Manitoba Hydro 2010 GRA

Information Requests of RCM/TREE

RCM/TREE/Independent Experts 1
Reference: Independent Experts' report - p. 4

This duality of character creates a principal agent problem because of information asymmetries between the principal (the public) and the agent (MH). The government or its agencies and bodies are interested in overcoming information asymmetries with the operator and in aligning the operator's interest with those of the public. The information asymmetry arises in the context of utility regulation because the operator knows far more about its abilities and effort and about the utility market than does the regulator or the public.

1. Please elaborate the ways in which information asymmetries between the operator and the regulator or public can be overcome? Is this strictly a one-sided learning process?

2. In particular, what is the role of expert consultants employed by interveners or the regulator, who may introduce analyses and information from other jurisdictions that the utility may lack?

3. How do the models cited in the footnotes on p. 4 address the creation and introduction of new knowledge in the regulatory process and how would you address the same issue?

4. PUB proceedings have produced quantified analyses by interveners of more optimal ways for Hydro to make energy affordable, provide economic stimulus, generate wealth for Manitoba, and mitigate global greenhouse gases. What recommendations would you make to ensure that such knowledge generated in the context of the PUB process flows to Manitoba Hydro-Electric Board members and provincial government officials who set the policy framework for Manitoba Hydro?

ANSWER:

1(1) There are many areas where PUB does not have access to full information from MH. The particular area KM can think of first is the area of long term contracts. PUB is not privy to the details of these contracts (prices, exact conditions and terms). MH feels that this information is protected by agreements with counter parties and cannot reveal them without jeopardizing its relationship with these parties. Whatever the reason, PUB is left in the dark in this matter. But PUB by being involved as the regulator for a long period of time it has amassed considerable information and expertise which has overcome to some extent the information asymmetries. The learning process is certainly not only one directional. The regulator will also over the course of time develop expertise in dealing with MH. The asymmetries also are reduced over time with more transparency.

1(2) Expert consultants play a role in filling in the limitations in the knowledge of the regulator and in dealing with MH. They also can provide valuable information and analysis on a comparative basis with other utilities.

1(3) The citation on page 4 of KM Report refer to areas of regulation and the type of issues that PUB faces in dealing with MH.

1(4) KM would recommend that a seminar be conducted. Such a seminar, however, cannot be simply "a show and tell" but must involve an interactive process to cause the parties to develop meaningful knowledge of the PUB process.

RCM/TREE/Independent Experts 2
Reference: Independent Experts' report - p. 5

The dual structure of the utility in Manitoba presents challenges and difficulties for MH but it also confers some critical advantages. MH is able to borrow at preferred interest rates, to expand its operations with greater access and ease to capital markets, to pursue environmental and social objectives, and to be liberated from an undue short term focus in favour of long term objectives (creating jobs, maintaining balanced relationships with First Nations, taking environmentally friendly initiatives, and so on). However, this structure also insulates MH from strict and direct shareholder scrutiny and it may constrain it to compromise business objectives in favour of social and environmental goals.

1. Please explain how "this structure also insulates MH from strict and direct shareholder scrutiny...." Why should or does a crown corporation operate with less transparency to its shareholders than a private corporation?

ANSWER:

2(1) The question is difficult in that the shareholder in this case is the Provincial Government. By the unique nature of the relationship between Manitoba Hydro and its "shareholder" there should be every opportunity for Government to insist upon transparency. The Government here stands for the citizens of Manitoba.

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RCM/TREE/Independent Experts 3
Reference: Independent Experts' report p. 6

Put differently, the real issue is for the regulators to align the risk exposure and tolerance of MH to match that of the citizens on behalf of whom the government and/or the Public Utility Board typically act. Citizens, in general, are risk averse, and Manitobans are likely no exception. Roughly speaking, this means that they would prefer to take on financial risk only if the probability of gain outweighs the probability of loss. MH tolerance and acceptance of risks may be different from that of the public. The issue is, then, one of a potential lack of alignment between the two and the extent to which regulators are forced to govern the risk tolerance and appetite of MH to match that of the shareholders (the people of Manitoba). This misalignment in risk tolerance arises not only because of different appetites for risk but also from the fact that the public assumes the costs of any losses either in higher electricity rates (if PUB allows it) or through debt payment charges, whereas the potential rewards of the risk-taking are internalized within MH.

1. Please explain the last sentence of this excerpt. In particular, why would the potential rewards of risk-taking not also accrue to the public through lower electricity rates (or other returns to Manitobans) or reduced debt payment charges?

