PROVINCE OF MANITOBA

BEFORE THE PUBLIC UTILITY BOARD

Manitoba Hydro Energy Intensive	**)**	**2008 MH EIIR**
Industrial Rate Application	**)**	

DIRECT TESTIMONY OF

PAUL CHERNICK

ON BEHALF OF

RESOURCE CONSERVATION MANITOBA

AND

TIME TO RESPECT EARTH'S ECOSYSTEMS

Resource Insight, Inc.

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I. Identification and Qualifications

Q: Mr. Chernick, please state your name, occupation and business address.

A: I am Paul L. Chernick. I am the president of Resource Insight, Inc., 5 Water Street, Arlington, Massachusetts.

Q: Summarize your professional education and experience.

A: I received an SB degree from the Massachusetts Institute of Technology in June 1974 from the Civil Engineering Department, and an SM degree from the Massachusetts Institute of Technology in February 1978 in technology and policy. I have been elected to membership in the civil engineering honorary society Chi Epsilon, and the engineering honor society Tau Beta Pi, and to associate membership in the research honorary society Sigma Xi.

I was a utility analyst for the Massachusetts Attorney General for more than three years and was involved in numerous aspects of utility rate design, costing, load forecasting, and the evaluation of power supply options. Since 1981, I have been a consultant in utility regulation and planning, first as a research associate at Analysis and Inference, after 1986 as president of PLC, Inc., and in my current position at Resource Insight. In these capacities, I have advised a variety of clients on utility matters.

My work has considered, among other things, integrated resource planning, the cost-effectiveness of prospective new generation plants and transmission lines, retrospective review of generation-planning decisions, ratemaking for plant under construction, ratemaking for excess and/or uneconomical plant entering service, conservation program design, cost recovery for utility efficiency programs, the valuation of environmental externalities from energy production and use, allocation of costs of service between rate classes and

jurisdictions, design of retail and wholesale rates, and performance-based ratemaking (PBR) and cost recovery in restructured gas and electric industries. My professional qualifications are further summarized in Exhibit____PLC-1.

Q: Have you testified previously in utility proceedings?

A: Yes. I have testified over two hundred times on utility issues, before regulators in thirty US jurisdictions, Ontario, British Columbia, Alberta and Manitoba. My previous testimony is listed in my resume. Specifically, I testified in the Manitoba Hydro 2008 General Rate Application (GRA).

II. Introduction

Q: On whose behalf are you testifying?

A: My testimony is sponsored by the Resource Conservation Manitoba ("RCM") and Time to Respect Earth's Ecosystems ("TREE").

Q: What is the purpose of your direct testimony?

A: My sponsors have asked me to evaluate the Energy Intensive Industrial Rate (EIIR) proposal of Manitoba Hydro ("MH" or "Hydro") for the General Service Large (GSL) schedule, in light of the Public Utility Board's concern about below-cost pricing and resulting environmental emissions:

> The Board seeks to assure itself that MH's rate design and rates are consistent with the pursuit of the environmental objectives of The Sustainable Development Act (SDA). Energy efficiency presents the potential for a virtuous circle, wherein lower domestic consumption results in reduced customer bills, higher MH aggregate net export revenue and net income, and lower carbon emissions by MH's American export customers. (PUB Order 117/06, p. 3)

This proceeding is a follow-on to Hydro's 2008 GRA and to Hydro's proposals for a similar two-block rate for certain large customers in that proceeding.

Q: What specific issues does your testimony address?

A: I address the following issues:

- Estimation of marginal costs for setting the tail block of the EIIR, including future market prices, losses, and environmental values.
- Setting the baseline above which the EIIR customers would pay a marginal-cost-based rate.
- Other issues in designing the EIIR and the integrating the EIIR design into retail rate design in general.

I have assumed that this case will deal only with rate design for some portion of the GSL rate, which would start paying marginal-cost-based rates for energy use above some level. Many of the issues I discuss—setting marginal cost, setting baselines, implementing time-of-use rates, reducing demand charges and eliminating demand ratchets—also apply to reform and modernization of rates for smaller GSL customers and other classes. That reform should be undertaken as soon as practical, and certainly by the next GRA.

III. Estimate of Marginal Energy Cost

Q: How did Hydro set the second block of the proposed EIIR rate?

