# THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

**IN THE MATTER OF** the *Public Utilities Act* (R.S.N. 1990, Chapter P-47) (the "Act"),

**AND**

**IN THE MATTER OF** a General Rate Application by Newfoundland and Labrador Hydro for approvals of, under Section 70 of the Act, changes in the rates to be charged for the supply of power and energy to Newfoundland Power, Rural Customers and Industrial Customers; and under Section 71 of the Act, changes in the Rules and Regulations applicable to the supply of electricity to Rural Customers.

# PRE-FILED EVIDENCE
# OF
# C. DOUGLAS BOWMAN

September 5, 2003

**THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES**

**IN THE MATTER OF** the *Public Utilities Act* (R.S.N. 1990, Chapter P-47) (the "Act"),

**AND**

**IN THE MATTER OF** a General Rate Application (the "Application") by Newfoundland and Labrador Hydro for approvals of, under Section 70 of the Act, changes in the rates to be charged for the supply of power and energy to Newfoundland Power, Rural Customers and Industrial Customers; and under Section 71 of the Act, changes in the Rules and Regulations applicable to the supply of electricity to Rural Customers.

# PRE-FILED EVIDENCE OF C. DOUGLAS BOWMAN

My name is Doug Bowman. This document was prepared by myself, and is correct to the best of my knowledge and belief. I have been retained by the Government appointed Consumer Advocate to provide expert advice and evidence to the Consumer Advocate in response to Newfoundland and Labrador Hydro's ("Hydro's") application for approval of certain changes to its rates, charges and regulations. In particular, this evidence documents the results of my review of Hydro's proposed cost of service and rate design, and provides some general comments regarding the Application.

A summary of my background and qualifications is provided in ***Exhibit CDB-1***. I have both a B.S. and an M.S. in Electrical Engineering from the State University of New York at Buffalo and 26 years experience in the electricity services and consulting industry. My primary expertise includes power sector restructuring, regulation and markets, and electricity services costing and pricing. I am currently an Executive Consultant at KEMA Consulting with Head Office located in Fairfax, Virginia. I have been employed at KEMA Consulting since July 1999. KEMA Consulting provides technical and

management consulting, as well as training services, to the electric power industry worldwide. For over 30 years, KEMA Consulting has been serving the complete spectrum of participants in the energy marketplace, from generation through the consumer side of the meter, assisting more than 500 clients in over 70 countries to achieve their strategic and operational goals.

Prior to joining KEMA Consulting, I was employed by Pace Global Energy Services, International Resources Group, CSA Energy Consultants and Ontario Hydro. I have testified before this Board three times previously as an expert witness on cost of service and rate design at Newfoundland Light and Power Company Limited's ("Newfoundland Power's") 1996 *Application by Petition for Approval of Certain Revisions to its Rate, Charges and Regulations*, at Hydro's 2001 *General Rate Proceeding*, and at Newfoundland Power's 2003 *General Rate Application*. I have also appeared twice before the Nova Scotia Utility and Review Board as an expert witness on cost of service and rate design, and while at Ontario Hydro, I was involved with the regulatory process in the areas of generation and transmission planning, demand/supply integration, operations, rate design and customer service.

Section 1 of my Pre-filed Evidence summarizes my review of Hydro's evidence with regard to this Application; Section 2 provides a review of Hydro's cost of service study; Section 3 addresses Hydro's rate designs; Section 4 provides a review of Rules and Regulations; Section 5 provides comments related to customer value of service; and

Section 6 addresses issues related to the Government's Energy Policy Review, specifically, performance-based regulation and service to Hydro's Isolated Systems.

**1. Summary of Evidence**

A summary of my review of Hydro's Application follows:

a) I believe that the methodology used in the cost of service study submitted by the Applicant is consistent with previous Board Orders and recommend that it be approved as proposed by the Applicant, with the exception of any changes that might result from revisions to the rate for Newfoundland Power ("NP").

b) Hydro's rates do little to incorporate marginal cost price signals, so do not promote efficient consumption decisions by customers. In addition, Hydro does not offer rate options to its customers. To correct this situation, I recommend that the Board direct Hydro to undertake a marginal cost study, and evaluate, and make recommendations on how its rates can be re-designed to better incorporate marginal cost principles and promote market efficiency. The report should make specific recommendations regarding the introduction of rate options for customers, and include a time-bound plan for implementation. Hydro should file its report with the Board in 2004, and the Board should hold a hearing on the report with customer participation.

c) As Newfoundland Power experts have testified before this Board in the past, NP cannot send proper price signals to its customers until it gets proper price signals from Hydro. This testimony was delivered over ten years ago, yet the wholesale power rate for sales to NP remains a non-time varying, energy-only rate. In an effort to finally force resolution of this issue, I recommend that the Board direct the interveners in this hearing to participate in a mediation/technical session prior to the end of October 2003 in an effort to develop an appropriate rate structure for wholesale power sales to NP (as supported by Hydro in CA-131 NLH). If the experts are unable to agree on a rate design in the mediation/technical session, I recommend that the Board direct Hydro to implement effective January 1, 2004 a demand/energy rate consistent with the design proposed in Chart 1 of Exhibit RDG-2.