2. Does this passage imply that one role of the regulator is block excessively risky capital expenditures that the utility might otherwise initiate? Please expand and illustrate with examples how the regulator might "govern the risk tolerance and appetite of MH...."

ANSWER:

3(1) Reference the answer to MH-KM-5

3(2) The regulator may insist on a Drought Preparedness Plan and other risk management plans where the probabilities, consequences of risk and risk tolerances are defined. PUB may have a different perspective on these calculations and judgement. There is no assurance that MH ranking and estimations will be similar to those independently verified and examined by PUB.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 4
Reference Independent Expert Report, p.83

a) With regard to the statement that "there is no indication that this maximization is over time," does that mean that SPLASH seeks to maximize net revenues in each load year in isolation, without accounting for impacts in prior or future load years? Please explain.

b) Does SPLASH seek to maximize net revenues for each flow case in isolation or across all flow cases? Please explain.

ANSWER:

4(1) SPLASH uses the 94 years of water flow and exploits whatever autocorrelations exist in this data, but KM are thinking of the time variables and the need for a discount rate and for some stock-flow variables that define accumulation of capital and capacity and the influence of lags.

4(2) Splash optimizes over time for the long run, up to 40 years. KM have not seen a discount rate. There are a few different simulations used in SPLASH, as explained in the KM Report Chapter 3. SPLASH does not have a stock-flow accounting framework. It generates a steady state solution.

RCM/TREE/Independent Experts 5
Reference Independent Expert Report, p. 86

a) Please describe how Manitoba Hydro derives the piece-wise functions for export and import prices.

b) Did the authors independently verify the reasonableness of Manitoba Hydro's piece-wise functions? If so, please describe how those functions were evaluated and the outcome of that assessment.

ANSWER:

a) KM believe this question is answered at pages 86 and 87 of their report

b) KM did not independently verify.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 6
Reference Independent Expert Report, p. 93

a) With regard to the statement that "surplus energy resulting from the earlier simulations is translated in 5x16 long term contracts":

i. Does the reference to "surplus energy resulting from the earlier simulations" refer to the forecast of surplus dependable energy derived as part of the Dependable Energy run? Please explain.

ii. Please describe how this surplus energy is "translated in 5x16 long term contracts."

iii. Please describe how contract prices are estimated for these "5x16 long term contracts."

ANSWER:

a) i) The long term commitments are of two kinds: peak and off peak. The 5x16 is peak supply and these quantities are negotiated in the contract which specifies the quantities and price. The forecast of the dependable energy is derived from the dependable energy simulation.

ii) This is a contract determined amount.

iii) The exact procedure of price determination involves confidential information. The general principle involves the use of an MH adjusted consultant's forecast and the avoided cost (long run marginal cost) of the counter party.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 7
Reference Independent Expert Report, p. 94, Figure 3.19

a) Please define the term "net flow-related revenue".

b) Does the calculation of "net flow-related revenue" include a forecast of revenues from domestic firm load? Please explain.

ANSWER:

a) Basically, "net flow-related revenue" is whatever water goes into the system that generates power and ultimately generates revenue from both domestic and export sources.

b) Yes, the new flow-related revenue calculation includes a forecast of revenues from domestic firm load.

RCM/TREE/Independent Experts 8
Reference Independent Expert Report, p. 94

a) With regard to the statement that "the LP solution will determine the best allocation of hydro energy":

i. Does the LP solution seek to maximize net flow-related revenues given the resources and constraints modeled in the Production Cost run? Please explain.

ii. Does the LP solution seek to maximize net flow-related revenues across all load years and all flow cases? Please explain.

ANSWER:

a) i) LP is a mathematical procedure that optimizes an objective function subject to constraints. Both the objective function and constraints are linear. The objective function is net flow revenue (gross revenues minus costs). Revenues are generated by sale of firm energy and opportunity energy, domestically and outside the province. Costs include all operation costs including depreciation but in this case excludes interest on debt.

ii) It uses all flow years and often the average of these flows.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 9
Reference Independent Expert Report, p. 97

a) In the authors' best judgment, should "the cost and implications of the assumption of perfect foresight" be determined prior to Manitoba Hydro executing the new long-term contracts with Wisconsin Public Service and Minnesota Power? Please explain.

b) In the authors' best judgment, if perfect foresight implies that "the actual costs of a drought would be seriously understated," does that also imply that the Company's estimate of a $2.405 billion reduction in retained earnings due to a five-year drought, as provided on page 20 of the November, 2009 Integrated Financial Forecast, is also "seriously understated?" Please explain.

c) In the authors' best judgment, if perfect foresight implies that "the actual costs of a drought would be seriously understated," does that also imply that the estimates of drought-related financial losses provided in Section 4 and Appendix J of the KPMG report are also "seriously understated?" Please explain.

