Q. Please provide a copy of The Report on Rural Electrical Service, 1996.

A. Please see LWHN-NLH-010, Attachment 1.

REPORT

OF

THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

TO

THE HONOURABLE MINISTER OF MINES AND ENERGY

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

ON

A REFERRAL BY THE LIEUTENANT-GOVERNOR IN COUNCIL

CONCERNING RURAL ELECTRICAL SERVICE

JULY 29, 1996

BEFORE:

David A. Vardy, Chairperson
Leslie E. Galway, C.A., M.B.A., Vice-Chairperson
Raymond A. Pollett, Commissioner
Wallace S. Read, P.Eng., Commissioner

NEWFOUNDLAND AND LABRADOR

BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

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1996 07 29

Honourable Rex Gibbons, Ph.D.,P.Geo.
Minister of Mines and Energy
Office of the Minister
Department of Mines and Energy
Government of Newfoundland and Labrador
Confederation Building
P.O. Box 8700
St. John's, NF.
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Dear Minister:

The Board has completed preparation of the revised Report requested by the Lieutenant-Governor in Council with respect to rural electrical service. This Report has been revised to reflect traditional Government policy with respect to the preservation of a lifeline block of energy whose pricing is determined by the rate charged by Newfoundland Light & Power Co. Limited. In light of the fact that policy decisions have already been implemented on the funding of the rural deficit, through the proclamation of the Electrical Power Control Act, 1994, the revised Report does not address "the possible options to recover the cost of providing service to rural customers" which was included in the original terms of reference made through MC 93-0432 by the Lieutenant-Governor in Council under Section 12 of the Electrical Power Control Act, R.S.N. 1990.

The revised Report covers rates, the cost of service, the views of interested parties, Canadian electrical pricing practices, as well as measures to limit electrical usage.

The Board hereby presents this report to you as Minister of Mines and Energy, on behalf of the Lieutenant-Governor in Council.

Respectfully yours,

David A. Vardy,
Chair.

Leslie E. Galway, C.A., M.B.A.
Vice-Chair.

Raymond A. Pollett,
Commissioner.

Wallace S. Read, P.Eng.,
Commissioner.

Introduction

This revised report has been written to provide Government with options within the framework of traditional policy with respect to rates and recognizing that Government has established policies with respect to the funding of the rural deficit through the *Electrical Power Control Act, 1994*. This report responds to a reference by the Lieutenant-Governor in Council which was forwarded to the Board with a covering letter from the Minister of Mines and Energy dated 1993 04 27.

The terms of reference for this investigation are as follows:

"The Board of Commissioners of Public Utilities in its report dated April 13. 1992. to the Minister of Mines and Energy recommended that the rates charged Newfoundland and Labrador Hydro's Isolated Rural Customers and certain other 'Preferential Rural Customers' for electrical consumption above 700 kWh/mo. be increased by 10 to 15%.

"Government did not approve these rate increases. but instead decided to refer the matter to the Public Utilities Board for an inquiry into issues relating to the supply of electricity to isolated rural areas of the Province.

"Accordingly, this Terms of Reference has been referred by the Lieutenant-Governor in Council to the Public Utilities Board pursuant to Section 12 of the *Electrical Power Control Act*."

Scope

"The Board shall investigate and examine the following matters and report to the Minister of Mines and Energy as to:

- the cost of providing service (diesel generation) to Isolated Rural Customers versus the cost of providing service to other rural customers;
- the possible options to recover the cost of providing service to rural customers:
- an appropriate rate structure. with reasons for preferring it to the other identified options;
- the views of interested parties (both Island and Labrador grid customers) as well as Isolated Rural Customers. with respect to rural rate issues;
- current Canadian electrical pricing practices related to urban. rural and Isolated Rural Customers;
- the price and non-price measures that may be taken by Newfoundland and Labrador Hydro to limit the amount of electrical power and energy used in isolated rural areas."

The Panel

The Panel conducting this Hearing was as follows: Chairperson. D. Vardy. Vice-Chairperson. L. Galway and Commissioners R. Pollett and W. Read.

The Hearing

The hearing (Phase I) was held in the Board's Hearing Room on January 10, 1995. Phase I was held to identify the interested parties, to prepare a timetable for pre-filed evidence. and as well to set the time and locations for the Phase II hearings.

Public notice of the time and date of the Phase I hearing as well as the Board's terms of reference was published in newspapers circulating throughout Newfoundland and Labrador. The Board mailed the public notice to approximately 3,250 isolated rural customers.

The Board received notice of appearances for the hearing from Newfoundland and Labrador Hydro ("Hydro"); Newfoundland Light & Power Co. Limited ("Newfoundland Power"); Abitibi Price Inc. (Stephenville and Grand Falls mills). Corner Brook Pulp and Paper Company Limited. Deer Lake Power Company Limited and North Atlantic Refining Limited ("Industrial Customers"). and the Towns of Labrador City and Wabush. and Danny W. Dumaresque. Member of the House of Assembly. Eagle River District.

Geoffrey P. Young. appeared on behalf of Newfoundland and Labrador Hydro;

Peter Alteen. appeared on behalf of Newfoundland Power:

Janet M. Henley Andrews. appeared on behalf of Industrial Customers.

Edward Hearn. Q.C., Legal Counsel for The Town of Labrador City and The Town of Wabush (Phase I only);

Danny W. Dumaresque, Member of the House of Assembly, Eagle River District.

The Board also received expressions of interest from Mr. Bruce Morris, Executive Director, Southern Labrador Development Association; Mayor Yvonne Rumbolt-Jones, Mary's Harbour Community Council; David Dyson, Clerk, Community Council of Makkovik; Daniel Ashini, Director, Innu Rights and Environment, Innu Nation; Brian Lyall, Labrador Inuit Association; and David S. Gilbert, Member of the House of Assembly, Burgeo-Bay d'Espoir.

The Board retained Mr. George C. Baker, P.Eng., G.C. Baker Engineering Ltd., as its Engineering Consultant.

During the hearing, the Board was assisted by its Counsel, Sean Hanrahan, and its Engineering Consultant.

Phase II hearings were held after due public notice. The Board held public hearings on April 24 in Goose Bay; April 26 in L'Anse au Clair; May 3 in Ramea; May 24, 25, 26, 29, and 30 in St. John's, and June 7 in Mary's Harbour.

The Town Council of Happy Valley/Goose Bay requested leave to make a presentation, as they had not previously notified the Board of their intention to appear.

Evidence was given by the following:

Happy Valley/Goose Bay:

Judith O'Dell, Happy Valley/Goose Bay Town Councillor.

L'Anse Au Clair:

Derek Sturge, Director of Rates and Financial Planning, Newfoundland and Labrador Hydro;

Ronald O'Brien, Manager of Support Services for Transmission in Rural Operations, Newfoundland and Labrador Hydro;

Derek Osmond, Vice-President of Corporate Planning, Newfoundland and Labrador Hydro;

Nath Moores, Mayor, L'Anse au Clair;

Stelman Flynn, Businessman, Forteau Food Processors Limited;

Gilbert Linstead, General Manager of Labrador Fishermen's Union Shrimp Company Limited;

Gail Flynn, Town Manager, Forteau Community Council, Forteau;

Bonnie Goudie, Manager, Northern Light Inn.