d) The current Domestic Diesel customer rate design falls short of meeting "lifeline requirements" as shown in Hydro's report entitled *A Review of the Adequacy of the Lifeline Block on Diesel Electric Systems* (see CA-13 NLH). As a result, I recommend that the Board direct Hydro to replace the current three-block Domestic Diesel rate structure with a two-block rate structure. The first block would be set at the Alternative Lifeline developed in Hydro's report, and reproduced in ***Exhibit CDB-2***, and would be priced as it is today at the rate charged by Newfoundland Power to its Domestic Customers. The second block would cover all consumption beyond the first block, and would be priced at a level that maintains revenue neutrality; i.e., there would be no increase in the rural

deficit relative to the rate proposed by Hydro in the Application. I make this recommendation on condition that specific customer impacts are judged acceptable. This can be determined on the basis of Hydro's response to CA-223 NLH, which was not filed in time for incorporation in this evidence.

e) I recommend that the Board approve the proposed changes to Rules and Regulations that relate primarily to fees that Hydro charges for various services. However, the Board should direct Hydro to undertake an assessment of its costs to provide these services so that any subsidies are clearly identified.

f) Hydro does not have in-depth knowledge of the value customers place on service, and may be spending too much to upgrade aspects of service that its customers already find adequate. As a result, the Board does not currently have the information necessary to determine if capital and operating and maintenance expenditures are being utilized to optimum advantage. In this regard, I recommend that the Board direct Hydro to undertake a targeted survey of its customers in an effort to find out what they really value in terms of service, and how much they are willing to spend for service improvements. The survey should be designed to gain the information necessary to address the issues raised in CA-187 NLH through CA-195 NLH, as a minimum.

g) As I recommended at Hydro's previous rate hearing, the Board should complete a review of the merits of performance-based regulation, conduct a public hearing on

its review, and file a report with Government. This recommendation is entirely consistent with the "major issue" related to regulation identified in the Government's Energy Policy Review. In the immediate timeframe, I recommend that the Board direct Hydro to propose a peer group of utilities and identify appropriate measures upon which to compare its performance. The peer group and measures should be subject to review and verification by stakeholders, and once established, the Board should direct the Applicant to report key statistical information relative to the peer group at regular intervals.

h) I recommend that the Board direct Hydro to commission an independent study to consider the merits of creating an organizational structure with a separate department having sole responsibility for service to the Isolated Systems. A separate department would have direct management incentives to minimize this component of the rural deficit; it would make the rural deficit transparent; and would recognize the different skills and management functions necessary to supply the Isolated Systems. The study should ensure consistency with the Energy Policy Review.

**2. Cost of Service Study**

Mr. Greneman's Pre-filed Evidence documents the approach followed by Hydro in the cost of service study. My review indicates that Hydro's proposed cost of service methodology appears to be consistent with previous Board directives. Hydro's

System Planning Department study entitled *Review of COS Assignment for the GNP, Doyle – Port aux Basques, and Burin Peninsula Assets*, conducted in response to an Order by the Board in P.U. 7, recommends assignment of plant on the following basis (see page 10, lines 6 to 16 of Mr. Greneman's Pre-filed Evidence):

- All generation assets on the GNP should be reassigned from rural to common since they act to enhance reliability of the system;
- Transmission assets related to the GNP and Doyles – Port aux Basques remain specifically assigned based on the fact that they are radial lines that serve a single customer with generation of less than sufficient magnitude to justify their assignment to common; and
- Transmission assets on the Burin Peninsula continue to be assigned to common as they serve more than one customer (Newfoundland Power and Hydro Rural).

These plant assignments have been adopted by Mr. Greneman in the cost of service study. Based on my review of Hydro's report, these assignments appear reasonable and justified.

On page 13, lines 6 to 18 of Mr. Greneman's Pre-filed Evidence, he summarizes the cost of service study noting that it is in accordance with P.U. 7, and includes three minor refinements, as summarized below:

- Hydro Place is now recognized as providing administrative support to all of Hydro's systems;

- In functionalizing General Plant, there is now a greater reliance on expense, rather than plant ratios; and
- Municipal Taxes and the Board Assessment are now directly recognized as being revenue-related.

The response to CA-130 NLH shows the cost impacts of these changes on each customer category. The combined effect is to transfer costs from NP, Island Industrial and Labrador Industrial to Rural Labrador Interconnected ($310,855). In my opinion, these changes are reasonable and justified.

In summary, I support Hydro's proposed cost of service methodology and recommend that it be approved as proposed subject to any changes that might arise from revisions to the rate for Newfoundland Power.

### 3. Rate Design

NP-141 NLH indicates that Hydro has not undertaken a marginal cost study in over 10 years. In addition, Hydro states that it has no plans to develop and implement time-of-use rates for its customers (see IC-186 NLH). Therefore, Hydro proposes to continue with rates that do little to incorporate marginal cost principles, and has no plans to provide customers with rate options that might provide them a level of control over their bills. This is in spite of specific requests by the Industrial Customers for Hydro to consider implementation of innovative rate options (see CA-156 IC), and the Board's statement in

its 1993 Report that "marginal costs should be reflected in rates if efficiency is to be gained".

