Volume 2, Tab 9 – Description of Current Rate Structures

Q. (page 3 of 4) "The current rate structure allows customers to pay a lower unit price per kWh by being efficient and minimizing their peak demand relative to their energy requirement (i.e., maintaining a high load factor). The Wright-Hopkinson Rate Structure for Rate 2.2 has been used since 1978. This type of structure is used elsewhere in Canada. However, a Hopkinson rate structure is more prevalent."

a. With a proposed tail-block energy charge of 6.799 cents/kWh, does NP consider this rate structure more efficient than a Hopkinson rate structure with an energy tail-block charge set at the marginal cost of production; i.e., 10 cents/kWh?

b. Would a Hopkinson rate structure with an energy tailblock charge set at the marginal cost of production provide a better match between NP's costs and revenues when actual load varies from forecast, thus reducing NP's business risk?

c. Do the results of the load research study support continuation of a Wright-Hopkinson rate structure for general service customers on Rates 2.2 and 2.3?

d. What are the pros and cons of a Wright-Hopkinson rate structure relative to a Hopkinson rate structure; i.e., compare structures on basis of rate design objectives such as efficiency, fairness, customer understandability, ease of administration, etc?

e. In NP's opinion, why is use of a Hopkinson rate structure more prevalent?

f. If the Board were to direct NP to implement a Hopkinson rate structure for Rates 2.2 and 2.3, what rate would NP propose (consistent with the proposed revenue allocation to these classes)?

A. (a) Both the Wright-Hopkinson and Hopkinson rate *structures* are accepted rate structures in Canada. Both structures can be used in rate design to provide efficient price signals to customers.

Newfoundland Power's rate proposals in this Application reflect a balancing of a number of conflicting rate design criteria. If the tail block rate were increased to 10 cents per kWh, the marginal cost to consumers who purchase energy *in the tail block* would better match the current marginal cost of production. However, the overall efficiency of the rate would also depend on the size of the other rate components (e.g., demand charge, customer charge, other energy blocks).

The marginal cost of energy is volatile as it is derived from the cost of fuel consumed at Hydro's Holyrood Thermal Generating Station. In 2002, the average price of fuel burned at Holyrood was approximately $30 per barrel which is equivalent to a short-term marginal cost of approximately 5¢ per kWh.[1] The current marginal cost of energy is approximately 9.3¢ per kWh. Rate design challenges

[1] 5.0¢ per kWh =$30 per barrel divided by 630 kWh per barrel plus 5.7% losses.

associated with addressing such significant changes in marginal energy costs, while maintaining fairness and stability in embedded cost recovery from customers, would exist under both the Wright-Hopkinson and Hopkinson rate structures.

(b) In order to match class revenue requirement, a Hopkinson rate structure with the tail block rate set to match the marginal cost of production would require a blocking structure in which the 1st block would be priced materially below the marginal cost of production. This inverted rate structure would result in no change in marginal revenues when actual load increases as a result of new customers connecting to the system.[2]

When actual load varies from forecast as a result of changes in customer average use, an inverted Hopkinson rate structure with a tail block energy charge set at the marginal cost of production would provide a better match between the Company's costs and revenues for the change in consumption *that occurs in the tail block*. However, the higher priced tail block is not the marginal price to many lower consumption customers. Under the inverted rate, the marginal price to these customers will be set significantly below the marginal cost of production and provide a poor match between the Company's marginal supply cost and marginal revenue.

The Rate 2.2 and Rate 2.3 classes contain a highly diverse group of customers; there are more than 8,300 customers in Rate 2.2 and more than 1,000 customers in Rate 2.3. Inverted block rates with a relatively low priced 1st block, the size which is the same for all customers in the class, raises the issue of intra-class fairness. This is because the lower priced block provides a proportionally greater benefit to smaller usage customers within the class than larger usage customers within the class. This fairness issue is a limitation to applying inverted block structures to general service customers.

In assessing this fairness issue with respect to the potential rate designs for Hydro's industrial customers, NERA indicated that an inverted rate approach is feasible because of the small number of industrial customers and the possibility to implement different block sizes for each customer.[3] Newfoundland Power does not consider such a complex rate design approach feasible for the rate design to its more than 9,300 customers billed on Rates 2.2 and 2.3.

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[2] Based on the assumption that marginal revenue is the increased revenue that will accrue from basic customer charges, energy charges and demand charges. The assumption is that increased revenues result from serving new customers and there is no change in overall average use. For additional information, see the response to CA-NP-217.

[3] Page 13 of NERA Economic Consulting Report: *Implications of Marginal Cost Results of Class Revenue Allocation and Rate Design*, July 2006.

As Newfoundland Power's load growth is primarily driven by new customer connections, it is not expected that retail rate design changes will materially reduce the Company's business risk.

(c) The class demand estimates provided by the load research study have resulted in higher revenue to cost ratios for the General Service classes, reflecting lower demand cost allocations to those classes. Nothing in the load research results suggests the current rate structures used to send price signals to Rate 2.2 and Rate 2.3 customers ought to be altered.

(d) The primary difference between a Hopkinson rate and a Wright-Hopkinson rate is the linkage of the energy block size to the customer's demand requirements. As explained in the Description of Current Rate Structures (Volume 2, Tab 9), the current structure provides an incentive to minimize peak demand relative to energy consumption. While the linkage of demand in determining the 1^{st} block size adds some complexity to the rate structure, it also provides flexibility in ensuring a reasonable balance between the various criteria of good rate structures including fairness and efficiency. Newfoundland Power rate structures have evolved over time as system costs and customer usage patterns have changed. A cost-effectiveness study would first need to be undertaken giving consideration to the rate design objectives, including customer considerations, to fully assess the pros and cons of changing the rate structure.

(e) Newfoundland Power has not conducted any research to determine why the Hopkinson rate is more prevalent among Canadian utilities.

(f) If ordered by the Board, Newfoundland Power would propose a rate which met the Board's stated objectives. In Newfoundland Power's view, given the high diversity of customer load profiles in these classes and the high current marginal cost of energy, any proposed rate structure developed would necessarily compromise intra-class fairness in favor of the economic efficiency which results from pricing the tail block to reflect marginal costs.