ANSWER:

a) The results that emerge from SPLASH are derived using perfect foresight. MH knows exactly when a drought will happen and the end levels of lakes are chosen in a way that would make this water available in the next year as if this year is going to be the minimum level in the historic series. Should the expected level be different than the one captured by perfect foresight costs can escalate. Let say that a minimum level was left in storage but the next year did not have the flow conditions assumed, costly imports may have to be purchased.

b) The estimated costs of a five year drought cited above does not come only from SPLASH. While SPLASH data is used to generate the autocorrelations in flow, PRISM uses a number of stochastic assumptions to derive the $2.4 billion.

c) To the extent that KPMG estimates were based on a SPLASH run alone, the perfect foresight assumption would have resulted in understatement. KM's understanding is that KPMG had asked MH to run a few simulations with different expected prices and sale and no sale assumptions and therefore are significantly different from those that SPLASH would generate using a five-year low flow.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 10
Reference Independent Expert Report, p. 215

a) Please provide the missing adjective between "relatively" and "prices" in the sentence that reads: "The reasons why counterparties will pay these relatively prices are based on four factors".

b) Please explain what the authors are relying on as the point of comparison, when they state that the contract prices are "relatively [missing adjective]."

ANSWER:

a) The missing adjective is: "high"

b) KM relied on the MISO prices past and present

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 11
Reference Independent Expert Report, p. 215

a) With regard to the statement that "the major part of the volumetric risk is assumed by MH":

i. In the authors' opinion, do the new contracts allocate volumetric risk between MH and the buyers in a reasonably efficient fashion? Please explain.

ANSWER:

a) The new contracts do allocate volumetric risk between Manitoba Hydro and the buyers by way of the curtailment provisions, which have added a new safety valve for MH. Optimal risk management suggests that the party that can deal best with a risk should assume responsibility for it. Indeed, MH is in a much better position to deal with volumetric risks and can therefore assume responsibility for it and derive other benefits from the counter parties. This in KM's opinion has been reflected in the curtailment provisions.

RCM/TREE/Independent Experts 12
Reference Independent Expert Report, p. 216

a) With regard to the curtailment condition described as "adverse water conditions (MH unable to meet firm load)":

i. Do the "adverse water conditions" have to be more severe than the worst conditions on record before this condition is satisfied? Please explain.

ii. With regard to the parenthetical "(MH unable to meet firm load)", does the term "firm load" include both domestic load and firm export commitments, or just domestic load?

iii. Does the parenthetical "(MH unable to meet firm load)" imply that the curtailment provision would not be triggered unless MH was unable to meet firm load as a result of "adverse water conditions"? Please explain.

ANSWER:

a) (i)KM believes the answer is no. Adverse water conditions, generation or transmission failures would trigger the curtailment provisions.

(ii)Yes, firm commitments include both domestic load and firm exports minus firm imports.

(iii)There are a few other conditions that are spelled out in the contracts that must be met before the adverse water conditions qualify for curtailment. As well, MH is obligated to compensate the curtailed party but with an upset heat rate weighted price. The details of these are subject to the Confidentiality agreement KM have with MH.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 13
Reference Independent Expert Report, p. 217

a) With regard to the curtailment condition described as "adverse water conditions (MH unable to meet firm energy commitments)":

i. Do the "adverse water conditions" have to be more severe than the worst conditions on record before this condition is satisfied? Please explain.

ii. Please define the term "firm energy commitments" as it is used in the parenthetical "(MH unable to meet firm energy commitments)." Do "firm energy commitments" include both domestic load and firm export commitments?

iii. Does the parenthetical "(MH unable to meet firm energy commitments)" imply that the curtailment provision would not be triggered unless MH was unable to meet firm energy commitments as a result of "adverse water conditions"? Please explain.

ANSWER:

a) Since this question follows from RCM/TREE/KM 12, only a short answer will be provided. KM believe that they answered the three subsections of the question already in its response to RCM/TREE Independent Experts 12.