A: Hydro set the second block based on its estimate of marginal cost, which it defined to be the "average price of extra-provincial sales" during MH's fiscal 2007 and 2008, or $55.27/MW.h (Application, Page 5). Since the demand charge of $5.40/kW-month is at least $7.40/MW.h, MH set the second-block

energy charge at $47.90/MW.h, plus about 1.9% losses for customers served at voltages less than 30 kV.[1]

Hydro anticipates that the second-block rate would be adjusted every one to three years, "depending on the changes in the marker price used to set the rate" (IR RCM/TREE/MH I-29) and "that normally the tail block portion of the rate would be updated as part of a General Rate Application" (IR MIPUG/MH I-2).

Q: Does the $55.27/MWh represent the best estimate of Hydro's opportunity cost for off-system sales?

A: No. The $55.27/MWh is an historical value for 2007 and 2008, reflecting the prices of about a dozen contracts (or permits), some of which date back over a decade. The appropriate value for off-system sales would be based on the projected price for new off-system sales that would be scheduled, given lower domestic sales, or off-system sales that would be curtailed if domestic load grows.

Q: Has Hydro explained why it chose to lag marginal cost by two or three years, rather than using marginal cost projected for the same period as the embedded rates?

A: Yes. Hydro says it chose mixed-vintage historical sales prices "because of the uncertainty associated with forecasts of marginal cost, and the difficulties involved in assuring stakeholders that a forward-looking marginal cost estimate is reasonable" (RCM/TREE/MH I-32).

Q: Is that a reasonable basis for using backward-looking estimates of market prices?

[1] This price is rounded from $55.27/MW.h – $7.40/MW.h = $47.87/MW.h.

A: No. Hydro essentially justifies using numbers of limited relevance, because it is unwilling to support the forward market prices that it uses for supply planning, contracting, and other purposes.

Q: Has MH provided estimates of the prices of new contracts it could secure?

A: No. Hydro has refused to provide any such information, even under confidentiality protection (IR RCM/MH I-12, 13; PUB/MH I-15, 16).

Q: Has MH provided any forecasts of off-system sales prices?

A: Yes. Hydro provided its IFF07-1, a forecast of off-system sales prices, in PUB/MH I-14(g). That forecast does not distinguish between firm and opportunity sales, or between old and new contract prices. Hydro refused to provide its updated estimates because they have not been approved by the MH Board.[2]

Q: What is that forecast?

A: The Integrated Financial Forecast IFF07-1 projection for off-system sales prices is shown in the table below.

Fiscal Year	Average Export Sales Price ($/MW.h)
2009	62.1
2010	63.0
2011	64.5
2012	66.7
2013	71.1
2014	74.1
2015	78.2

[2] I cannot recall another utility refusing to provide staff-generated documents to its rate regulator on the grounds that the documents have not been approved by the utility's board. The PUB's ability to make informed decisions rests on the quality of the information available to it. I recommend that the PUB require MH to provide data, reports and workpapers in its possession, regardless of the status of internal MH approvals for those documents..

2016	89.1
2017	93.3

The levelized value of the projected export price from 2010 through 2017 is $73.2/MW.h, at a real discount rate of 6.1% (IR RCM/TREE/MH I-16) and 2% inflation (from IFF07-01). The rise in value of the US dollar since the time of this forecast would increase the off-system sales price, especially in the first half of the forecast.

Q: How do these values compare to the estimate of off-system sales prices that MH proposes to use in setting the second block of the EIIR?

A: Hydro's most recent export-price forecast is 12% higher than its backward-looking marginal rate in FY 2009, and 17% higher by FY 2011.

Q: Can you adjust Hydro's forecast of average off-system sales prices to eliminate the lower-priced opportunity sales?

A: Not with any precision. From IR PUB/MH I-14, the price of firm sales was 12% higher than the average price in FY 2007 and 8% in FY 2008. I cannot determine whether the forecast in IFF07-1 reflects a similar mix of firm and opportunity sales as do the historical data. Assuming that the firm sales price exceeds the average for all export sales by 10%, the forecast firm-sales price would be 24% higher than MH's historical price in FY 2009 and 38% in FY 2011.

Q: Do you have any reason to believe that Hydro's marginal cost of energy may be higher than the historical or forecast off-system sales?