As noted by Newfoundland Power in its June 1997 report entitled *A Study of Innovative Approaches to Rate Design Based on Marginal Costs and Time-of-Use Design Principles*, time-of-day rates are common utility practice. According to a survey of 92 utilities conducted by Virginia Power in 1993, two-thirds of the utilities make time-of-day rates available to their residential customers (page 9). The report goes on to say that the implementation of marginal cost based rates on a voluntary basis creates customer choices while improving the economic efficiency of the power system (page 22). The report includes time-of-day and seasonal rate designs for each of NP's customer classes (pages 13 through 17). Unfortunately, six years after completing the report, NP has yet to pursue implementation.

The Board stated in Order P.U.7 that it was inappropriate for Hydro to commence work related to time-of-use rates owing to the number of issues facing Hydro at that time (see IC-186 NLH). However, the time for such a study is now long overdue. Rate designs that incorporate marginal cost principles promote efficient consumption decisions by consumers, consistent with conservation, demand management and global climate change initiatives. In this regard, I recommend that the Board direct Hydro to undertake a marginal cost study, and evaluate, and make recommendations on how its rates can be re-designed to better incorporate marginal cost principles and promote market efficiency. The report should make specific recommendations regarding the introduction of rate

options for customers, and include a time-bound plan for implementation. Hydro should file its report with the Board in 2004, and the Board should hold a hearing on the report with customer participation.

Further to this recommendation, I have a number of comments to make with regard to the wholesale rate for sales to Newfoundland Power and the rate for Domestic Diesel Customers, as follows.

### *3.1 Wholesale Rate for Newfoundland Power*

On page 3, lines 6 to 8 of his Pre-filed Evidence (1st Revision), Mr. Banfield states that Hydro is proposing continuation of the energy-only rate for sales to NP. Later on the same page, lines 18 to 28, he indicates that subject to resolution of a number of issues related to the degree of risk to be assumed by Hydro, a weather normalization methodology, the treatment of NP generation, and development of costing and billing determinants, Hydro recommends that a demand/energy rate similar to the structure outlined in Exhibit RDG-2 be implemented in place of the current energy-only rate. In CA-131 NLH, Hydro goes on to say that these issues could be resolved during mediation sessions conducted prior to, or during, the hearing process.

The benefits of a wholesale rate with demand and energy components have been fully documented at past rate hearings. In the Board's 1990 Report on *Proposed Rates to be Charged to Newfoundland Light & Power*, Newfoundland Power witnesses, in particular.

Dr. Bruneau, the CEO at the time, and Mr. Brockman, NP's expert witness, came out strongly in favor of a rate with a demand charge component. Dr. Bruneau stated that NP cannot send the proper price signal to its customers until it gets proper pricing signals from Hydro. He went on to say that waiting three years for implementation of a rate structure with a demand charge would be a serious impediment to the introduction of cost effective demand side management programs (page 76). Mr. Brockman stated that it is widely accepted practice, consistent with the principle of ensuring rates reflect costs, to signal costs separately in customer, energy and demand charges where practical to do so. He went on to say that this lack of proper rate design gives little incentive for NP to engage in demand-side management activities that reduce peak load, one of the most common and cost effective demand side management activities in existence. Finally, Mr. Brockman said that if NP is to achieve proper matching between the distinct cost causation effects of demand and energy, the Board should recommend that Hydro develop a rate structure that includes these important components (pages 76 and 77).

In my Evidence filed at NP's rate hearing concluded earlier this year, I stated that it appears unlikely NP will pursue rate options for its customers until it has incentives to do so. NP's June 1997 report which I referenced earlier develops time-of-use rates for NP customers, and notes that the implementation of marginal cost based rates on a voluntary basis creates customer choices while improving the economic efficiency of the power system (page 22). In spite of this, NP failed to propose a single new rate option for its customers in its Rate Application filed more than five years after completing the report. In my evidence, I urged the Board to move quickly on implementation of a cost reflective

wholesale power purchase rate with customer, demand and energy components that vary by time-of-use to reflect the costs of production and delivery in different time periods. I felt then, as I do now, that this is vital if Newfoundland Power is to receive the proper incentives to pursue innovative rate options for its customers.

Exhibit RDG-2 is a consultant's report entitled *Review of Rate Design for Newfoundland Power*. The report recommends a rate structure similar to that shown in Chart 1 (page 15) subject to resolution of the issues identified above, and discussion of the rate with NP. The consultants are well aware that Hydro and NP have failed to resolve these issues for the past 10+ years as stated on page 1 of the report. There is little reason to believe that these issues will be resolved any time soon either without specific direction from the Board. NP makes it quite clear in CA-155 NP that it is opposed to a demand/energy rate structure, and has a number of concerns related to the particular demand/energy rate structure provided in Chart 1 of the Consultant's report.

