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YUKON ELECTRICAL PUBLIC UTILITIES BOARD

REPORT ON

DESIGN OF ELECTRICAL RATES

May 31, 1983

As discussed.

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1. INTRODUCTION

In its Decisions 1981-1 and 1981-2 the Board expressed concerns to the Yukon Electrical Company Limited (YECL) and the Northern Canada Power Commission (NCPC) relative to the following matters:

- "(a) The philosophy of decreasing rates with increasing levels of consumption - the Board is of the opinion that this policy was designed to encourage the use of electrical energy during a period of hydro generated electrical energy surplus, and that the policy warrants review in the current context of diminishing supply and escalating costs, i.e., increased rates for increased levels of consumption may have significant conservation impacts;
- (b) The impacts of rate equalization upon energy conservation; and
- (c) The separate directions taken by NCPC and YECL with respect to rate equalization which has resulted in inconsistent patterns of rate design within the territory."

Subsequent to the above decisions YECL and NCPC prepared Rate Design Studies for Yukon and submitted them to the Board. Both studies were exhaustive in nature and contained an extensive discussion and examination of rate design principles employed in North America. Each recommended the adoption of certain

principles in Yukon. In addition, the two utilities provided the Board with certain information in response to information requests made prior to the hearing.

2. HEARING

After publication of notice and pursuant to Section 33 of the Electrical Public Utilities Act a hearing was held by the Board on March 15, 1983 for the purpose of enquiring into the matter of the design of rates charged for electricity in Yukon by NCPC and YECL. The subjects discussed at the hearing included not only the specific concerns of the Board expressed above but also other issues relating to the design of rates for electricity.

In addition to the comprehensive rate design studies prepared at the Board's request by the two utilities, studies which formed the basis of the hearing, the Board received thirteen other submissions.

The three major political parties active in the Yukon (Liberal, New Democratic and Progressive Conservative) all made representations. Government groups presenting briefs included the Yukon Government, three municipalities (Dawson, Faro, Whitehorse) and the Association of Yukon Communities. Yukon industry and business was represented by submissions from the Yukon Chamber of Mines, the Whitehorse Chamber of Commerce, the Yukon Visitors Association and the Cyprus Anvil Mining Corporation. Also, A. Philipsen, M.L.A. for Porter Creek West Whitehorse submitted a brief.

Nine of the thirteen parties submitting briefs also made oral presentations and made themselves available for questioning by the other participants, the Board's consultant and the Board members.

The Board recognizes that the depth, breadth, strength and balance, as exhibited by the participants, contributed greatly to the hearing process. Active public participation by a cross section of interest groups helps to ensure that the Board is made aware of and considers a wider range of facts, comments, issues and arguments than that which might have been revealed without such public involvement.

The Board benefitted from all the briefs and presentations and appreciates the time and effort of each participant.

After enquiring into this matter the Board has reached certain general conclusions which will be set forth in this Report. The Report is intended to provide a general framework for the design of rates for electricity, it is not intended to deal with every detailed matter relating to the subject.

3. DECLINING BLOCK RATES AND THEIR IMPACT ON CONSERVATION

The first concern expressed by the Board related to the relative impact of declining block rates and inverted (increasing) block rates on conservation.

The Board considers that before dealing with the matter of conservation it is important to define the term. It was pointed out during the hearing that there are a number of different definitions or concepts of conservation. In its most simplistic sense conservation may mean a reduction in the use of energy. Alternatively, it may be considered to include only the wasteful use of energy and that even this definition has a difficulty in that what may be wasteful use for one consumer may be necessary use for another. For the purpose of this Report the Board defines conservation to mean "wise use" of energy as opposed to its "non-use".

During the course of the hearing there was extensive discussion relating to the fairness of declining block rates as opposed to inverted rates and to their potential effect in achieving fair rate design. The Board was advised by consultants for the utilities that regulators in other jurisdictions had found that problems exist with inverted rates. Opinions were expressed that inverted rates did not properly reflect costs incurred by the utilities, that their use could result in instability of revenues to the utilities and would tend to penalize high load factor customers and hence lead to a reduction in the overall efficiency of a utility. It was also pointed out that because of the terms of the Federal Power Support Program which will be discussed later, introduction of an inverted block

rate form would tend to reduce the amount paid under the Program to residents of Yukon.