Ramea:

David S. Gilbert, Member of the House of Assembly, District of Burgeo/Bay d'Espoir;

Tom Hutchings, Economic Development Officer, Town of Ramea;

James Marsden, Businessman; Chair, Economic Development Corporation, and Ramea Town Councillor;

Una Sibley, Private Citizen; Post Mistress, Canada Post, Town of Ramea;

Clyde Dominie, Private Citizen; Ramea Town Councillor.

St. John's

Brian Lyall, Social Programs Co-ordinator, Labrador Inuit Association;

Danny W. Dumaresque, Member of the House of Assembly, Eagle River District.

Newfoundland Power

W. Wallace Pinhorn, Vice-President of Technical Services for Newfoundland Light & Power Co. Limited;

Larry B. Brockman, Senior Vice-President, Electronic Data Systems. Management Consulting Services - Utilities Division.

Tom Connors, Director of Rates & Cost Analysis, Newfoundland Light & Power Co. Limited.

Newfoundland and Labrador Hydro

Derek Sturge, Director of Rates and Financial Planning. Newfoundland and Labrador Hydro:

Keith Boone. Senior Planning Engineer. Responsible for generation in rural planning. Newfoundland and Labrador Hydro;

Ronald O'Brien. Manager of Support Services for Transmission in Rural Operations. Newfoundland and Labrador Hydro;

Stephen Goudie, Manager of Economic Analysis. Newfoundland and Labrador Hydro:

Al Ballard, Customer Service Supervisor, Newfoundland and Labrador Hydro;

Abitibi-Price

Jack Verhoeven, Manager, Abitibi-Price Pulp & Paper Mill, Stephenville;

Melvin Lloyd Dean, Electrical and Instrumental Superintendent, Abitibi-Price Pulp & Paper Mill. Stephenville.

The Board

Mr. George C. Baker, P.Eng., Engineering Consultant to the Board.

Mary's Harbour

Margaret Pye, Community Council of Cartwright, the Labrador White Bear Development Association, and Labrador Director on the Newfoundland and Labrador Rural Development Council;

Sandra Pye, Coordinator, Battle Harbour Regional Development Association;

Dorothy Earle, Community Council, Port Hope Simpson;

Neil Anderson, President, Combined Councils of Labrador;

Yvonne Rumbolt-Jones, Mayor, Community Council, Mary's Harbour.

Final submissions were filed by Counsel for Newfoundland and Labrador Hydro, Newfoundland Light & Power Co. Limited and Industrial Customers on July 4, 1995.

The Board submitted a Report on October 10, 1995. Government responded on November 30, 1995 and asked the Board to reconsider its recommendation to raise the rate to domestic customers on the lifeline block, in light of traditional policy established in various Orders in Council, and not to consider funding options in view of policies now in force through the Electrical Power Control Act, 1994 which has now been proclaimed. The present report reflects the revised recommendations arising from this reconsideration.

Background

The principal focus of this inquiry is the provision of electrical service to isolated customers using diesel generating systems. Diesel systems are operated by Hydro and are located on the Island and in Labrador. There are presently 30 of these diesel systems. By 1997, the number will be reduced to 29, due to the interconnection of the St. Anthony/Roddickton area of the Great Northern Peninsula. This will reduce the number of isolated customers from 8,300 to 4,400.

Also by 1997, one of the larger diesel systems, located in the Labrador Straits area, will have been connected to a hydro-electric source in Quebec which will provide secondary energy for that system. A separate hearing was held on the rates to apply in the L'Anse au Clair to Red Bay area. The evidence contained in this present report comes solely from the hearings referred to on page 4, which addresses all isolated systems.

In the Board's report, references will also be made to Hydro's rural interconnected customers. These are customers of Hydro who are interconnected to the Island transmission grid. At present, there are 17,900 such rural interconnected customers and the 3,800 customers in the St. Anthony/Roddickton area will increase this number to 21,700, upon interconnection, by 1997.

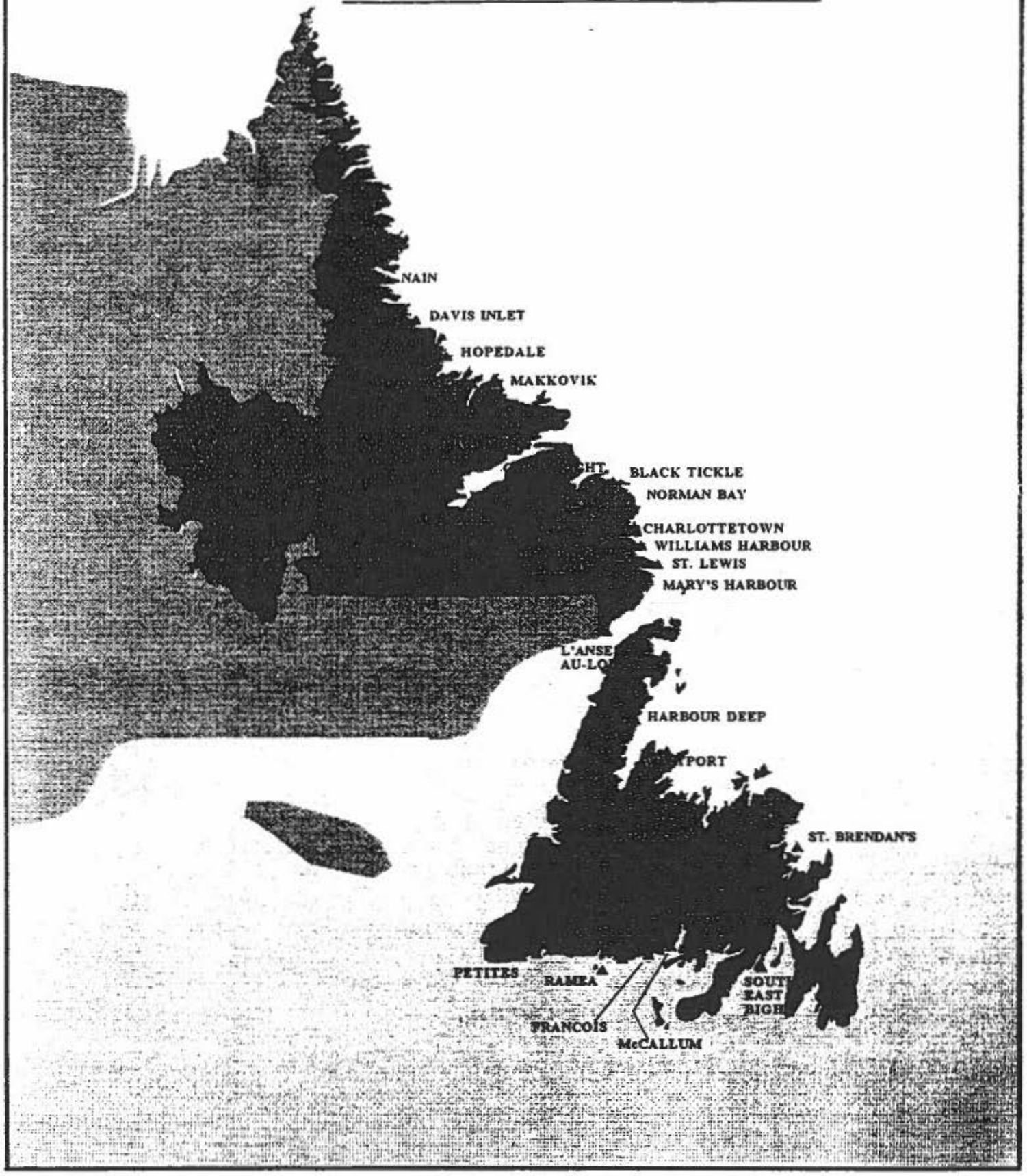
Chart 1-1 (on page 8A) shows each of the 29 diesel systems as they are expected to exist in 1997. Chart 1-2 (on page 8B) shows the interconnected rural system operated by Hydro, with the inclusion of the St. Anthony/Roddickton system.