I have reviewed the rate design proposed in the Consultant's report and believe that it represents a significant improvement over the energy-only rate in place today. It is disappointing that other rate design options were not considered, such as a time-varying element to reflect the statement made on page 12 of the report that it is only the winter peak that drives demand costs. I would like to see further consideration given to Option 3 treatment of the NP generation credit, because as stated in the report, it is consistent with treatment of Industrial Customer-owned generation, and billing is based on an actual metered number. I should also point out that I do not have the same concerns about the

level of revenue risk that Hydro is taking on through the introduction of a demand/energy rate. Evidence has not been filed that would suggest Hydro's level of business risk falls outside the norms for a utility of its type. If Hydro's revenues come up short following introduction of a demand/energy rate, they would have the option of filing another rate case. Further, I do not view the possibility of NP operating its generation in a manner that minimizes its power purchase costs as a negative outcome, and in fact, support it, provided the eventuality is properly accounted for in the rate design and cost of service study.

The electricity consumers in the Province would be ill-served if the Board allows the current shortcomings of the wholesale power rate to persist. In this regard, I recommend that the Board direct the interveners in this hearing to participate in a mediation/technical session before the end of October 2003 in an effort to derive an appropriate rate structure for wholesale power sales to NP. If the experts are unable to agree on a rate structure in the mediation/technical session, I recommend that the Board direct Hydro to implement a rate consistent with the structure shown on Chart 1 of Exhibit RDG-2, and make it effective January 1, 2004.

### *3.2 Domestic Diesel Customer Rate*

Hydro has conducted an analysis of the lifeline block for Domestic Diesel customers in response to a Board Order in P.U. 7. The analysis is documented in a report entitled *A Review of the Adequacy of the Lifeline Block on Diesel Electric Systems* (see CA-13

NLH). Although the report was prepared in response to a Board Order, Hydro makes no reference to it in Pre-filed Evidence. In CA-213 NLH, Hydro indicates it is not proposing any change to the lifeline block in this Application, but failed to offer any explanation why.

In the report, Hydro analyzes the consumption characteristics of Domestic Diesel customers. The principle findings are summarized below:

- There are barriers to market entry for oil water heating in Isolated Systems (page 6 of 10), so customers really have no alternative to electricity for their water heating needs.
- The current 700 kWh block falls about 15% short on an annual basis of covering the consumption of the average Domestic Diesel customer with electric water heating (see page 6).
- There is a seasonal consumption effect with higher consumption levels during the winter months when days are darker and colder, and there are increased levels of indoor activities (see page 6).
- Owing to demographics, Labrador customers tend to have higher consumption levels than Island customers, so it is appropriate to statistically weight the lifeline block toward Labrador customer consumption levels (see page 6).

Hydro believes that the figures reproduced in ***Exhibit CDB-2*** are representative of an appropriate, alternative lifeline block for Domestic Diesel customers.

***Exhibit CDB-2. Current and Alternative Lifeline Blocks***

| ***Month*** | ***Current Lifeline (kWh)*** | ***Alternative Lifeline (kWh)*** |
|---|---|---|
| January | 700 | 1000 |
| February | 700 | 1000 |
| March | 700 | 900 |
| April | 700 | 900 |
| May | 700 | 800 |
| June | 700 | 800 |
| July | 700 | 700 |
| August | 700 | 700 |
| September | 700 | 700 |
| October | 700 | 800 |
| November | 700 | 900 |
| December | 700 | 1000 |
| Annual Total (kWh) | 8400 | 10,200 |
| Monthly Average (kWh) | 700 | 850 |

If the rate is to meet objectives relating to a "lifeline rate", the lifeline block should cover what represents basic electricity needs, which in this case, includes water heating. The principle concerns related to adoption of the Alternative Lifeline shown in ***Exhibit CDB-2*** include impacts on customers and the rural deficit. The rural deficit impact can be mitigated by designing the rate to be revenue neutral. This can be accomplished by replacing the current three-block Domestic Diesel rate structure with a two-block rate structure. The first block would be based on the Alternative Lifeline shown in ***Exhibit***

***CDB-2***, and would be priced as it is today at the rate charged by NP to its Domestic Customers. The second block would relate to all consumption above the first block, and would be priced at a level that maintains revenue neutrality; i.e., there would be no increase in the rural deficit relative to the rate proposed by Hydro in the Application.

Customers with consumption levels less than 700 kWh/month would see no change in rates relative to the rate proposed by Hydro. Customers with consumption levels between 700 kWh/month and the proposed lifeline in ***Exhibit CDB-2*** would see a rate decrease relative to the rate propose by Hydro, while customers with consumption above the lifeline block shown in ***Exhibit CDB-2*** would see a rate increase relative to the rate proposed by Hydro. Hydro was requested to quantify customer impacts under my proposed rate design, but a response had not yet been filed at the time this evidence was submitted. Therefore, I recommend that the Board direct Hydro to implement a two-block Diesel Domestic rate structure based on the Alternative Lifeline shown in ***Exhibit CDB-2*** on condition that the customer impacts are judged acceptable. This can be determined on the basis of Hydro's response to CA-223 NLH, once filed.