A: Yes. Hydro estimates that the Wuskwatim plant will cost 7.3¢/kWh in 2011 real dollars, escalating with inflation (IR RCM/TREE/MH I-16). This estimate does not appear to include the 4%–10% marginal losses on the Bipole transmission system required to deliver Wuskwatim to domestic and export load (IR RCM/TREE/MH I-21). Unless Hydro's decision to build Wuskwatim was

imprudent and inefficient, it is difficult to see how Hydro's forecast of export revenues could be much less than 8¢/kWh in 2011, with prices rising thereafter.

Q: Other than the lost export revenues, should the marginal cost include any other costs of increased domestic energy consumption?

A: Yes. As I discussed in my testimony in the GRA, domestic consumption of electric energy also results in environmental costs, most importantly the emission of additional greenhouse gas from the burning of coal and natural gas in power plants. The more clean hydro-electric energy used in Manitoba, the less is available for sale to Saskatchewan, Ontario, Minnesota, Wisconsin and potentially other states in the territory of the Midwest ISO. The less hydro energy available to those jurisdictions, the more of their energy requirements will be served by fossil generation, emitting more carbon dioxide.

Q: What carbon value should be included in estimating marginal cost?

A: In the GRA, I presented information supporting a value of $60/ton CO_2 for the total cost of carbon emissions, of which about half would be internalized in market prices for power. The emissions from avoided thermal generation would be about 0.95 tons CO_2/MW.h for coal and 0.40 tons CO_2/MW.h for gas-fired combined-cycle.

Q: Has Hydro included any of this cost in its estimate of marginal costs?

A: The historical export price data on which Hydro bases its rate proposal would not include any carbon costs. In the GRA, Hydro stated that its forecasts of sales prices (which I assume would include the IFF07-1 projections) includes a price premium based on anticipated future legislation requiring reductions of greenhouse-gas emissions, but refused to provide those estimates.

Q: How should the Board incorporate the environmental costs of domestic energy consumption?

A: Environmental costs should be included in marginal energy costs for EIIR and all other rates. In the next GRA, the Board should require that Hydro provide the greenhouse-emissions prices embedded in its export-price forecasts, and select the values to be incorporated in marginal costs. In the present proceeding, the Board should be aware of the omission of this important cost component, and when in doubt, round upwards its estimates of marginal energy costs.

IV. The Proposed Energy-Intensive Industrial Rate

Q: How has Hydro changed its proposal for the Energy-Intensive Industrial Rate since the 2008/2009 General Rate Application?

A: While the proposal still differentiates between charging embedded-cost rates for energy under a baseline (now called Customer Baseline Energy Level or CBEL) and marginal costs above that baseline, Hydro's proposal has changed in several ways:

- Increasing the nominal application of the marginal-cost rates for new loads over 39 GW.h annually, to customers over 100 GW.h annually.
- Removing from the marginal rate all existing GSL customers with annual energy usage under 100 GW.h.
- Limiting the marginal rate to customers served at 30 kV or above.
- Extending the base period from the three years ending March 2007 to the three years ending March 2008.
- Eliminating the employment- and tax-based exemptions proposed in the GRA.
- Clarifying the rate at which the baseline would be increased over time.

Q: Do these changes improve the proposal?

A: Not in most respects.

Q: Please comment on Hydro's proposal to limit the EIIR to customers over 100 GW.h annually and 30 kV or above?

A: In general, these changes would reduce the effectiveness of the EIIR, by reducing the group of GSL customers that would face marginal-cost-based rates. Hydro's only practical objection to applying the EIIR to smaller and lower-voltage customers is that "as there are significant costs associated with administering the rate, there are advantages to reducing the number of customers to whom it would apply" (IR RCM/TREE/MH I-22). Hydro does not actually assert that including the rest of the GSL class would be impractical or excessively expensive, but phasing in the EIIR makes sense, starting with "most of the price-sensitive load which has been increasing and is expected to increase more rapidly than other customer loads" (ibid.).

Hydro suggested such a phase-in: "Once this rate is established, Manitoba Hydro intends, if feasible, to implement inverted rates for all GS Large customers, and the EIIR provisions would be rolled into the new rate structure." (ibid.)[3] Hydro should put all GSL customers on notice that they should expect to eventually be covered by inclining rates, with a CBEL based on usage prior to March 31, 2008, and should evaluate expansion and efficiency decisions in that light. The Board should require Hydro to propose the implementation of marginal-cost pricing for the remainder of the GSL class in its next GRA.

