

**MANITOBA HYDRO 2017/18 & 2018/19 GENERAL RATE APPLICATION**  
**PUBLIC UTILITIES BOARD**  
**INTERVENER EVIDENCE INFORMATION REQUESTS**  
**COALITION (METSCO)**  
**NOVEMBER 15, 2017**

**PUB/COALITION I – 1**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Pages 16 and 19 of 54.

**Preamble:**

"METSCO notes that a centralized oversight body can be effective where it is confident that the analytical tools and processes underlying the project documents submitted for its review are themselves consistently used and interpreted across the organization. Absent this condition, a centralized oversight body may actually become as an unhelpful operating bottleneck. In addition \$15M as a threshold is nearly 5% of the total projected Business Operations Sustainment Capital in 2017. Setting the threshold too high may undermine the capability of the Council to balance costs, risk and performance of the assets."

"Among the specific improvements that Manitoba Hydro staff who prepared the report see as necessary, are the need for standardizing and documenting the Forced Outage Reporting and Root Cause Analysis processes, the development and documentation of asset care strategies 'such as maintenance programs, condition monitoring, condition assessments, and standard procedures,' and establishment of standard Maintenance Task Templates, among others. The deficiencies noted in the Summary Report are concerning, given that sustainment capital budgets are directly informed by records generated in the process of maintenance work. Absent corporate-wide consistency and rigor in documentation of maintenance activities, it becomes increasingly more challenging to rely on the accuracy of sustainment capital budgets that they underlie."

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**Question:**

- a) What is the basis for inferring that the \$15M threshold (i.e.: "nearly 5% of the total projected Business Operations Sustainment Capital in 2017") is set too high and undermines "the capability of the Council to balance costs, risk and performance of the assets"?
- b) How does METSCO reconcile the statement that "a centralized oversight body may actually become as an unhelpful operating bottleneck", with the statement "Absent corporate-wide consistency and rigor in documentation of maintenance activities, it becomes increasingly more challenging to rely on the accuracy of sustainment capital budgets that they underlie."

**Response:**

- a) Based on the System Renewal table in the Section 2.2.2.1 of Manitoba Hydro's Appendix 5.4 ("Capital Expenditure & Demand Side Management Forecast (CEF16)"), 65% and 68% of System Renewal expenditures planned for 2017 and 2018 respectively, are attributed to multiple projects with total cost below a \$10-million reporting materiality threshold. Accordingly, a \$15-million threshold set for the interim oversight body implies that potential changes to two-thirds of the System Renewal work program (by dollar value) would be outside of the scope of its authority.

While focusing on the largest projects makes intuitive sense, it is significantly more challenging to balance the costs and risks of the capital work program as a whole if the scope of the oversight body's authority only covers the top one-third of the program. For clarity, METSCO's commentary in the cited passage was not made with an intent to challenge any particular numerical threshold, but rather to emphasize the problematic nature of any threshold that a single oversight body would

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have to rely on to balance the considerations of oversight rigour and administrative practicality.

- b) The statements are logically consistent, as the existence of well-articulated, consistently implemented, and universally understood asset management processes simplifies these oversight bodies' activities, by enabling them to quickly establish whether, and to what extent the corporate asset management procedures were appropriately interpreted and followed, prior to undertaking more in-depth analysis. In the absence of consistently implemented asset management tools and processes, an oversight body may become a bottleneck, as it would be required to expend significant efforts on establishing the scope, nature and quality of the inputs and evaluation parameters underlying the analysis, prior to examining the reasonableness of proposed changes and/or their impact on the work program at large.

**PUB/COALITION I - 2**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Pages 27, 31 and 40-41 of 54.

**Preamble:**

"Lack of Condition-Based Data for Certain Key Distribution Asset Classes (the ultimate drive of this section is the lack of O&M optimization) - the Kinetrics 2016 Distribution Asset Condition Assessment (ACA) report findings rely to a significant degree on age based data, as indicated by the fact that out of 23 asset classes, the Average Data Availability Index (a measure of the portion of the

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population for which asset health data was available) was 0% for seven asset classes, and below 50% for another nine types of assets. The lack of asset health data is of particular concern with respect to the Underground Cables (HV-Oil) distribution asset class, over 40% of which is deemed to be in Very Poor condition (and thus, presumably, expected to represent a material portion of replacement work over the coming years), and to a lesser degree for the Ductline and Overhead Switches."