**4. Rules and Regulations**

On pages 17 and 18 of Mr. Banfield's Pre-filed Evidence, he proposes a number of changes to the Rules and Regulations for Hydro's Rural Customers. The proposed changes primarily relate to service and connection fees. Hydro's justification for these changes is that it wants to make its rules and regulations as consistent as possible with

those of Newfoundland Power (see page 17, lines 3 to 5 of Mr. Banfield's Pre-filed Evidence). According to PUB-156 NLH, Hydro has not actually assessed its costs of providing these services to its customers, and accepts Newfoundland Power's service and connection fees (CA-72 NLH).

Hydro indicates that it is desirable that there be consistent charges for these services across the Province (PUB-156 NLH). However, the Board should at least have the benefit of knowing the costs of providing these services, so that it knows the level of subsidy being paid, and received, by the various customer groups as a result of the changes. In this regard, I recommend that the Board accept the changes as proposed, but direct Hydro to undertake an assessment of the costs to provide these services, and file the information with the Board.

## 5. Customer Value of Service

A report by McKinsey and Co. summarized in the August 4, 2003 edition of Electric Utility Week indicates that utilities typically over-emphasize the value of reliability to customers, and invest too much to upgrade an aspect of service that customers already find satisfactory. In an effort to understand the depth of Hydro's knowledge of what its customers value in terms of service, a number of Information Requests were posed (CA-187 NLH through CA-195 NLH). They are summarized along with the short version of Hydro's responses in ***Exhibit CDB-3***.

***Exhibit CDB-3. Summary of Hydro Responses to Customer Service Issues***

| ***Information Request*** | ***Hydro Response*** |
|---|---|
| Number of customer complaints per 1000 customers | Does not directly track |
| Percent of customer calls answered within 30 seconds | Does not track, but has started to track the average speed to answer |
| Percent of customer outage calls answered | Began tracking in 2000 |
| Percent of new customer services installed and energized by the date promised | Does not normally specify a date for connection – coordinates with other work in area |
| Percent of estimated bills | Does track - information provided |
| The number of hours of service outages, on an annual basis, that customers are willing to accept | Does not have an estimate |
| The correlation between amounts Hydro has spent to improve the reliability of the network, and the power cuts in each region of the Province served by Hydro | Does not have a correlation – focus on portions of system requiring improvements |
| Information for recent years indicating the return on investments for reliability improvements beyond the system average | Does not maintain such information – investments are made to address system elements performing below system average |
| With regard to reducing power outage durations, provide a comparison of re-designed maintenance procedures (i.e., fielding additional repair crews) to making infrastructure improvements (i.e., building additional feeders) | Has not made such a comparison – attempts to balance both alternatives |

The responses indicate that Hydro is beginning to track its performance related to direct customer contact, such as customer call response, outage call response and estimated bills, although it does not yet directly track customer complaints. It is unclear if Hydro understands the value that customers place on these services; i.e., are customers willing to pay higher rates in order to receive improved outage call response? In addition, the

responses indicate that Hydro does not know how many hours interruption its customers are willing to accept, nor does it know the correlation between money spent and resulting improvements in reliability.

It would appear that Hydro spends money to improve reliability when the SAIDI and SAIFI statistics fall below the system average without knowing if customers are content with current levels of reliability, and whether or not they are willing to pay higher rates for improved reliability. If customers were to indicate a willingness to pay higher rates for improved reliability, it is not clear that Hydro would be able to tell them how much improvement they could expect, since it does not know the correlation between expenditures and outage improvements (see CA-193 NLH). It is very difficult for the Board to make proper decisions on expenditure approvals when it does not know how much customers are willing to spend for increased reliability, and how much reliability is likely to improve as a result of the expenditure.

In summary, Hydro does not have in-depth knowledge of what its customers value, and may be spending too much to upgrade aspects of service that customers already find adequate. Hydro's customer research is not going far enough in terms of determining customer values, and in the absence of such information, it is difficult for the Board to know what expenditures to approve. In this regard, I recommend that the Board direct Hydro to undertake a more targeted survey of its customers in an effort to find out what they really value in terms of service, and how much they are willing to spend for service

improvements. The survey should be designed to gain the information necessary to address issues raised in CA-187 NLH through CA-195 NLH as a minimum.

## 6. Issues Related to Government's Energy Policy Review

A number of items were left outstanding during the previous Hydro rate application owing to the Government's ongoing Energy Policy Review. A report on the Energy Policy Review has since been completed (see IC-127 NLH), and while it does not specifically address many of the issues raised during the previous rate hearing, it does identify two "major issues" that are of consequence in this hearing (page 46):

- A need to reform the regulatory process to reduce the cost of regulation and provide incentives to regulated utilities to find and implement greater operational efficiency; and
- Duplication of distribution and retail level services on the Island of Newfoundland creating inefficiencies that cost consumers in terms of higher rates.

Some discussion of these "major issues" follows.