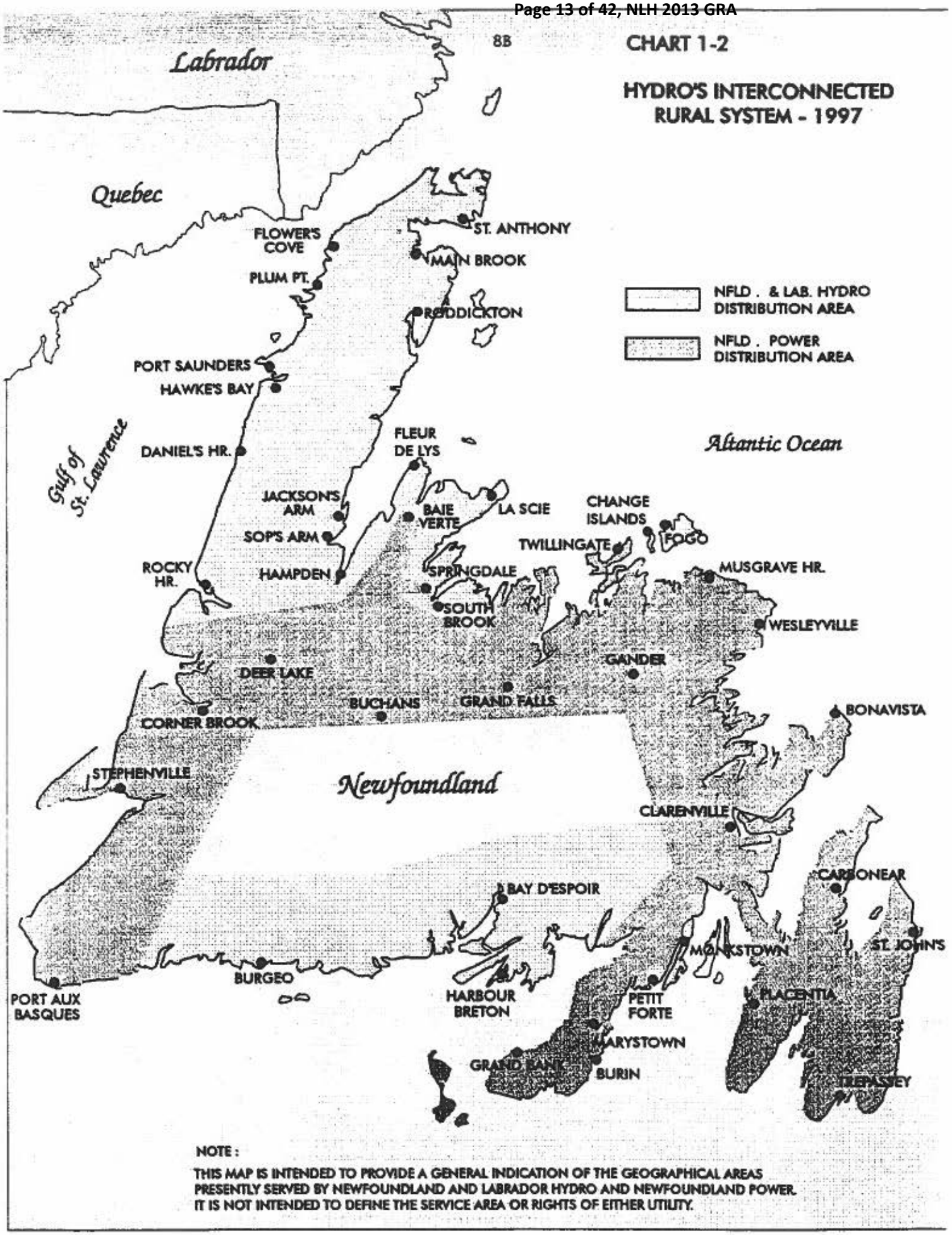
When the term "rural customers" is used in this report, the term will encompass Hydro's isolated and interconnected rural Island customers, a total of 26,100 customers. The term "rural deficit" is the shortfall in revenues as compared with the cost of service to these customers. This rural deficit has two major components, reflecting losses from the isolated system and from Hydro's rural interconnected system.

8A

CHART 1-1

DIESEL SYSTEMS - 1997




8B
CHART 1-2
HYDRO'S INTERCONNECTED
RURAL SYSTEM - 1997
Labrador
Quebec
Gulf of St. Lawrence
Atlantic Ocean
Newfoundland
NFLD . & LAB. HYDRO DISTRIBUTION AREA
NFLD . POWER DISTRIBUTION AREA
FLOWER'S COVE
ST. ANTHONY
MAIN BROOK
PLUM PT.
RODDICKTON
PORT SAUNDERS
HAWKE'S BAY
DANIEL'S HR.
FLEUR DE LYS
JACKSON'S ARM
BAIE VERTE
LA SCIE
CHANGE ISLANDS
FOGO
SOP'S ARM
TWILLINGATE
ROCKY HR.
HAMPDEN
SPRINGDALE
MUSGRAVE HR.
SOUTH BROOK
WESLEYVILLE
GANDER
DEER LAKE
BUCHANS
GRAND FALLS
BONAVISTA
CORNER BROOK
STEPHENVILLE
CLARENVILLE
CARBONEAR
BAY D'ESPOIR
MONKSTOWN
ST. JOHN'S
BURGEO
HARBOUR BRETON
PETIT FORTE
PLACENTIA
PORT AUX BASQUES
MARYSTOWN
GRAND BANK
BURIN
TREPASSEY
NOTE :
THIS MAP IS INTENDED TO PROVIDE A GENERAL INDICATION OF THE GEOGRAPHICAL AREAS PRESENTLY SERVED BY NEWFOUNDLAND AND LABRADOR HYDRO AND NEWFOUNDLAND POWER. IT IS NOT INTENDED TO DEFINE THE SERVICE AREA OR RIGHTS OF EITHER UTILITY.

The rural deficit is financed through a surcharge imposed by Hydro on its sale of electricity to other customers. This deficit is added to the cost of electricity purchased from Hydro. Up to this point, the deficit has been funded by Newfoundland Power and by the Industrial Customers. In the *Electrical Power Control Act, 1994* the following definition is given:

"2 (h) "industrial customer" means any person purchasing power, other than a retailer, supplied from the bulk transmission grid at voltages of 66 KV or greater on the primary side of any transformation equipment directly supplying the person;"

The *Electrical Power Control Act, 1994* also states that:

"3. It is declared to be the policy of the province that

(a) the rates to be charged, either generally or under specific contracts, for the supply of power within the province

. . . . . .