The Board has concluded that the declining block rate form advocated by the two utilities is preferable to an inverted block rate.

4. RATE EQUALIZATION IN YUKON

Rates presently charged for electricity at the various locations within Yukon vary considerably. The reason for the variation is to a large extent due to the desire by the utilities to charge rates which tend, to a greater or lesser extent, to reflect the cost of providing the electricity to the various classes of customers at the various locations in the territory. The extent to which rates vary by location is illustrated by the following table which compares the monthly gross charge to residential customers for 600 kWh of electricity at the various locations in Yukon.

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<u>Location</u>	<u>Number of Residential Customers</u>	<u>Monthly Bill (600 kWh Consumption)</u>
Whitehorse	5270	\$ 35.79
Area 1 (a)	304	57.17
Keno	42	39.61
Watson Lake	513	84.05
Area 2 (b)	274	122.74
Old Crow	75	147.39
Haines Junction	188	67.09
Ross River	121	94.48
Faro	521	48.36
Mayo	178	41.24
Dawson	390	82.60
Johnsons Crossing	6	181.11

- (a) Includes Carcross, Carmacks, Marsh Lake, Tagish
(b) Includes Beaver Creek, Destruction Bay, Pelly Crossing,
Stewart Crossing, Swift River, Teslin and Upper Liard.

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There was considerable discussion during the course of the hearing on the subject of whether or not rates charged to each of the customer classes should be the same (uniform) throughout Yukon or whether they should vary by location in order to reflect the costs specific to each location. In general, it was the position of YECL that rates should vary by location to reflect a close approximation of the actual costs at each location. On the other hand, NCPC favoured the introduction of uniform rates within each customer class in Yukon, with certain modifications designed as a deterrent to high consumption in diesel serviced areas.

In support of its proposal for uniform rates, NCPC maintained that "...residential and general service consumers in the Yukon should have access to electric utility requirements at a similar cost in all areas of the territory and should not be penalized because of geographical location of service which may not place the consumer in reach of available lower cost hydro supply". NCPC also suggested that uniform rates would simplify rate administration.

The major disadvantages to a uniform rate structure discussed were as follows:

1. There would be considerable cross subsidization between customers at various locations.
2. The rates would not be cost based in the sense of reflecting specific costs at each location.

3. Conservation would not be aided as it is most effectively accomplished by cost based rates.
4. The Federal Power Support Program for certain residential and commercial customers would be eliminated.

Representatives of YECL took the position of supporting rates based upon costs. It was their submission that cost based rates are best able to satisfy the utilities' objectives of providing service at fair rates and encouraging conservation. They submitted that proper rate design accurately tracks costs and improves the load factor of a utility, and accordingly its efficiency of resource allocation, by providing users with appropriate price signals on which they may base their future consumption patterns.

NCPC's advisor agreed with the position taken by YECL that cost based rates were the most appropriate. However, it was his view that the definition of cost was open to interpretation in the sense of relating to the cost of producing electricity within a discrete area or to its average cost for some predetermined administrative area, or for the entire territory. If the entire territory is used as a base for the determination of cost the result is that a single cost will be determined for each customer class for the territory as a whole and there would seem to be little reason to vary the rates charged in each of the discrete areas. It was the position of both utilities and their advisors that the determination of the cost base area and whether

or not there should be uniform rates throughout the territory was a matter of public policy and should be addressed by the Board and the Government and not imposed by the utility.

At the present time the Government of Canada shields Yukon residential power consumers in areas outside of Whitehorse on the first 700 kWh of monthly consumption to the extent of the difference between their electricity costs and that which they would pay if charged the rate in effect in Whitehorse. Certain commercial customers are similarly shielded on the first 1,000 kWh of monthly consumption.

This program was described by the utilities and their advisors as being a form of lifeline rate with the inherent disadvantages of such a rate, however, none of the parties advocated the abolition of the program. NCPC, the prime advocate of rate uniformity considers it desirable to have uniform rates in place to avoid a dislocation in electric bills in the event that the Federal Power Support Program is abolished. NCPC submitted that because the Federal Program requires annual renewal it is important to have in place an equalization scheme more permanent in nature which would carry on in the event the Federal Power Support Program is abandoned.