### *6.1 Regulation*

The following quote is taken from the Energy Policy Review (page 47):

*Reforming the regulatory process itself does not depend on the structural alternatives adopted. There is support for changing to some type of performance-based regulation, although the general public has not yet been consulted. Nevertheless, such approaches to regulation are working elsewhere and appear to offer promise of reduced costs and lower rates.*

The current form of regulation is inconsistent with changes taking place in the industry. It is slow, cumbersome and expensive. Inefficient mechanisms such as the Rate Stabilization Plan should be eliminated, and replaced by formulas that better allocate risks between the utilities and customers, and provide incentives to the utilities to improve performance. A performance-based regulatory mechanism provides incentives to utilities to provide reliable power at low cost, with the opportunity to increase returns to their shareholders. The Province needs to study the introduction of incentive-, or performance-based, regulatory mechanisms in an effort to give utilities greater latitude in their decision making process while providing benefits to consumers.

In this regard, I repeat the recommendation I made in Hydro's previous rate hearing, that the Board should complete a review of the merits of performance-based regulation, conduct a public hearing on its review, and file a report with Government. This recommendation is entirely consistent with the major issue related to regulation identified in the Energy Policy Review. In the immediate timeframe, I recommend that the Board direct Hydro to propose a peer group of utilities and identify appropriate measures upon which to compare its performance. The peer group and measures should be subject to

review and verification by stakeholders, and once established, the Board should direct the Applicant to report key statistical information relative to the peer group at regular intervals. Newfoundland Power has agreed to report similar information to the Board following the mediation/technical sessions conducted earlier this year as part of its Rate Application.

### *6.2 Distribution Service*

The Energy Policy Review indicates a preference for combining the distribution function on the Island of Newfoundland. It notes that there are inefficiencies under the current configuration that lead to higher rates for consumers. It is not my intent to comment on the pros and cons of single or multiple distribution companies in the Province, but I believe there is merit in considering forming a separate department within Hydro to serve the Isolated Systems.

The Isolated Systems have traditionally been included in the distribution function in Newfoundland and Labrador. In fact, Hydro indicates in CA-198 NLH that up until 1990, the Power Distribution District was a separate department within Hydro with the purpose of serving rural and isolated customers. However, the Isolated Systems are fully-integrated systems, including generation (typically diesel) and distribution. This means that the skill-sets necessary to supply these systems are quite different, and owing to the small size and remote nature of the systems, there is generally a need for staff with broader skills who are willing to reside in the remote community they serve. In fact,

Hydro recognizes this with the Diesel System Representative. In its response to CA-114 NLH, Hydro indicates that the Diesel System Representatives are assigned only to work in diesel systems and generally live in the communities they service. On occasion, they may perform work in other diesel systems when there is a need to cover for someone on sick leave or vacation, or during emergencies.

Although Hydro believes the current structure is working well (CA-198 NLH), the rural deficit remains excessively high, in spite of cost reduction initiatives (see page 26, lines 1 to 18 of Mr. Wells' Pre-filed Evidence, 1st Revision). As indicated on page 25, lines 19 to 23 of Mr. Wells' Pre-filed Evidence, 1st Revision, the average subsidy in 2004 is forecast to be $4700 for each Isolated Rural Customer and $800 for each Island Interconnected Customer. This places a huge burden on other customers in the Province who are paying for this subsidy through higher electricity rates.

There is little hope that the rural deficit can be reduced significantly under the current rate regime. The best that one can hope for is that the communities be served efficiently, in a manner that minimizes the rural deficit. The Government has made a decision that these customers will be subsidized, so it is important that the subsidy be carefully tracked and made transparent, with incentives for management to minimize the deficit.

A separate department could be funded by revenues from rates, and from the cross-subsidy provided by other customers; i.e., the rural deficit. The sole purpose of this department would be to serve the isolated communities. BC Hydro has a separate

department in its Distribution Line of Business that is wholly responsible for non-integrated systems (i.e., isolated systems). This department is responsible for all functions associated with the non-integrated areas including operation, maintenance, planning, financial reporting, environmental issues, business development, generation and distribution asset management, and customer relations. I understand that this is a similar arrangement to what Hydro had prior to 1990, except service is confined to the Isolated Systems; i.e., it does not include rural customers on the Interconnected System.

A department with sole responsibility for serving the Isolated Systems would make that component of the rural deficit transparent, and provide direct management incentives to minimize the deficit while maintaining adequate levels of service. Under the current structure, there does not appear to be direct management incentives to reduce the deficit. I note that rural deficit reduction is not included in the list of key management performance indicators shown in NP-88 NLH. In addition, the current structure is not particularly transparent in that it is difficult for the Board to re-create the actual amount of the deficit. Creation of a separate department to supply the Isolated Systems could address both of these issues.

In summary, I recommend that the Board direct Hydro to commission an independent study to consider the merits of creating an organizational structure with a separate department having sole responsibility for serving the Isolated Systems. It would be useful to have Government input to the study to ensure consistency with the Energy Policy Review.