(iv) should be such that after December 31, 1999 industrial customers shall not be required to subsidize the cost of power provided to rural customers in the province, and those subsidies being paid by industrial customers on the date this Act comes into force shall be gradually reduced during the period prior to December 31, 1999;"

Up to 1989, rural customers were served by the Power Distribution District. The Provincial Government funded the rural deficit through a grant to the Power Distribution District, and later to

Hydro, from the Consolidated Revenue Fund. In 1989, Government began a three year phase-out period, wherein the subsidy was transferred from taxpayers to ratepayers, specifically the ratepayers of Newfoundland Power and Island industrial customers of Hydro. Labrador interconnected customers have not contributed to funding the rural deficit.

In 1991, the *Electrical Power Control Act, R.S.N., 1990,* was amended to remove the exemption given to Labrador interconnected customers with respect to their share of the funding for the rural deficit. This applied to customers in Labrador City, Wabush, Churchill Falls and Happy Valley/Goose Bay. However, this sharing has not yet taken place and will not occur until Hydro refers a proposal to the Board to alter existing rates. For the purpose of this investigation, the Board has assumed that such a rate referral will be forthcoming, in light of the legislation passed in the Fall of 1991, which removes the exclusion of Labrador interconnected customers, who had been exempted in 1989.

Overview of Rural Customer Demographics

Before proceeding to an interpretation of the individual elements of the terms of reference for this inquiry it will be helpful to provide an overview of the demographic and financial dimensions, which are of fundamental importance to the investigation. This overview will commence with a profile of the customers.

Customer Profile

The rural customers served by Hydro live in relatively small communities, dispersed throughout the Province. Customers served by diesel systems live in isolated areas on the Island

and in Labrador. Most of these customers are not connected by road and their transportation requirements are met by coastal boats, ferries and small aircraft. For rural isolated customers on the coast of Labrador, marine transportation does not operate from November to June.

Most of the rural communities covered by this inquiry, both isolated and electrically interconnected, are fishery dependent communities. The collapse of the groundfishery has had a devastating impact on the Province and particularly on these communities.

The people served by Hydro in isolated rural areas and in interconnected areas on the Island number 67,600. or 12% of the Province's population (Newfoundland Statistics Agency. 1991 Census Data). These rural customers are comprised of two groups. At present, the first group of 22,100 people (8,300 customers) live in electrically isolated communities supplied from diesel generating systems. The second and larger group, 45,500 people (17,900 customers) are those served from the electrically interconnected transmission system.

By 1997, with the interconnection of the Great Northern Peninsula, 10,300 people (3,800 customers) will no longer be electrically isolated. This will reduce the total number of electrically isolated people from 22,100 to 11,800 and will increase the ranks of those electrically interconnected from 45,500 to 55,800 people. The proportion of rural customers who are interconnected will rise from 67% to 83%. The proportion who are isolated will fall from 33% to 17%. As a percentage of the Province's total population, isolated customers will decline from 3.9% to 2% .

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Magnitude of Rural Deficit

In 1995 the total deficit for all rural customers was projected to be $34 million. Of this total, about $25.5 million, or 75%, is attributable to electrically isolated customers. For isolated rural

customers the subsidy per customer is $3,082 per year while for interconnected customers the annual deficit per customer is $475. On the isolated systems, only 30 cents on the dollar is recovered from customers. For electrically interconnected customers, the recovery rate is 74 cents on the dollar.

While in the past the deficit was funded directly by Government, today the rural deficit is funded through a surcharge upon, or a cross-subsidy from, other ratepayers. The rural deficit adds to the cost of purchased electricity for both Newfoundland Power and for Island industrial customers.

Electrically interconnected rural customers pay the same rates as those charged by Newfoundland Power to its customers. However, customers on the isolated system pay higher rates. In the case of isolated domestic customers the rates charged by Newfoundland Power (6.579 cents per kWh) apply to the first 700 kWh of monthly consumption. Beyond this monthly level, the rates are higher. The second block is for usage between 701 and 1000 kWh per month at a rate of 9.606 cents per kWh. For usage exceeding 1000 kWh per month the rate is 13.022 cents per kWh, on the open ended third block. This is referred to as the "run off rate". The monthly customer charge is $16.71, which is the same as that charged by Newfoundland Power.

General service customers also pay higher rates on the isolated systems. While fish plants have been given the benefit of Island interconnected general service rates, other commercial enterprises, such as hotels and stores, must pay a rate which is above the rate charged to electrically interconnected general service customers.

In 1989, the concept of a lifeline block was also extended to general service customers. The result was that general service customers were given access to energy at a rate of 8.624 cents per kWh for the first 700/kWh. Beyond the 700 kWh level the rate rises to 19.540 cents per kWh. The monthly customer charge is $19.02.

Electrically isolated customers consider the rates which they pay to be inequitable. These people believe they should have access to electricity on the same terms as Newfoundland Power's customers and Hydro's electrically interconnected rural customers on the Island. However, while rates charged on the isolated systems are considered high, they fall far short of recovering the full 1995 cost of 40.8 cents per kWh.

Cost of Service

Based upon Demand for Particulars PUB-1 (1995) the rural deficit for 1995 is projected at $34.0 million, with $25.5 million attributable to isolated systems and $8.5 million to interconnected island systems. The resulting cost per kWh on isolated systems is 40.8 cents, while for interconnected systems the cost is 11.4 cents. The estimates prepared by Hydro in Demand for Particulars PUB-2 (1995) show that the projected rural deficit in 1997, upon interconnection of the Great Northern Peninsula, will be approximately the same, at $34.3 million, but the distribution between isolated and interconnected systems will change. The isolated deficit falls to $18.3 million while the interconnected deficit rises to $16.0 million. In 1997, the cost per kWh for isolated systems is projected at 49.7 cents, while the interconnected system cost rises to 13.4 cents.

Cost control is vitally important in reducing the magnitude and burden of the rural deficit. Recognition of the limited opportunities available to increase revenues leads to the conclusion that cost reduction must be vigorously pursued. In response to this, Hydro initiated a task force study to review the complete scope of its operations on the thirty isolated systems. This Task Force has presented two reports on the matter. Hydro concluded that its priorities must be to reduce operating costs and improve efficiencies. All participants at the hearing agreed that the priorities identified

in these reports were appropriate.

The Board agrees that, with respect to isolated systems, Hydro's priorities should be reduction of operating costs and improving efficiencies. This is due to the significance of the deficit created with every kWh generated. The only mechanism available to Hydro to reduce this deficit is at the cost level, given the limitation on future load growth and fixed revenue rates. Hydro has identified projects to be pursued through its internal Task Force. The Board believes it would be beneficial to have a plan in place that identifies goals and targets for savings and efficiency gains in general and by system.