"In the absence of capital cost benchmarking evidence, and particularly in light of the project cost estimation issues discussed above, the PUB and the parties have few tools available to determine whether and to what extent the Applicant's proposed capital expenditure plans are reasonable."

"Of the 23 asset classes examined in the Kinetrics Asset Condition Assessment Report for the distribution plant, the Average Health Data Availability Index (a measure of the portion of the population for which asset health data was available) was 0% for seven asset classes, and below 50% for another nine types of assets. Along with the evidence pointing at issues with reliability and consistency of Manitoba Hydro's current maintenance record keeping, this further puts to question the Applicant's claim that asset health/condition was a material driver in developing the Sustainment Capital work program. Of note is the fact that Manitoba Hydro has no health data on the condition of its underground cables – the asset class that Kinetrics nevertheless classifies as being in Very Poor condition for over 40% of the population and expect that the Applicant will have to replace in large quantities. We also note that the Applicant's evidence showcases advancements in its ability to rejuvenate certain types of the underground cable at about the third of a cost of replacement, which suggests opportunities to manage the costs of intervention within this specific asset class.

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On the balance of the above information, it is our interim conclusion that age – not condition – was a predominant factor in determining the work program."

**Question:**

- a) Given that MH has a lack of asset data in certain categories and an "absence of capital cost benchmarking evidence ... the PUB and the parties have few tools available to determine whether and to what extent the Applicant's proposed capital expenditure plans are reasonable", is it reasonable for MH to forecast future budgets on the basis of previous budget trends because there isn't enough asset data to support an alternative approach?
  - i. If yes, please explain why.
  - ii. If no, what quantitative basis does METSCO recommend that MH use to predict future budgets given the apparent lack of asset data?
- b) Could primary reliance upon asset age rather than asset condition materially compromise the pacing of asset replacement decisions?
- c) Are some asset classes more amenable to evaluation using only age-based data than others?
  - i. If yes, please identify these asset classes and explain why they are more amenable to evaluation using only age-based data.
- d) Specifically in respect of Manitoba Hydro's assets, would reliance upon generic industry asset survival curves potentially skew investment decisions earlier than necessary, especially given Manitoba Hydro's longer than average asset survival statistics?
  - i. If no, why not?

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- ii. If yes, what would METSCO recommend MH do to ensure timely asset replacement decisions?

**Response:**

- a)
  - i. No, expenditure trends alone are not an advisable benchmark for the reasonableness of spending levels, as they invariably reflect different policies, assumptions and priorities than those that underlie the most recent plans.
  - ii. With respect to the future budgets, METSCO recommends that Manitoba Hydro make concerted efforts to accelerate the process of gathering actual asset health data, quantifying the risks underlying it, and implementing the asset management tools and processes reflective of mature utilities – such as those described in recommendations by UMS and Kinetrics reports. This data can be used as an important input in the development of future test year budgets. In the absence of meaningful progress in the area of asset health and risk data collection and integration for key asset classes, Manitoba Hydro could remain susceptible to relying on age-based data and failure curves only for the foreseeable future.
- b) The answer to this question depends on what a utility understands as “pacing” (e.g. future annual spending profile, avoidance of year-over-year spend volatility, deferring the maximum amount of investments into the future, maintaining a flat investment profile, etc.), the type of asset condition assessment approach a utility implements (i.e. a correlation of health indices vs age data), and other factors considered in the decision-making process, such as safety, reliability, environment and others.

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Depending on definitions articulated and validated in the development of an asset management strategy, the effect of reliance on age data alone may vary. However, since asset condition data reflects the actual health state of a utility's plant at any given juncture, it represents an important data input that should be incorporated into asset replacement decisions whenever possible.