This concludes my Pre-filed Evidence.

| | | | |
|---|---|---|---|
| **Profession** | *EXECUTIVE CONSULTANT* | **Nationality** | Canadian Citizen<br>U.S. Resident |
| **Years of Experience** | **Years with**<br>26 | **KEMA Consulting** | 4 |

**Education**

M.S./1977/Electrical Engineering/State University of New York, Buffalo, NY
B.S./1975/Electrical Engineering/State University of New York, Buffalo, NY

**Key Qualifications**

Mr. Bowman has 26 years of experience in the power industry both domestically and internationally. His primary expertise includes power sector restructuring, regulation and markets, and electricity service costing and pricing. Mr. Bowman has played a leading role in numerous consulting projects in Canada, Australia, Central America, China, Colombia, Dutch Antilles, Egypt, Ghana, India, Indonesia, Pakistan, Serbia, South Korea, Thailand, The Philippines, United States and Vietnam.

**Expert Testimony at Newfoundland Light & Power's Rates Submission.**
Provided expert written testimony and participated in mediation/technical sessions on issues related to cost of service and rate design at Newfoundland Power's 2003 General Rate Application.

**Expert Testimony at Newfoundland and Labrador Hydro's Rates Submission.**
Provided expert oral and written testimony related to cost of service and rate design issues at Hydro's 2001 General Rate Proceeding.

**Expert Testimony at Newfoundland Light & Power's Rates Submission.**
Provided expert oral and written testimony related to cost of service and rate design issues at Newfoundland Power's 1996 General Rate Proceeding.

**Expert Testimony at Nova Scotia Power's Rates Submission.**
Provided expert oral and written testimony related to cost of service and rate design issues. Recommended and designed time-of-day rates for all customer classes and designed an alternative interruptible rate design for large industrial customers.

**Expert Testimony at Nova Scotia Power's Rates Submission.**
Provided expert oral and written testimony regarding an Industrial Expansion rate design. Recommended approval of rate with modifications and submitted two alternative rate designs for approval including a real-time surplus power rate and a time-of-day expansion rate.

**Cost of Service and Cost Reducing Rate Design Study**
On behalf of the Nova Scotia Utility and Review Board, reviewed Nova Scotia's cost of service study, and developed rate designs consistent with Nova Scotia Power's integrated resource plan for all customer classes. Report was filed with Board, and reviewed as part of hearing on utility's subsequent rate submission.

**Alberta RTO Evaluation Project**

The objective of the Alberta Regional Transmission Organization (RTO) Evaluation Project was to determine a business relationship with RTO West that will ensure Alberta's electricity needs are met by a competitive market. The project participants included the Alberta Department of Energy, ESBI Alberta Limited, and the Power Pool of Alberta. KEMA Consulting developed supporting information and delivered a report to assist Alberta with formulation of a strategy relating to a preferred business relationship with RTO West.

**Development of Market Rules for Competitive Power Market in Indonesia**
Project Manager responsible for leading a team of experts in the design of market rules for a competitive power market in Java-Bali, Indonesia. Under Phase 1 of the project, market rules were developed for a single-buyer market that will serve until reforms are in place to allow progression to a fully competitive, multi-buyer market structure. The market rules for the multi-buyer market structure were developed under Phase 2 of the project, and included market simulation, and development of a transition plan for moving from the single-buyer market structure to the multi-buyer market structure over time.

**Expert Testimony in California Civil Case Concerning Breach of Contract.**
Provided expert testimony concerning the value of a company based on revenues generated less costs to manage and operate the business. Revenues were derived from a contract for energy services covering steam and electricity sales to an industrial client and its power purchase agreement covering electricity sales to a utility. Costs to manage and operate the business included administrative costs, the cost of a lease and the cost of an operation and maintenance contract with an O&M provider.

**Advice on IPP's Power Delivery Contract.** Provided expert advice and written testimony on the value of an IPP's power delivery contract before the New Jersey Public Utilities Board.

**Expert Testimony in Kansas Civil Case Concerning IPP Development**
Provided expert testimony concerning the independent power producer (IPP) programs in India and Colombia. The testimony related to the difficulties and hurdles that must be overcome in order to successfully develop an independent power project in a developing country.

**Workshop on Transmission Planning in a Competitive Power Market**
Conducted workshop on transmission planning for proposed RTO West in Portland, Oregon. Workshop covered transmission planning responsibilities of Regional Transmission Organizations under FERC Order No. 2000 and experience with domestic independent system operators and international transmission organizations. Reliance on market mechanisms for transmission expansion was emphasized at workshop.

**Workshop on Transmission Pricing in a Competitive Power Market**
Conducted workshop on transmission pricing for proposed RTO West in Portland, Oregon. Workshop covered transmission pricing in Regional Transmission Organizations under FERC Order 2000 and experience with domestic Independent System Operators and international transmission organizations. Workshop addressed transmission services such as network, connection, import, export, and point-to-point service, and cost recovery such as postage stamp, zonal and nodal pricing.

**International Survey of Transmission Rates and Services**

Conducted a survey of transmission rates and services provided in various domestic and international jurisdictions. Survey conducted in support of submission by Ontario Hydro Services Company to Ontario Energy Board on its new transmission tariff. Survey topics included: services offered such as network, point-to-point, connection, import and export service; cost recovery such as postage stamp, zonal and nodal pricing; treatment of generation; and transmission planning.

