Q. The Board recommended in its July 29, 1996 *'Referral by the Lieutenant Governor in Council Concerning Rural Electrical Service'*:

(i) "that Hydro prepare a detailed calculation of long run marginal costs. In the event that a detail estimate of long run marginal cost confirms it to be significantly below the current energy rate, the Board recommends that consideration be given to reducing the energy rate to a level closer to long run marginal cost"; (page 31)

(ii) "that Hydro be directed to provide a cost benefit analysis of a rate structure for general service customers which provide for a demand charge. The energy and demand charge in such a rate structure should recover long run marginal cost"; (page 32)

(iii) "that Hydro provide, as part of future cost of service reports, the specific policies as well as an allocation schedule related to operation and maintenance overheads"; (page 37)

(iv) "Design criteria for plant and auxiliary equipment should be re-examined, with a view to ensuring reliability requirements are not unduly stringent, particularly in communities operating close to capacity limits; (page 37) and,

(v) "Conservation programs for isolated areas should be designed to defer expansion of capacity and to target for subsidy reduction rather than lower energy use. Demand side management should be directed toward those systems which will soon require capacity expansion." (page 37)

(a) Provide the detailed calculation of long run marginal cost as recommended by the Board. If the calculation was not completed, please explain why not.

(b) Provide the cost benefit analysis of a demand/energy rate structure for general service rates in isolated areas as recommended by the Board. If the analysis was not completed, please explain why not.

(c) Provide the specific policies and allocation schedule related to operation and maintenance overheads.

(d) Provide details of, or any reports prepared on, the re-examination of design criteria for plant and auxiliary equipment.

(e) Provide details of any conservation or demand side management programs designed to defer expansion of capacity and to target for subsidy reduction rather than lower energy use.

A. (a) Please see attached report entitled “An Estimate of Long Run Marginal Costs in Newfoundland and Labrador Hydro’s Isolated Rural Areas”, July 2001.

(b) Please see attached report entitled “Cost Benefit Analysis of Implementing Demand Charges in the General Service Rate Structure in Isolated Areas”.

(c) Please see response to NP-132.

(d) Hydro has carried out a review of the planning criteria used for the isolated systems. The review was based on a survey of the planning practices of other Canadian utilities which have significant isolated/diesel operations. Please see attached report "Isolated Systems Generation Planning Practices; A Survey of Canadian Utilities", 2001. After reviewing the results of the survey it was concluded that Hydro's planning criteria is consistent with the practices of other utilities.

(e) Since 1996 Hydro has generally not encountered circumstances where it was practical or feasible to defer capacity expansion where called for on the diesel systems (as per evidence of H.G. Budgell, pages 12-13). Significant power requirements for seafood processing operations have been the key underlying factor in the case of St. Lewis, Makkovik, and Charlottetown. Expanded generating capacity was required in Davis Inlet due to a rapid increase in peak demand attributed to new community infrastructure and loads. Diesel unit replacement in Hopedale and Postville led to an increase in installed capability. There is some on-going work and analysis aimed at deferring capacity expansion for Norman Bay. An analysis was prepared in December 2000 on the potential for demand side management for this system and some fieldwork was carried out in 2001. Some additional work on load controllers and operational matters remains to be done before an impact evaluation can be carried out.

As recognized by the PUB in its 1996 recommendation noted above, utility sponsored programs that aim to reduce electricity use on isolated systems can lead to an increase in cross subsidy

requirements, and therefore should not be undertaken by Hydro. However, there are a few diesel systems where the short run marginal cost exceeds marginal revenue to the point where lower energy use may reduce subsidy requirements (e.g. Norman Bay, Paradise River, Francois, Williams Harbour), assuming no negative impacts on diesel system operations. Due to the isolation of these systems, DSM programs costs can be high and pure subsidy reduction conservation initiatives generally need to be co-ordinated with other utility system visits to minimize delivery costs. Achievable savings are limited and typically restricted to the application of compact fluorescent lighting, and to a lesser extent electric hot water heaters. Hydro is currently making arrangements to deliver compact fluorescent lighting to the isolated systems noted above following on its review in 2000 of isolated short run marginal costs and marginal revenues.

Cost Benefit Analysis of Implementing Demand Charges in the General Service Rate Structure in Isolated Areas

Introduction

The PUB expressed the view in its report dated July 29, 1996 concerning rural electrical service that general service customers in isolated systems should have demand charges to encourage reduced levels of demand. Further on page 32 of that report the Board stated:

> *"The Board recommends that Hydro be directed to provide a cost benefit analysis of a rate structure for general service customers which provides for a demand charge. The energy and demand charge in such a rate structure should recover long run marginal cost."*

This following analysis has been conducted to meet this request.

Costs

The additional costs associated with implementing demand charges relate primarily to the additional costs of demand meters versus energy only meters, additional billing costs and additional enquiry costs.

Demand meters cost approximately $175 - $250 for self-contained units and $425 for cabinet units plus installation labour compared with $40 for energy only meters. There are approximately 200 general service customers in isolated areas with demands greater than 10 kW. Over 75% of these customers currently have demand meters installed therefore the additional cost to install the remaining units will be small when spread over the life of the meter.

Billing on demand energy rates requires capturing, processing and retaining demand data resulting in additional data gathering and processing time. The level of increased costs however will be negligible as existing staff and billing systems can handle these items.

Customer enquiries are more difficult to deal with due to the increased complexity of the rate structure. Many customers will never understand or accept the concept of demand charges. The increased time required will however be provided by existing staff resulting in no overall increase in costs but potentially an increase in allocated costs.

The level of costs associated with implementing demand charges will therefore be negligible and not an impediment to proceeding. There will also be a cost to provide communication material to the affected customers and possibly personal explanations

of the change. No attempt has been made to estimate the cost of implementing a communication plan as such a plan has not been developed.

Benefits

The benefits associated with implementing demand charges relate to sound rate design principles, consistency with Interconnected Systems rate structures and promote improved customer load factors.

It is a generally accepted principle of rate design that rate structures and the respective component levels should reflect the nature of the costs as accurately as possible in order to minimize the level of intra-rate class subsidization. As costs are generally capacity, energy and customer related, rate structures with these components will better reflect the costs associated with the level of service provided. Care must be taken to not make the rate too complicated however.

Moving to a rate structure with a demand component will be consistent with the rate structure currently used for the interconnected systems.

Having a rate structure with a flat energy charge results in higher load factor customers subsidizing lower load factor customers. Moving to a demand energy rate structure will therefore improve financial viability of high load factor customers in isolated system areas.

Conclusion

The cost of implementing demand charges in general service rates in isolated areas is not significant. Such a change in rate structure will have varying effects on customer's individual bills. Generally lower load factor customers tend to receive increases while higher load factor customers will receive decreases assuming the rate is designed to recover the same revenue. Customers that will receive higher bills are likely to complain about such a change. Customers' bills will however, better reflect their respective costs and provides them with an opportunity to reduce their bills through managing the level of demand they place on the system. Therefore Hydro should implement demand charges in the general service rates charged in isolated areas.

The timing of the implementation should reflect the other rate issues to be addressed in the isolated areas. However in preparation for the eventual implementation, demand meters should be installed on all appropriate customers in the near future.