There are a number of cost characteristics which have been identified through financial analysis of the isolated systems. These include the following:

Sharing of Costs

Rural isolated customers are projected to pay 30% of the total cost of service. (PUB-1). Other ratepayers, the Island Industrial Customers and customers of Newfoundland Power, pay the remaining 70%. By 1997, after interconnection of the Great Northern Peninsula, the cost recovery rate for isolated rural customers, as a group, will fall to 24%.

Fuel Costs

The conventional wisdom has been that fuel costs are a large proportion of isolated systems cost. In fact, the cost of fuel has averaged only 20% of total costs in recent years. The other 80% is attributable to the depreciation cost of the system, operating and maintenance costs (including overhead), and interest costs.

Operating and Maintenance

The cost of operating and maintaining thirty isolated systems (51.54% of total costs) is more than twice as expensive, in relative terms, as the island interconnected grid (23.56%).

Variation in Fuel Cost and Plant Efficiency

Fuel costs vary significantly from one isolated system to another, as does the efficiency of use. The 1997 forecast cost for diesel fuel per kWh ranges from 7.0 cents per kWh in Ramea to 14.6 cents per kWh in Mud Lake. (Demand for Particulars GCB-1(d) page 2).

The Board notes that the plant efficiency varies from system to system. It appears that the highest plant efficiencies are recorded in Makkovik (3.52 kW/liter) and Ramea (3.56 kW/liter).

Furthermore, fuel costs generally are at levels above the first block domestic rate of 6.579 cents per kWh. As a general rule, the first block rate does not cover short run incremental costs, which are principally the costs of fuel.

Automation Opportunities

Most isolated systems (with the exception of Norman Bay) require two operators, regardless of the amount of energy generated or the customers served. All automation opportunities for these system should be considered.

System Losses

A study of system losses would also be beneficial, since the Task Force Report questioned whether the station metering currently installed permits an accurate measurement of system losses and station service separately. A change in the metering system may be necessary.

Economies of Scale

For those systems which are not capacity constrained, an increase in load can reduce unit cost. As long as rates recover more than the short run incremental costs, an increase in load contributes more towards revenues than towards costs, and can thereby reduce the deficit.

Long run marginal cost is much lower than average embedded cost of 40.8 cents per kWh (1995-PUB-1). Therefore, the systems would probably benefit, within capacity limits, from increased load, if priced properly. Long run marginal costs are low because of the surplus capacity in the isolated system, which puts the requirement for new generation plant off into the future. Future demand is forecast on the basis of the present pricing structure.

Funding of the Rural Deficit

In 1994 rural isolated customers contributed 31% of the cost of service. Based upon 1994 data (IC-18 and IC-28), Industrial Customers paid 11% while Newfoundland Power's customers paid 58% of the isolated system deficit. Under the *Electrical Power Control Act, 1994*, funding by Industrial Customers will be gradually phased out by December 31, 1999. The funding sources would likely then be limited to Newfoundland Power and to Labrador interconnected customers.

However, until such time as Hydro comes before the Board on behalf of Labrador interconnected customers, Newfoundland Power will remain the only long run funding source. The cost to Newfoundland Power, after December 31st, 1999, potentially amounts to an additional $10 million and increases Newfoundland Power's share of the cost of providing electricity to isolated rural customers to 76%.

Canadian Pricing Practices

The evidence concerning other isolated rural systems across Canada was reviewed during the hearing. There is a wide variation in rate practices followed by the other Provinces and by the Territories. However, there are certain similarities as well. The evidence presented to the Board leads to the following:

* Isolated systems generally have a special lifeline rate for a basic level of service.
* Other customers, including Government, are surcharged to cover the rural deficit.
* Governments are frequently charged a higher rate than other customers, as a means of deficit recovery.
* Preferential rates are not common in other jurisdictions.
* Beyond the lifeline block of energy, rates tend to be higher in other jurisdictions than they are for Newfoundland rural isolated customers.
* Isolated systems in Newfoundland are designed to accommodate higher levels of demand than isolated systems elsewhere. This is a result of the demand requirements of Newfoundland fish plants and other commercial loads.

Views of Interested Parties

The Board held hearings in Mary's Harbour, L'Anse au Clair, Happy Valley/Goose Bay, Ramea and St. John's. During these hearings the Board heard the views of isolated system customers as well as the views of Labrador interconnected customers in Happy Valley/Goose Bay. Presentations were made by private individuals, business people, development associations, community councils, Members of the House of Assembly and by regional associations. Presentations were also made by Industrial Customers, Newfoundland Power and Hydro.

Views of Isolated Customers

Strong views were presented recommending that rates be equalized throughout the Province and that people in isolated areas should not be required to pay higher rates than Island interconnected customers. It was argued that electricity is a necessity and should be made available to all consumers at an equal price. It was argued that isolated communities suffer from low incomes, below the provincial average, and that the collapse of the groundfishery, combined with cuts in unemployment insurance and in the TAGS program, add weight to the case for equalized rates.

Proposals for equalized rates were presented in two forms. Some presentations argued that all customers in the Province should pay identical rates. Such identical rates would mean a reduction in the rates to be paid in isolated rural areas but it would also involve an increase in the rates charged to customers on the Labrador interconnected system. This was the first formulation. The second formulation of the concept of equalized rates would apply Newfoundland Power rates to isolated systems, regardless of the level of consumption. For domestic customers, this means that the rate currently charged for the lifeline block would be made available for all energy consumption.

without any limit.

There were a number of concepts advanced in support of equalized rates. These include the following principles. The electric power resources of the Province are owned by all of its people and the benefits of such public ownership should be shared equally. Newfoundland and Labrador Hydro, as a crown corporation, is owned by all of the people of the Province and it should provide equal treatment to all people, regardless of where they live.

Considerable opposition was voiced from business firms and their associations to the level of electricity rates in the isolated areas. They took the position that these rates make it difficult to compete with firms who enjoy lower rates. In the Straits area, the Board heard from representatives of the business community who said that they were losing business to firms in Quebec, who pay lower rates. Hotel operators complained that the higher rates which they must pay represent a threat to their survival. Other business people, including representatives of the fishing industry, expressed the same view.

Both on the Island and in Labrador the Board heard presentations from groups who argued that the economic development of their region is impeded by high energy rates. In Labrador, the Board heard that forestry development is held back by virtue of the high cost of energy.

During the hearing in L'Anse au Clair, the Board heard presentations in support of a reduction in electricity rates based upon the proposed purchase by Hydro of secondary energy from the Lac Robertson hydro electric plant. The interconnection with Lac Robertson is expected to be completed shortly. It was proposed to the Board that the L'Anse au Clair to Red Bay area should enjoy the benefit of an interconnected rate, in light of the availability of this energy. This matter was the subject of a separate reference to the Board under the *Electrical Power Control Act, 1994*.

In Mary's Harbour, the Board heard a proposal calling for the development of small hydroelectric systems whose development would avoid the cost of diesel fuel.

At its hearing in Mary's Harbour the Board also heard an argument in support of increasing the lifeline block from 700 kWh per month to 1200. It was argued that the lifeline block of 700 kWh per month is inadequate to meet normal household requirements in the North. However, this recommendation was offered only as an alternative, in the event that uniform rates were not endorsed by the Board.

Representations were made on behalf of the community councils who argued that the high cost of electricity imposes a severe strain on municipal budgets, particularly in the operation of water and sewerage systems and pumping systems.