- c) Age alone may be an acceptable factor for evaluating replacement decisions for asset classes where the cost of collecting and maintaining condition-based information materially exceeds the cost of replacing these assets, and/or the quantified cost consequences of their failure (e.g. customer interruption costs) are low. Establishing which specific asset classes warrant collecting and maintaining how much of asset condition data, is a complex utility-specific undertaking that involves risk-based assessment across all asset classes.
- d) METSCO is not in a position to hypothesize as to whether Manitoba Hydro's longer survival rates for some asset classes relative to its industry peers would skew the replacement decisions made by the company's engineers. METSCO's commentary highlighting the discrepancy between the industry failure curves and those relating to the utility itself were primarily made to illustrate the importance of relying on utility-specific data to drive the most optimal asset replacement decisions. We do, however, note, that we did not find the evidence that the investment decisions for the test years were based on the established industry or MH's specific survival curves.

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**PUB/COALITION 1 – 3**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 33 of 54.

**Preamble:**

"While the separate reliability performance for the City of Winnipeg is less favourable than the province-wide result, Winnipeg's performance on both SAIDI and SAIFI over the 10-year period nevertheless remained above the CEA peer group median. While favourable reliability performance relative to peers is generally indicative of good asset stewardship on the part of Manitoba Hydro, it does not necessarily point to the cost effectiveness of asset management work, as good reliability performance may also be a function of overinvestment, or just simply lack of rigorous data collection procedures with mostly manual entries."

**Question:**

- a) Has METSCO found any evidence of significant reliability drivers that would justify the proposed transmission and generation asset renewal and system enhancement projects and programs identified in the present filing?
  - i. If yes, please provide all evidence found.
  
- b) Has METSCO found any evidence in MH's filing demonstrating that the planned capital renewal expenditure justifications consider the increased generation and bulk transmission redundancy associated with the completion of the Keeyask and Bipole III projects?
  - i. If yes, please provide all evidence found.



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**Response:**

- a) Given the evidence that it has had at its disposal, METSCO is not in a position to identify “significant reliability drivers” related to particular projects or programs. In general, reliability is a consideration in all cases where asset failure implies asset outage, and an increased strain on the remainder of the system that may be involved in addressing the customer impact of asset failure. Consequently, nearly all projects intended to avert or mitigate the failure of an electric asset constitute reliability projects. However, determining the extent to which reliability represents a key driver would entail quantifying the probability and consequence of a particular asset’s outage – which entails asset risk-based information, which in METSCO’s understanding, Manitoba Hydro is yet to collect and/or consistently implement.
- b) Aside from reviewing the individual Information Request responses where the applicant noted that the Keeyask or Bipole III projects were considered in making asset replacement decisions, METSCO did not explicitly seek to establish a connection between the two major greenfield projects and the applicant’s Sustainment projects.

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**PUB/COALITION I – 4**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 37 of 54.

**Preamble:**

"The key challenge with examining the need for or reasonableness of sustainment capital expenditures lies in the fact that the contemplated work cannot, as a rule, be permanently cancelled (the asset will eventually fail and require replacement sometime in the future), short of an asset manager deciding to retire a given asset without replacing, upgrading or refurbishing it. In most cases, however, the options at an asset manager's disposal in light of the funding/labour constraints are the following:

- Proceed with a sustainment project as planned;
- Defer the entire project for a period of time;
- Break up the original scope of work, completing some items as planned, and deferring others;
- Find a way to complete the project at a lower cost;
- Explore alternative options that mitigate the risks of the asset failing."

**Question:**

- a) From a best practices perspective, what quantitative information should be obtained and evaluated by a utility seeking to minimize capital expenditures, in order to demonstrate a link between planned investments

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and improved reliability performance, and to justify the cost involved in achieving that reliability performance improvement?

- i. Has Manitoba Hydro provided any evidence demonstrating that it has done so?
- b) Did METSCO attempt to evaluate the economic impact of individual generation unit outages on export sales revenue, specifically in light of existing US electricity market prices?
  - i. If yes, please provide this evaluation.
  - ii. If no, why not?
- c) Did METSCO evaluate whether the incremental generation redundancy available to Manitoba Hydro following completion of the Keeyask project will materially impact MH's ability to extract economic value from export sales?
  - i. If yes, please provide this evaluation.
  - ii. If no, why not?