Q: Should Hydro revise the base period from the three years ending March 2007 to the three years ending March 2008.

A: No. The GSL customers have been on notice since prior to the filing of the 2008/2009 GRA that increases in usage may be billed at rates above embedded

[3] It is unfortunate that Hydro refers to marginal-cost GSL rates as "inverted," as if it were backwards, rather than "inclining" or "increasing."

costs. Any increase in usage since March 2007—which Hydro estimates at 19 GW.h (RCM/TREE/MH I-10)—should be billed at the second-block rate.

Q: Does eliminating the employment- and tax-based exemptions proposed in the GRA improve the EIIR proposal?

A: Yes. Hydro can be a tool for economic development, but should not be making judgements regarding the desirability of various types of new load.

Q: Do Hydro's clarification and revision of increases in the CBEL improve the EIIR proposal?

A: While clarification in rate design is always desirable, the increases in the CBEL over time are not appropriate or useful. The increases eliminate the marginal-cost incentive for customers whose loads grow at less than the CBEL baseline. Worse still, after the sixth year of the EIIR, customers who expect load to grow in the future will have an incentive to increase energy usage up to the 2% limit each year, since the annual increase in the CEBL will be lost if the customer does not increase its usage. This is a terrible disincentive to energy efficiency.

As I discussed in my testimony in the GRA, the baseline should decline over time to increase incentives for efficiency and reduce the subsidy from other ratepayers.

> The base usage, for which each customer is charged embedded rates, should be less than a fixed historical base usage, such as maximum annual usage in 2005–2007. The base usage might be set as 95% of the historical value in 2008, falling 2% or so each year thereafter. No growth allowance should be added to this declining base.

The Board should reject Hydro's proposals to increase the baseline. In subsequent cases, the Board should gradually reduce the baseline.

Q: Of the 10 customers that Hydro expects to be covered by its proposed EIIR, how many does Hydro expect to face the marginal-cost second block?

A: Including the adjustments for past Power Smart participation, Hydro expects five of the ten customers to use some energy in the second block in FY 2010, four in FY 2011–2013, and just three from FY 2014 onward. (IR MIPUG/MH I-3(a)). Adjustments for other energy-efficiency investments may further reduce those numbers.

Q: Has Hydro changed its proposal to increase the CBEL by the amount of electricity consumed for an energy-efficient solution for compliance with federal or provincial environmental act or regulation?

A: Yes. While Hydro's proposal in the GRA would have increased the baseline by 50% of energy used for environmental compliance, Hydro now proposes to increase the baseline by the full amount of electricity used for environmental compliance.

Q: What is Hydro's justification for this adjustment to the CBEL?

A: Hydro says that it "does not want to discourage companies from implementing the best solution when companies are required to implement systems to comply with new environmental legislation or regulations." RCM/TREE/MH I-23(d)

Q: Would the proposed adjustment to CBEL have the effect that Hydro says it wants?

A: No. The special exemption for energy used in environmental controls would have exactly the opposite effect that Hydro intends. An environmental compliance strategy that uses large amounts of electricity would be subsidized by Manitoba electricity consumers, while strategies that use more fuel, capital, labour, reagents, or other operating costs would not be subsidized. As a result, rather than selecting the lowest-cost compliance approach, customers would be encouraged to select electricity-intensive approaches with higher total costs to Manitoba.

Q: Do you have any concerns about the adjustment of the historical baseline for the savings estimated to have occurred as a result of Power Smart and other energy-efficiency efforts?

A: Yes. Some of those investments may now be over 15 years old. Equipment that was installed or improved in the early 1990s may have since worn out, failed or been replaced due to process changes or reconfiguration of factory space. An inefficient twenty-year-old motor replaced with a more efficient model in 1995 with Power Smart incentives might otherwise have failed and been replaced with a new efficient model, without the Power Smart intervention. Yet Hydro does not intend to verify the continued existence of claimed savings (IR COALITION/MH I-2).

Hydro should verify the reasonableness of assuming continued operation of energy-efficiency investments that are more than 10 years old, or discount older investments for attrition.

Q: Did Hydro's rebuttal in the GRA address your position that the baseline should decline, rather than rise?