Labrador Interconnected Customers

The Board heard from the Town Council of Happy Valley/Goose Bay, who expressed opposition to any proposed increase in electricity rates for Labrador interconnected customers in order to cross-subsidize the rural deficit. The Town Council expressed strong opposition to any increase in electricity rates and argued that an increase would discourage economic development. Reference was made to the hope that a smelter will be established. It was argued that higher energy rates would discourage development of a smelter and would impede other economic activities including expanded military operations, airport business and forestry development.

Newfoundland Power

Newfoundland Power took the position that the current cross-subsidization of Hydro's rural rates is unfair and inefficient and that the subsidy should be supported by Government. They expressed opposition to the concept of uniform electricity rates throughout the Province and proposed that the rates for Hydro's rural service be decoupled from Newfoundland Power's rates.

Industrial Customers (Abitibi Price Inc., Corner Brook Pulp & Paper Company Limited, Deer Lake Power Company Limited and North Atlantic Refining Limited)

Industrial Customers expressed their concern that the cross subsidization of rural rates was seriously affecting their competitive position in difficult world market conditions. They charged that cross-subsidization is not a good utility practice and recommended that taxpayers, rather than ratepayers, should provide any necessary subsidy. Industrial Customers argued that rates in each isolated rural system should be based on its own costs. They proposed that the lifeline block should be reduced in size and that the rate for domestic use, beyond the lifeline block, as well as the rate for general service customers, should be based on the long run marginal cost of the system.

Industrial Customers took the position that preferential rates should be eliminated and that federal, provincial and possibly municipal government offices and institutions should pay rates which recover the full cost of the service. Federal and provincial government offices and institutions should, in addition, pay a surcharge which generates sufficient revenue to recover the costs not otherwise recovered through the rates for other isolated rural customers, as is done in the Northwest Territories, the Yukon Territory, Saskatchewan, Manitoba and Ontario.

With respect to interconnected rural customers, they proposed that rates should be based on the cost of providing service to them, without regard to Newfoundland Power's rates to its customers. They went on to argue that a target revenue to cost ratio of 90 to 110 percent be set for interconnected rural customers and that rates be increased to achieve that goal.

Newfoundland and Labrador Hydro

The position taken by Hydro is that the lifeline rate should be maintained so that Isolated Rural Customers pay the same rate for the first 700 kWh per month of their electrical service as any similar customer served from the Newfoundland Power interconnected grid. There should be gradual increases in the rates charged to isolated rural customers for usage beyond the 700 kWh per month level so that a portion of the costs incurred to serve this consumption is recovered through rate increases over time. An appropriate starting point in that process would be a 10% increase in rates.

Hydro proposed that preferential rates available to fish plants and other customers should be phased out by increasing their rates until they have achieved the appropriate general service rate.

RATES

There was a substantial amount of evidence presented during the hearing on the subject of rates. Presentations from people and organizations in isolated rural areas generally took the position that rates should, in principle, be the same throughout the Province, including Labrador interconnected customers. Some argued that Newfoundland Power rates should be fully adopted in isolated areas, while others took the position that a uniform set of rates should be set for all

consumers in the Province. Some of the presentations argued for an increase in the size of the lifeline block. Many of the presentations stressed the common ownership of energy resources in support of the principle of equalization of rates. Higher rates in isolated areas were seen as discriminatory and as imposing a burden on rural residents. Business customers generally argued that higher rates placed them at a disadvantage, as compared with similar businesses served from interconnected systems.

Hydro took the position that the 700 kWh monthly first or lifeline block should be continued. Improved cost recovery should be achieved instead through rate increases on the second and third blocks. They supported continued linking of the lifeline block rate with Newfoundland Power rates.

Newfoundland Power, on the other hand, in their final arguments, presented the Board with a proposal to decouple the rates charged for the lifeline block from Newfoundland Power rates. Furthermore, its expert witness, Mr. Larry Brockman, proposed that the size of the lifeline block be lowered to a level of approximately 500 to 550 kWh per month. This is based upon the argument that electric water heaters should be discouraged and that other electrical uses can be addressed within a 550 kWh block.

Industrial Customers, in their final arguments, said that the size and the price of the lifeline block should be adjusted to achieve greater cost recovery. Industrial Customers also argued that rural customers should be charged rates which reflect the cost of each isolated system, or, alternatively, that rate groupings be established whereby customers in each group would pay a different rate, reflective of the cost of the generating systems in the group.

The Board's consultant, Mr. George Baker, conducted a detailed examination of the costs associated with rural systems. In his analysis, Mr. Baker examined both the full embedded cost and

the marginal cost associated with increased consumption in isolated systems. Mr. Baker has calculated (Mr. Baker's supplementary testimony, dated April 18, 1995, page 10 and Exhibit GCB-2, page 1 of 3) that the 1997 short run marginal cost will be about 9.3 cents per kWh and approximately equal to the cost of fuel. The long run marginal cost, on the other hand, is intended to include costs associated with any additional investment in plant which may be required, as well as operating cost. Long run marginal cost provides a signal to customers concerning the consequences of continued growth in load. Such long run marginal cost rates, reflective of both fuel costs and investment in plant, are used when load growth has the consequence of requiring additional investment. Mr. Baker estimates a long run marginal cost (for 1997) of 13 cents per kWh. (Mr. Baker's supplementary testimony, dated April 18, 1995, page 7 and Exhibit GCB-5). Mr. Baker said that an increase in the rate beyond 13 cents could add to the deficit by virtue of higher demand elasticity at higher usage levels.

Mr. Baker argued that the lifeline rate should be completely decoupled from Newfoundland Power's rates and that the rate should be raised to a level high enough to cover short run marginal cost, or the cost of diesel fuel. This would require an increase from 6.579 cents to 9.3 cents per kWh. (Based upon Mr. Baker's estimates for 1997)

On the subject of preferential rates, the Board heard arguments from Newfoundland Power, Hydro and from Industrial Customers, arguing for the elimination of such preferential rates. These arguments were based upon the additional cost which such rates impose on other customers. Practices in other jurisdictions were also cited to show that such preferential rates have been eliminated elsewhere.

Newfoundland Power and Industrial Customers argued that Government should pay at least

the full cost of service and preferably underwrite the deficit, through the payment of an additional surcharge on its own electricity usage. Industrial Customers argued that Government should pay such a surcharge, citing the Northwest Territories, the Yukon Territory, Saskatchewan, Manitoba and Ontario as precedents.

Preferential rates have also been offered in the isolated systems for street and area lighting. Hydro, Newfoundland Power and the Industrial Customers argued that such preferential rates for street and area lighting should be eliminated.

As noted earlier, a lifeline block was introduced for general service customers in 1989. Industrial Customers argued that this lifeline block should be removed and practices in other jurisdictions were cited in support of this position. The Board's consultant, Mr. Baker, recommended removal of the special rate on the first 700 kWh of consumption for general service customers. Mr. Baker also argued that the general service rate of 19.540 cents per kWh (rate category GS 2.5) is too high and is above the long run marginal cost. He recommended a reduction in the rate so that it is closer to long run marginal cost, which he has estimated for 1997 at about 13.0 cents per kWh.

