pct of Demand-Related Cost	0.0%	31.4%	68.4%	100.0%
via Block 1 Energy Charge	$19,218,192	$13,192,392	$6,070,992	$0
pct of Demand-Related Cost	100.0%	68.6%	31.6%	0.0%
Annual Class Revenue	$42,813,971	$42,813,971	$42,813,971	$42,813,971
Customer	$413,404	$413,404	$413,404	$413,404
Demand	$0	$6,025,800	$13,147,200	$19,218,192
Energy	$42,400,567	$36,374,767	$29,253,367	$23,182,375
Bill Impact	$0	$0	$0	$0

The level of demand price does not affect total demand-related cost recovery. The share of demand cost recovery via the demand charge increases from zero to 100% as the demand price rises from zero to the unit cost of service. The share of revenue shifts toward demand

as the demand price rises, but the block 2 energy revenue remains unchanged (not shown). The bill impact of using alternative demand prices is zero.

e) Under the HOU design, the customer's perceived marginal price of consumption is the sum of the customer's marginal energy price (usually block 2) and their marginal price of demand. This latter amount is zero if the customer is not close to their Power on Order but can be much larger otherwise, since increases in peak demand reduce load factor and push load previously in block 2 back into block 1. The customer is induced to manage its peak demand so as not to exceed Power on Order and thereby increase billed demand. As a result, it is the combination of demand price and block 1 energy price that provides the price incentive. The reduction in demand price relative to the current rate is offset by an increase in block 1 energy price. Thus, when a customer's usage is close to Power on Order, the demand-related component of marginal price becomes significant, inducing the customer to control their own metered demand so as not to increase their billed demand above Power on Order. Like the current rate, there is no dynamic price component that informs customers of the level of system demand or reserves. However, the HOU design induces limitation of peak demand in all hours.