**Development of Terms and Conditions for Transmission Tariff**
Assisted Ontario Hydro Services Company with development of terms and conditions for its new transmission tariff. The terms and conditions were filed with the regulatory authority as part of the utility's application for approval of the new tariff. Also assisted with preparation of responses to various discovery questions related to the tariff.

**Restructuring in the Philippines:** For JBIC-funded project in the Philippines, worked with a team from Chubu Electric. Responsible for evaluating impact of market reform plan on transmission company operations, pricing, and regulation, and comparison of Philippine environment to Thailand, Indonesia, Malaysia, etc. Conducted analysis of impact of introduction of new electricity law, market rules and Grid Code, recommending appropriate regulation, and strategy for benchmarking of performance.

**Advisory Services on Electricity Supply Industry Reform, EGAT, Thailand:** Project Manager leading critical analysis of reform options and identification of those characteristics that have been implemented elsewhere and are directly applicable to Thailand, culminating in a Thailand-specific plan for power sector reform and power sector privatization.

**Implementation of Power Sector Restructuring Plan for Shanghai Municipal Electric Power Company.**
Managed the tariff and technical components of the study that included development of a generation purchase tariff to promote economic dispatch, a review of operations, dispatch and unit scheduling procedures, and an evaluation of the potential role for a Grid Code to promote development, maintenance and operation of an efficient, coordinated and economical power system.

**Feasibility Studies for Merchant Co-generation Project at Industrial Plant Site.**
Participated with a team of consultants on a feasibility study for development of a merchant co-generation facility to sell power into the wholesale market and steam to the industrial plant. Directed market studies including analyses of forecasts for electricity demand, new generating plant construction, generation costs, market bid strategies, fuel costs, utility avoided costs, etc.

**Advice to Mid-west Cooperative Concerning Role in Deregulated Power Market.**
Provided advice to a mid-west cooperative on positioning itself for a deregulated power market. Advice included the cooperative's future power purchasing strategy, transmission and distribution construction and operations and maintenance strategy and how it should position itself to compete in the future deregulated power market.

**Advice to Cooperatives Concerning Power Purchase Strategy and Transfer Pricing Mechanism.**
Advised a group of cooperatives concerning implementation of a transfer pricing methodology that would enable each member to choose the supplier of its choice while leaving the remaining members harmless. The intent was to ensure that each member paid its fair share of the costs associated with the group's power purchase commitments.

**Expert Testimony at Various Rate Hearings in Ontario.**
Provided expert testimony developed for annual rate cases in Ontario, Canada. Extent and content of input varied with position at Ontario Hydro at time of rate hearing.

**Experience**

**KEMA Consulting, Fairfax, VA 1999 to Present**
Executive Consultant

**Pace Global Energy Services, Fairfax, VA 1998 to 1999**
Director, Power Services

**International Resources Group, Ltd. (IRG), Washington, DC 1995 to 1998**
Senior Manager, Energy Group

**CSA Energy Consultants, Arlington, VA 1994 to 1995**
Vice President (1995); Senior Manager, Power Supply Analysis (1994)

**Ontario Hydro, Toronto, Ontario, Canada 1977 to 1993**
*Industrial Service Advisor, Field Support Services Department, 1992-1993*

*Senior Rate Economist, Rate Structures Department, 1990-1992*

*Planning Engineer, Demand/Supply Integration, System Planning Division, 1988-1990*

*Senior Engineer, Resource Utilization, Power System Operations Division, 1987-1988*

*Planning Engineer, BES-Resources Planning, System Planning Division, 1981-1987*

*Assistant Planning Engineer, Transmission System Planning Department, 1979-1981*

*Engineer-in-Training, 1977-1979*

**Professional Affiliations**

Professional Engineers of Ontario; Institute of Electrical and Electronic Engineers

**Recent Publications**

1. Paper entitled *PBR – A Window of Opportunity for Transmission Owners* published in the July/August 2000 edition of Utility Automation
2. Paper (joint authorship with Margaret McKay) entitled *PBR Delivers Maximum Benefits* published in the April 2001 edition of Electric Light & Power
3. Conducted workshop on *Design of Performance-Based Regulatory Mechanisms* at Power Delivery Reliability Conference in Denver sponsored by KEMA Consulting in June/2000
4. Presented paper on *Performance-Based Regulation – Experience and Emerging Trends* at Xenergy Disco 2001 Event in San Diego in February 2001
5. Presented paper on *Performance-Based Ratemaking – Recent International Experience and Emerging Trends* at Performance-Based Ratemaking Conference in Denver co-sponsored by KEMA Consulting on November 9/10, 2000. In addition, served as conference chairperson, and led Panel Sessions
6. Presented paper on *Performance-Based Regulation for Regional Transmission Organizations – Industry Trends* at Regional Transmission Organizations conference in Denver co-sponsored by KEMA Consulting in November 1999
7. Conducted workshop on Transmission Pricing under Open Access at Asia PowerGen Conference in Bangkok in September 2000