Non-Price Measures

It has always been assumed that any demand side management measures, which reduce load, will also be beneficial in reducing the rural deficit. However, it has been determined that this is not always the case and that there may be advantages to an increase in the load, as long as the additional revenues exceed the incremental cost. Economies of scale on the system, arising from surplus capacity, create a situation where average unit cost decreases with increased energy load. However,

the Board concludes that there is still a role for demand side management. Conservation programs should be designed for systems where variable costs are relatively high and for those isolated systems which will soon need capacity additions. Increased generating capacity is planned for Nain. LaPoile, Charlottetown, Harbour Deep and Mud Lake. Demand side management and other conservation efforts should be focused in these communities, with the objective of reducing the number and size of the replacements required, by mitigating the peak load in each system.

Policy Direction

Government has provided policy direction to the Board on rural electrical issues through legislation as well as through various Orders in Council. In the *Electrical Power Control Act. 1994*. Sections 3, 4 and 5 provide policy direction on rates.

Over the years, there have been a number of Orders in Council which establish basic policy parameters for rates. The initial Order in Council on the lifeline block was 184-74, which established domestic service rates for the first 500 kWh per month and linked these rates with Newfoundland Power rates. Orders in Council 171-75, 299-80 reconfirmed this first block at 500 kWh per month. Order in Council 520-87 increased the block from 500 kWh to 600 kWh per month and reconfirmed interconnected rates charged by Newfoundland Power. The size of the block was further increased from 600 kWh per month to 700 kWh per month by Order in Council 810-89.

The establishment of the second and third blocks was also confirmed by Orders in Council. Order in Council 171-75 provides that, for consumption levels beyond 500 kWh per month, "the charge for each additional kWh consumed in any month be increased by an amount equal to the average rate of increase approved by the Board" for Newfoundland Power. This was reconfirmed

by Order in Council 299-80. The third block rate has always referred to consumption beyond 1,000 kWh per month, while the second block refers to consumption between the first and third block, starting at 500 kWh in 1974 and rising to 700 kWh in 1989, up to 1,000 kWh per month.

The diesel general service rate has also been set from time to time by Order in Council, beginning with 184-74 and 171-75. The lifeline block of 700 kWh per month for general service customers was first set by Order in Council 810-89.

Preferential rates for diesel system customers were also set by Order in Council. Order in Council 184-74 confirmed "the provision of service to fish plants fed from diesel systems at Hydro rates". Cabinet Directive OC'254-78 reads as follows:

> "the rates for electricity presently being charged by the Power Distribution District of Newfoundland and Labrador to the Burgeo school and library and to all churches, schools and church halls supplied on diesel generated systems, as set forth in paragraphs 3 and 4 of the relevant submission, were approved; these rates to remain unchanged until further notice."

Order in Council 299-80 approved the policy that: "fish plants with a load of 30 kW or more in the diesel areas and Canada Bay Lumber Company Limited continue to be charged the interconnected rate as long as Government believes it is necessary to provide subsidization in this matter." Order in Council 257-81 ordered that "churches, schools and organizational halls in diesel areas to be charged the diesel domestic rate".

Turning to interconnected rural rates, the decision to link these rates to Newfoundland Power

rates was also set by Order in Council. Order in Council 184-74 states that: "the Hydro system rates of the Power Distribution District be adjusted to conform to the rates approved by the Public Utilities Board for Newfoundland Light & Power Co. Limited."

On the question of funding, the *Electrical Power Control Act, 1990* established the policy that the rural deficit is to be funded through a contribution from customers of Hydro. The *Electrical Power Control Act, 1994* reconfirms this policy but provides for the phasing out of contributions from industrial customers by December 31, 1999. The *Electrical Power Control Act* of 1994 was introduced into the House of Assembly subsequent to the present reference from the Minister of Mines and Energy of April 27, 1993 and the said Bill was proclaimed effective January 1, 1996.

RECOMMENDATIONS

Funding

The Board has noted the position of Newfoundland Power, the advice of expert witnesses and the views of Industrial Customers against continued funding of the subsidy through cross-subsidization. The representatives speaking on behalf of rural ratepayers were not opposed to cross-subsidization. Their view was that isolated customers should benefit from public ownership of provincial resources and that rates should be equalized, to this end.

Government policy on the funding of the rural deficit has been set forth in the *Electrical Power Control Act, 1990,* which directs that the rural deficit is to be recovered from retail and industrial customers. More recent policy, established through the *Electrical Power Control Act, 1994,* indicates that the Province has revised the policy in order to recover the rural deficit from retail customers only.

Government has determined its policy whereby a cross-subsidy by ratepayers, with the phasing out of industrial customers by December 31, 1999, will be implemented. This determination precludes further investigation and consideration by the Board.

Therefore, the Board is making no recommendation on the issue of funding.

Rates on Isolated Systems

Government has established, through various Orders in Council, that the first block rate for domestic customers be linked to the rates charged by Newfoundland Power. This policy establishes limits upon any change in the first block rate. Hydro said that improved cost recovery should be achieved through an increase in the second and third block rates. The Board is not inclined to support this proposal, particularly in light of the fact that the second block rate presently covers short run marginal cost. Also, the present third block rate has been estimated by the Board's consultant, Mr. Baker, to be approximately equal to long run marginal cost. An increase beyond the third block rate of 13.022 cents per kWh could well lead to a reduction in consumption and an overall increase in the size of the rural isolated deficit.

The Board is not recommending any increase in the rates charged in electrically isolated systems, for the first, second or third blocks of energy, nor is it recommending any change in the monthly domestic customer charge of $16.71.

The Board has considered the policy option of fully adopting Newfoundland Power rates for domestic consumers and thereby eliminating rate differences for the first, second and third blocks. During the hearing, it was proposed that all customers in isolated rural communities should have

access to electrical service at the same rates paid by Newfoundland Power customers. Hydro prepared a Report entitled "Estimate of the Financial Impacts of Interconnected Rates in Newfoundland and Labrador Hydro's Isolated Rural Areas", dated October, 1994. which focussed on the customers who will continue to be served from twenty-nine isolated systems. after the interconnection of the St. Anthony/Roddickton system in 1996. It also examined the costs and revenues associated with the introduction of a new rate system, whereby rural isolated customers would be charged the same rates as Newfoundland Power's customers.

The study examined the increased energy use estimated to arise from a reduction in rates. This projected increase in energy use is largely attributed to the introduction of electrical space heating in these areas. Over the period 1996 to 2005, Newfoundland and Labrador Hydro projected a total incremental deficit of $56.5 million. The effect of such a change in rate policy would be to increase the isolated system deficit by more than 30 percent.

The Board believes it may be inefficient and costly to create price incentives which would lead to the installation of additional electric heating in rural isolated areas. Some electric heating is currently used, primarily for supplemental heating purposes. One of the options considered by the Board was the adoption of interconnected rates, combined with a prohibition upon installation of electrical heat. The Board does not consider this to be a practical alternative.

The Board has also considered the adequacy of the current lifeline block. Mayor Yvonne Jones of the Mary's Harbour Community Council presented the Board with a proposal whereby the lifeline block would be increased to 1200 kWh per month at the island interconnected rate. while energy consumption beyond that level would be priced at the present third block rate of 13.022 cents per kWh. This proposal was advanced on the assumption that this would permit domestic customers

to meet their normal household end uses, except for electric heat, at the lifeline rate, while still discouraging increased penetration of electric heat.