**Response:**

- a) As noted throughout METSCO's report, the key parameters of establishing an economically optimal asset management program commensurate with the industry best practices involves, among other factors, quantification of individual- and system-level asset risks (customer interruption costs, safety, environmental, financial and potentially other risks), as supported by empirical asset condition assessments and failure curves sufficiently representative of the entirety of a utility's asset base. The presence of the above-noted quantitative information must be supported by a transparent, robust, and consistently implemented asset management governance

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tools and processes. In METSCO's assessment, and as echoed by the commentary in the UMS report, Manitoba Hydro has not presented sufficient evidence to satisfy the PUB that the asset management practices underlying CEF16 are consistent with the industry best practices.

b)

- i. METSCO did not perform this analysis.
- ii. This analysis was outside of the scope of METSCO's engagement. More generally, and as noted in METSCO's report, most of our attempts to acquire quantitative datasets from the Applicant were not successful, which has limited the extent of our ability to perform specific numerical analysis of Manitoba Hydro's evidence.

c)

- i. METSCO did not perform this analysis.
- ii. This analysis was outside of the scope of METSCO's engagement.

**PUB/COALITION I – 5**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 37 of 54

**Preamble:**

"It is also possible that deferral of the assets into the future and allowing them to fail before being replaced represents the most economical option for numerous asset classes."

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**Question:**

- a) Assuming that a Utility has redundant facilities and adequate interconnection capacity with external markets, is purchasing electricity from external markets considered to be a reasonable approach to help mitigate the impacts of generation unit outages?
  - i. If no, why not?
  - ii. If yes, what would be the downside to following such an approach?
- b) Did METSCO attempt to evaluate the impact of individual generation unit outages on unserved domestic load (or overall system reliability metrics) following completion of the Keeyask project?
  - i. If yes, please provide this evaluation.
  - ii. If no, why not?
- c) Did METSCO attempt to evaluate the impact of individual transmission asset outages on unserved domestic load (or overall system reliability metrics) following completion of the Bipole III project?
  - i. If yes, please provide this evaluation.
  - ii. If no, why not?

**Response:**

- a)
  - i. METSCO is unable to respond to this request, as the considerations involving electricity commodity trading decisions are outside of our scope of engagement.
  - ii. See response to part i.
- b)

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- i. METSCO did not perform this analysis.
  - ii. This analysis was outside of the scope of METSCO's engagement.
- c)
- i. METSCO did not perform this analysis.
  - ii. This analysis was outside of the scope of METSCO's engagement.

**PUB/COALITION I – 6**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 40 of 54

**Preamble:**

"Contributions to SAIDI and SAIFI by major types of distribution equipment failure also do not appear to exhibit consistently rising trends at this point. Overall, defective equipment constitutes about a third of outage causes, which in METSCO's experience is comparable with other utilities."

**Question:**

Please provide the analytic basis for METSCO's opinion that MH defective equipment constituting about a third of outages is comparable with other utilities.

**Response:**

This statement is based on METSCO's general experience in advising other U.S. and Canadian utilities on matters involving reliability. As utilities are not typically required to publicly disclose their reliability statistics by individual Cause Code,

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METSCO is not in a position to provide specific documents to support this statement.

**PUB/COALITION I – 7**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 40 of 54

**Preamble:**

"Based on the comparative industry data provided in the latest Kinetics Asset Condition Assessment Study, Manitoba Hydro's assets appear to have longer effective service lives than that of their peers. This is an important observation considering that until the release of the most recent Kinetics report, the vast majority of Manitoba Hydro's asset failure curves were based on industry curves, rather than those of the utility's own field data. While the Applicant states that most of its replacement work is identified on the basis of combination of assessment of age- and condition-based data, METSCO cannot verify the specific methodologies used, and as such, has to rely on the insights drawn from the examination of study methodologies. As such, and subject to further insights, we conclude that the average probability of failure underlying the Applicant's asset replacement plans is overstated."