The utilities and their advisors acknowledged that any step toward uniformity in rates in the territory, while the Federal Power Support Program is in effect, will have the effect of

decreasing the aggregate amount received under the program by the consumers in Yukon. This is an inevitable consequence of raising the rate to consumers in Whitehorse and hence the base on which the support payments are made to consumers in the other communities.

The Board considers that given the existence of the Federal Power Support Program nothing would be gained by endorsing a policy of uniform rates even if the Board was satisfied that such a policy should exist in Yukon in the absence of the Federal Program.

The Board considers that it should state its general position on the matter of uniform rates in the absence of the Federal Power Support Program. In this instance the choice is clearly between rates based on the cost of providing electricity within a discrete area and an average cost determined on a territory-wide basis. After reviewing the evidence presented at the hearing it is the position of the Board that consumers of electricity should receive clear price signals relating to the cost of its production and that, as a general principle, the appropriate base for determining cost is that of the discrete area. Consequently the Board does not accept the proposals of NCPC for uniform rates for all locations within Yukon.

The Board considers that the above finding complies with accepted principles of fair cost apportionment and optimal use.

The Board does not consider electricity rates to be the medium through which government should seek to accomplish social or economic development objectives. There are programs available to government which the Board considers to be more appropriate for this purpose, programs which can more equitably respond to the social and economic needs of Yukon people.

5. OTHER RATE DESIGN CONSIDERATIONS

(a) Revenue To Cost Ratios

Having established the principle of cost-based rates it is important to consider the matter of allocation of costs between customer classes and the pricing of electricity in relation to those costs. Both of the utilities have, on occasion, prepared fully distributed cost studies and both consider that there should be a reasonable relationship between the revenue received from each customer class and the related cost of service. The Board considers that in order to make this process more meaningful the utilities should direct their efforts to ensuring that over a period of time rates to all classes of customers will result in revenue to cost ratios within a reasonable range of unity, resulting in minimal cross subsidization. As a first step toward ensuring truer cost based rates the Board considers that both utilities should design customer cost recovery charges which more accurately reflect the actual costs incurred.

(b) Lifeline Rates

NCPC presently charges a lower rate for the first 300 kWh of monthly residential consumption in high cost diesel generation areas than is charged for consumption over that amount. The Board considers this rate form to have the characteristics of a lifeline rate which is not reflective of costs and thus considers its use to be inappropriate.

(c) Income Tax Rebate

A number of intervenors raised the issue that funds received by the Government of the Yukon pursuant to the provisions of the Public Utilities' Income Tax Transfer Act, are no longer being rebated to the customers of YECL. The Board considers it desirable to have the income tax rebate related to YECL rates in order to maintain an equitable relationship between customers of a publicly owned and an investor owned utility.

(d) Innovative Rate Designs

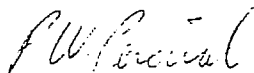
A number of presentations at the hearing dealt with what were described as innovative rate designs. Some expressed the view that more should be done by the operators of hydro systems to increase utility revenue by encouraging off peak use of hydro electric power. The Board recognizes that there are limitations to the extent to which consumption patterns can be influenced by rates designed to encourage the use of off peak power. However, the Board

encourages the utilities to be mindful of opportunities to maximize the use of power available at times other than system peak.

6. SUMMARY OF CONCLUSIONS

- (a) Cost based rates are appropriate because they provide clear price signals which encourage optimum usage and discourage waste.
- (b) A declining block rate structure appropriately reflects cost based rates.
- (c) Uniform rates are not appropriate because they do not reflect the differences in the costs of providing service in various communities.
- (d) Electricity rates are not an appropriate medium through which governments should seek to accomplish social or economic development objectives.
- (e) Lifeline rates and cross subsidization seek to accomplish social objectives and provide inaccurate price signals and are therefore inappropriate.
- (f) Since customers of publicly owned utilities do not have to bear a utility income tax expense, equity demands that the customers of investor owned utilities receive the same benefits.

ON BEHALF OF THE YUKON
ELECTRICAL PUBLIC UTILITIES BOARD



P. Percival, Chairman
May 31, 1983.