The evidence presented to the Board during the hearing includes a survey of domestic customer appliance use, as well as average consumption patterns by month, broken down by Labrador and Island customers for those in the sample. These data show (Demand for Particulars NP-12, 1995) that the current lifeline rate of 700 kWh per month provides domestic customers with sufficient energy to supply all lighting and appliances and up to 85% of their electric hot water heating requirements.

The Board recommends that the first block remain unchanged at 700 kWh per month.

General Service Rates

The Board has examined measures to achieve greater cost recovery from general service customers. The existing rate for consumption beyond 700 kWh per month is 19.540 cents per kWh. This is higher than Mr. Baker's estimate of long run marginal costs, estimated at 13 cents per kWh.

The Board recommends that Hydro prepare a detailed calculation of long run marginal costs. In the event that a detailed 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 costs.

The Board recommends that the special general service rate for the first 700 kWh per month, which was established by Order in Council in 1989, be eliminated. No change is recommended for the basic customer charge.

The Board is of the view that, for general service customers, there should be a demand charge in place in order to encourage reduced levels of demand.

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.

Preferential Rates

Government has had a policy to provide preferential rates to certain customers in isolated areas. Hydro has proposed that preferential rates be phased out. The Board believes that all general service customers in the isolated areas should be treated equally.

The Board recommends that preferential rates be phased out. The phase out period should be five years.

Government Rates

The Board recommends that a new rate be designed for federal and provincial departments and agencies and these rates, phased in over five years, should recover full costs, (i.e. 100% cost recovery).

Cost of Service

A number of cost of service issues required adjudication by the Board. Two of these relate to the interconnection of the Great Northern Peninsula. During the hearing, Industrial Customers argued that the generation assets of the Great Northern Peninsula should be specifically assigned to the rural island interconnected class, rather than being assigned as of common benefit. Hydro had

assigned generation costs as common, but had specifically assigned both transmission and sub-transmission costs to the rural interconnected system.

The Board recommends that both generation assets and the 138 kV transmission line on the Great Northern Peninsula be assigned, on a provisional basis, as being of common benefit to all interconnected customers and that sub-transmission costs (for lines whose voltage is below 138 kV) be specifically assigned. The Board further recommends re-examination of these cost assignment decisions, and the rules for cost assignment, at a future hearing.

The generation plant and transmission lines to be assigned as common to the interconnected system are as follows:

Listing of Common Plant - Great Northern Peninsula
(From Demand for Particulars NP-41 diagram)

St. Anthony to St. Anthony Airport
- St. Anthony generating station (yellow now)
- TL261 and all equipment thereon to Airport bus

Roddickton G.S. to St. Anthony Airport
- Roddickton G.S. (yellow now)
- TL257 and all equipment thereon except the spur line to Main Brook

St. Anthony Airport to Plum Point
- Airport main bus, TL256 and all equipment thereon
- Bus connecting TL256 and TL244 excepting Bear Cove feeder
- TL244 and all equipment thereon
- Plum Point bus excluding Plum Point feeder

Plum Point to Deer Lake
- TL241 and all equipment thereon
- TL259 south of junction with TL241 and all equipment thereon
- TL239 from junction with TL259 to Deer Lake and all equipment thereon

Because the Board does not have sufficient information on the assignment of assets on the Great Northern Peninsula, the proposed assignments are of a provisional nature only.

The second issue was raised by Mr. Brockman, Consultant to Newfoundland Power. who argued that the Roddickton Woodchip Plant should not be treated as 100% demand-related. as presented in Demand for Particulars NLH-2, but that 45% of the plant's costs be classified as demand-related and 55% be classified as energy-related. Mr. Brockman suggests (pages 1 and 2) in his Supplementary Evidence that classification of the assets in question. as 100% demand-related. is wrong.

His rationale is that the initial reason for building the Roddickton Woodchip Plant constitutes the basis for deciding how to classify costs. The initial use of the plant was appropriately treated as 45% demand-related and 55% energy-related. when it supplied energy to the isolated system. However. the original reasons for the construction of the Roddickton Woodchip Plant are no longer relevant. The viability of the interconnection relies upon conversion of the existing generation facilities to the use of # 2 diesel fuel and use of the plant as a peaking facility. Peaking units are used to meet demand. not to supply energy. Therefore. classification rules require the plant be treated as 100% demand-related.

The Board recommends that the treatment of the Roddickton Woodchip Plant be 100% demand-related, as proposed by Hydro.

Future Cost of Service Reports

The Board recommends that future cost of service reports be generated with six separate studies:

(1) **Rural Island Interconnected,**

(2) **Newfoundland Light & Power Co. Limited,**

(3) **Island Industrials,**

(4) **Labrador Interconnected,**

(5) **Isolated Island Systems, and**

(6) **Isolated Labrador Systems.**

Allocated overheads amount to 18.3% of the 1995 cost of service for isolated systems.

The Board recommends 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.

Interest Margin

In its Report to the Minister, dated 1992 04 13, the Board reviewed the question as to whether an interest margin should be allowed on the isolated rural debt. At that time the Board recommended that no interest margin on rural isolated systems be allowed.

The Board recommends elimination of interest margin on the Hydro rural interconnected system and that a rate of return not be allowed on rural electrical assets, as long as the rural system is operating on a deficit basis.

Operating Efficiencies

The Board recommends that aggressive action be taken to achieve greater efficiency of operations as a means to reduce the rural deficit.

The Board recommends that Hydro and Newfoundland Power establish a joint task force to identify measures whereby cost savings can be achieved, both in isolated and interconnected rural systems.

This task force should examine measures which will reduce operating, maintenance and overhead costs through the sharing of services and possible transfer of responsibilities between the two companies.

The Board recommends that independent consultants should be retained to study the isolated systems for the purpose of identifying all possible cost savings and efficiency improvements. The consultant should provide Hydro with targets and with a tracking system by which to measure progress toward achieving these targets.

The Board also recommends that the following measures be adopted to achieve improved efficiencies:

A study of system losses be conducted to improve measurement of station service and line losses. An enhanced consumer education program be undertaken in isolated areas, to promote greater understanding of the costs and operations of the electrical system and the effect of consumer decisions upon electrical loads and costs. Dissemination of information describing the full cost of the electricity they consume would be a major component of such an education program.

Each bill should show the full embedded cost of the energy consumed, as well as the amount charged to isolated rural customers.

Design criteria for plant and ancillary equipment should be re-examined, with a view to ensuring reliability requirements are not unduly stringent, particularly in communities operating close to capacity limits.

Tendering practices for fuel should be reviewed, along with the possibility of larger scale purchases and regional storage facilities.

An experimental project should be designed by selecting a community facility, such as a school or other public building, in close proximity to a diesel plant, whereby heat from the diesel plant can be recovered. Such a demonstration project might provide a model for research and for subsequent technology transfer.

Alternative technologies should be examined to ensure that all opportunities for cost reduction are fully realized. New technologies for harnessing windpower should be given particular attention.

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.