A: Yes. Hydro acknowledged the merit in my suggestions, saying that "this would be a reasonable approach to consider for a more general inverted rate for large loads." (Manitoba Hydro Rebuttal Evidence, February 28, 2008, p. 62)

Q: Did Hydro's rebuttal accept your proposal?

A: No.

Q: What was Hydro's justification for increasing the baseline, even though decreasing the baseline would provide better incentives for efficiency and reduce subsidies?

A: Hydro's rebuttal was not very specific, but it did claim that the "use of its Power Smart programs is working effectively" (Rebuttal, p. 62), suggesting that rate

design is unimportant in the presence of the Power Smart programs. The Power Smart programs fund investments in energy-efficient equipment, but do not directly affect customers' decisions regarding usage of equipment, allocation of energy usage among facilities in different jurisdictions, or expansions to take advantage of Manitoba's low energy prices. Higher tail-block rates perform all those functions, and also increase customer interest in participating in the Power Smart programs.[4]

It seems obvious that expanding the size of the initial, subsidized energy block reduces the likelihood that customers will face marginal costs for any of their usage and hence reduce their incentives to use energy wisely, invest in conservation, or make economically-efficient locational decisions.[5]

Q: Has Hydro reasonably estimated the effects of its proposal to increase the baselines?

A: My ability to review Hydro's responses to discovery is limited by Hydro's failure to provide much of the supporting documentation. For example, in IR PUB/MH-11, Hydro provides the forecast of sales by industry group, and hints at having information about the CBELs for each group, but does not provide the CBELs, making it impossible to accurately compare forecast usage to the proposed CBELs with growth allowances.

In PUB/MH-11, Hydro compares only annual growth rates and CBEL growth rates, making it difficult to compare sales to the adjusted CBEL, even

[4] Utilities in Ontario, Connecticut, Vermont and elsewhere expect to be able to eliminate load growth with energy-efficiency programs. Higher tail-block rates for all GSL customers would help Manitoba move toward that goal.

[5] Manitoba consumers might not care much about the last point, locational efficiency, except that they pay the subsidies that attract energy-intensive industry to the province.

with the simplification of assuming all customer loads move in similar ways.[6] Hydro adds some vague observations about the comparisons, including:

- "For the Chemical Industry…second block billings will apply to billings up to 2012/2013." (PUB/MH-11(g))
- "Due to the large forecasted growth in the petroleum industry in the first few years as shown in the table below, the second block rate will apply to approximately 90% of growth in the first two years; approximately 30% of growth in the third year and 0% of growth thereafter." (PUB/MH-11(h))
- "As indicated in the table below, it is possible that some customers in the Primary Metal Industry could be subject to the second block rate." (PUB/MH-11(i))

I have attempted to confirm these statements, without success, perhaps because Hydro does not provide its estimate of the CBELs. I can back out group usage in 2008 from the forecast of 2009 usage and the stated growth rate, but I do not know whether Hydro has set some CBEL's above the 2008 usage level based on higher usage in earlier years or adjustments for Power Smart savings[7]. Hydro is also not clear as to the meaning of "the first two years," which could be read as 2009 and 2010 (the first two years after the setting of the baseline), 2010 and 2011 (the first two years that the EIIR would be in effect), or 2011 and 2012 (the first two years in which the baseline would be adjusted).

[6] Hydro also hints one chemical customer's use may exceed the 1,500 GW.h threshold, in which case its marginal usage would be at the second-block rate. Hydro also says its largest customer uses about 1,500 GW.h (RCM/TREE/MH I-2).

[7] Hydro estimates the Power Smart credits to be 429.9 GW.h, plus load-curtailment energy of 1.4 GW.h (RCM/TREE/MH I-8).

Q: Did Hydro provide any other analyses of the effects of the increases in the CBEL?

A: Yes. In RCM/TREE/MH I-27, Hydro shows the subsidy if each of the ten large customers covered by the EIIR increases its usage by the allowed annual adjustment in the CBEL. This analysis shows annual effects of $3.5 to $5.1 million.

Q: Is the analysis in RCM/TREE/MH I-27 correct?

A: No. For each year, Hydro shows only the subsidy in that year due to load growth in that year. The effects are actually cumulative; the subsidy in 2013, for example, is a result of the growth from the original CBEL to 2013, which would include 3% growth allowances in 2011, 2012, and 2013. I correct that error in the table below.