RCM/TREE/Independent Experts 14
Reference Independent Expert Report, pp. 217-218

a) What are the "firm export commitments" that the authors' refer to when they state that the curtailment clauses in the new contracts would "allow MH to curtail up to 29% (2/7 days) of its firm export commitments?"

b) What are the "total system firm commitments" that the authors' refer to when they state that "total system firm commitments would only decrease by 19%?"

c) With regard to the statement that the "latter is more consistent with dependable supplies coincident with the worst drought":

i. What is the "latter" figure that the authors are referring to in this statement? What is the "former" figure implied by this reference to the "latter"?

ii. In what sense is this "latter" amount "more consistent with dependable supplies coincident with the worst drought" than the "former" amount? What is the relevance of the finding that this "latter" figure is "more consistent with dependable supplies coincident with the worst drought" than the "former" amount?

ANSWER:

a) With respect to some aspects of this question, KM have seen the long term contract but are not in a position to answer all of the questions due to the confidentiality obligation. Total system firm commitments include domestic load plus firm exports minus firm imports. The 29% refers to the weekend curtailment and the 19% is the ratio of these commitments that fall under the purview of the contract.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 15
Reference Independent Expert Report, Section 6.2

a) Please provide electronic versions, with all cell formulas intact, of all Excel spreadsheets relied on to derive the probability distributions shown in Figures 6.1 through 6.17.

b) Are the results shown in Figures 6.1 through 6.17 illustrative or do they represent the authors' best estimates at this time of Manitoba Hydro's risk exposure? Please explain.

ANSWER:

a) KM is not in a position to provide this worksheet because it may contain procedures and data that are subject to the confidentiality agreement. Furthermore in areas where no confidentiality is involved the use of @RISK is subject to license.

b) They are KM best estimates using Chi-Square scores and other statistical criteria.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 16
Reference Independent Expert Report, p. 228

a) Was Table 6.1 the sole source of data for derivation of the probability distribution functions for the 15 stochastic variables, or did the authors use historical data for years other than 2001 through 2007? If the latter, please provide the historical data and the source of that data for all years other than 2001 through 2007.

ANSWER:

a) Yes, most of the data used in generating the figures are based on the data obtained from Statistics Canada public domain. There are other data that KM derived from the Bank of Canada and other sources. All of these sources are noted in the source section of the Table. sole source of data. For a small fee Stat Can will provide this data electronically. Equally this data can be derived from the various catalogues that are published by Stat Can for free and are available in any public library.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 17
Reference Independent Expert Report, p. 229, Table 6.2

a) Please describe how export prices were derived for the scenario with high export prices. In particular, please describe how the probability distribution functions for export prices, as illustrated in Figures 6.26 through 6.29, were utilized to derive export prices in the high-export-price scenario.

ANSWER:

a) KM are not able to answer due to the confidentiality obligations

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 18
Reference Independent Expert Report, Section 6.5

a) Please provide electronic versions, with all cell formulas intact, of all Excel spreadsheets relied on to derive the probability distributions shown in Figures 6.18 through 6.44.

b) Please explain why prices for imports from the US were not modeled as a stochastic variable.

ANSWER:

a) Please refer to the answer to RCM/TREE Independent Experts 15.

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Information Requests of RCM/TREE

RCM/TREE/Independent Experts 19
Reference Independent Expert Report, p. 245

a) In the authors' opinion, what is a reasonable basis for defining the "upper bound" for drought losses when setting the "target level for retained earnings?" Should the "upper bound" be set based on an estimate of losses for a worst-case scenario, such as that described in Section 6.2? Should the "upper bound" be set based on the expected value of the loss or the value at the 95% confidence level? Please explain.

b) Do the authors' have a recommendation for the Board for a specific target level for retained earnings? If so, please provide the authors' recommended target and describe the basis for that recommendation. In particular, please indicate how the results of the authors', KPMG's, and ICF's quantification of risk exposure informed the recommended target value.

ANSWER:

a & b) Estimating the upper bound as the largest possible loss on the worst drought in historical record is not appropriate because that implies that accumulated retained earnings should be devoted in their entirety to mitigate drought risks. KM recommend an eclectic formula involving a number of sources–minimum water storage levels, riders on rates, some borrowing, etc. KM was motivated in suggesting this eclectic formula by three principal considerations. First, accumulated retained earnings are needed for investment and other emergencies. Second, they may not be sufficient to cover the full costs of a severe drought. Third, to involve the entire shareholders (the people of Manitoba) in bearing a part of the responsibility for mitigating a drought.