Hydro Projection of Potential Subsidy, RCM/TREE/MH I-27

Fiscal Year	Difference ($M)	
	Hydro	Corrected
2011	4.5	4.5
2012	4.6	9.1
2013	4.8	13.9
2014	4.9	18.8
2015	5.1	23.8
2016	3.5	27.3
2017	3.5	30.8
2018	3.6	34.5
2019	3.7	38.1
2020	3.8	41.9
2021	3.8	45.7
2022	3.9	49.6

By FY 2018, the potential subsidy is about ten times as large as Hydro reports.

Q: Did Hydro change its proposal for establishing baselines for new customers?

A: Yes. In the GRA, Hydro proposed a 39 GW.h baseline for new customers up to 78 GW.h; larger new customers would need to justify a baseline based on their

employment and tax benefits. In the current proceeding, Hydro proposes a 100 GW.h baseline for new customers.

Q: Is the 100 GW.h baseline for new customers appropriate?

A: Not in general. However, if the Board accepts Hydro's proposal to apply marginal-cost prices only to GSL customers over 100 GW.h in this case, the 100 GW.h baseline for new customers seems reasonable at this time. As the Board applies the EIIR approach to smaller customers over time, the baseline for new customers should correspondingly decline.

Q: Do you have any comments on other features of the proposed EIIR design?

A: Yes. Hydro has not dealt with Board instructions regarding time-of-use (TOU) rates, rebalancing of demand and. energy charges, and eliminating the demand ratchet. I discussed these issues in the GRA.

As part of the EIIR, the Board should instruct Hydro to transfer the demand revenues to an on-peak energy charge, which will provide more efficient pricing signals. That step would start the process of implementing TOU rates, while eliminating the inefficient demand charge and demand ratchet.

Q: What would be the effect of that rebalancing?

A: Assuming that the peak period covers the same hours as in the SEP rate, the peak period is about 23% of the hours and the $5.40/kV.A-month demand charge for customers over 100 kV.A would be equivalent to a peak-period energy price increment of $32.4/MW.h. For customers served at 30–100 kV, the $6.06/kV.A demand charge would be equivalent a peak increment of $36.4/MW.h.

V. Recommendations

Q: What are your recommendations to the Board on these issues?

A: I have five recommendations:

1. Unless Hydro presents evidence that Wuskwatim is not cost-effective, the rate for the second energy block should be based on the price of Wuskwatim, including losses on the HVDC system, or approximately $80/MWh minus $7.4/MW.h for the demand charge, or $72.6/MW.h, for customers served at voltages above 100 kV. For customers served at 30–100 kV, the corresponding second-block price would be $74/MWh.
2. If Hydro demonstrates that Wuskwatim is not cost-effective, the second-block rate should be based on Hydro's projection of market prices, about $73.2/MW.h. Netting out the demand-charge revenues, the second-block rate in this case would be $65.8/MW.h for customers over 100 kV and $67.1/MW.h for customers from 30 kV to 100 kV.
3. In either case, the demand charge should be restated as an increase to the peak energy rate, which I estimate to be about $32–36/MW.h.
4. The Board should eliminate Hydro's proposed allowances for growth and environmental compliance.
5. While limiting the initial application of the EIIR approach to Hydro's ten largest customers may be reasonable as an administrative measure, the Board should put smaller GSL customers on notice that they will also be covered by similar rate design in future years, and Hydro should file a plan with its next GRA to phase in the marginal-cost.
6. The Board should gradually reduce the CBEL to ensure that most customers will face marginal-cost prices and incentives for at least a small portion of their usage. In its next GRA, Hydro should be instructed to file

data on the percentage of EIIR customers (and the annual consumption of those customers) that would have some load in the second block for the CBEL formula set in this case, and with the CBEL decreased by various percentages from the original CBEL.

7. More generally, the Board should develop the ability to enforce its discovery and directives. Hydro simply refused to provide data requested by the Board (IR PUB/MH I-3, I-15(c) and (e), I-16(b)), as well as by intervenors. As shown in IR PUB/MH I-12, Hydro also refused to respond to some Directives from Order 116/08 (Directives 22 and 29(b)) and provided only a cursory response to Directives 29(a), which required an "in-depth analysis." The Board's ability to supervise Hydro is clearly compromised if Hydro refuses to provide information and perform analyses.

Q: Does this conclude your testimony?

A: Yes.