**Question:**

- a) In METSCO's opinion, would it be possible for Manitoba Hydro to defer a portion of its planned renewal investments in Distribution class assets over the test period without having a significant impact on reliability performance?

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- i. If yes, what portion of expenditures could be deferred without causing a significant impact?
  - ii. Which specific asset classes should investments be focused in to maintain Distribution performance?
- b) In METSCO's opinion, would it be possible for Manitoba Hydro to defer a portion of its planned renewal investments in Transmission class assets over the test period without having a significant impact on reliability performance?
  - i. If yes, what portion of expenditures could be deferred without causing a significant impact?
  - ii. Which specific asset classes should investments be focused in to maintain Transmission performance?
- c) In METSCO's opinion, would it be possible for Manitoba Hydro to defer a portion of its planned renewal investments in Generation class assets over the test period without having a significant impact on reliability performance?
  - i. If yes, what portion of expenditures could be deferred without causing a significant impact?
  - ii. Which specific asset classes should investments be focused in to maintain Generation performance?
- d) In METSCO's opinion, would the completion of the major generation and transmission projects currently under development (e.g.: Keeyask and Bipole III) partially mitigate the reliability consequences of some generation and transmission equipment failures by increasing bulk system redundancy?



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- i. If yes, please explain why.
- ii. If no, please explain why not.

**Response:**

- a) and
- b) It is impractical for METSCO to identify particular asset classes that would warrant more focus than others if the goal was avoiding adverse reliability consequences, as reliability can be compromised by failure of any asset depending on its position relative to the remainder of the system (e.g. cable failure on a trunk feeder affects more customers than the same failure at the end of a radial feeder). Such decisions must consider the cost of power vs the performance of MH's system relative to customer needs.

The most prudent course of action for Manitoba Hydro to establish which asset classes warrant more attention than others is to make a concerted effort to continue enhancing its asset condition and risk information databases, while implementing the asset management frameworks devised to ensure that this information is properly utilized. For instance, while the Kinetrics report indicates that the XLPE underground cables are the asset class in the worst condition, this assessment is not based on actual condition information. At the same time, Manitoba Hydro's evidence suggests that cable injection is proving to be a viable and cost-effective means of avoiding cable replacement, subject to any potential scale restrictions. This example illustrates the benefits of asset management decisions informed by actual asset performance, rather than pro-forma approaches.

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While the impact of reduced investments on the reliability is not immediate, there are recent precedents of utilities deferring a portion of investments into the future without adverse consequences. For instance, in Ontario, in several recent proceedings the Ontario Energy Board imposed capital budget reductions by specific investment portfolios or on a system level, giving the applicants discretion to determine which projects or programs were ultimately reduced to attain the aggregate reduction.<sup>1</sup>

- c) Based on Manitoba Hydro's response to COALITION/MH I-148c there have been no instances where generation equipment outages affected reliability statistics over the past five years. As such, and subject to major unforeseen events, METSCO would expect Manitoba Hydro to be able to limit the impact of individual generation station equipment outages on customer reliability in the near term. However, this need not imply that generation renewal investments are less critical, given a variety of other key drivers, including revenue loss, employee and public safety, system operation efficiency, environmental, and others.
- d) While the planned completion of major new transmission and generation projects would potentially give Manitoba Hydro's system operators more options as to the means of ensuring that power is delivered to their customers across the province under a variety of system outage scenarios, the new projects would not in themselves obviate the need for sustainment expenditures on the existing assets.

In other words, the planned greenfield additions do not change the probability of outages on the existing equipment, but may change the

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<sup>1</sup> Ontario Energy Board. DECISION AND ORDER EB-2015-0003. POWERSTREAM INC. <http://www.rds.ueb.ca/HPECMWebDrawer/Record/537387/File/document>; Ontario Energy Board. DECISION AND ORDER EB-2014-0116. TORONTO HYDRO-ELECTRIC SYSTEM LIMITED. <http://www.rds.ueb.ca/HPECMWebDrawer/Record/511251/File/document>

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impact of such outages (both in terms of the length of restoration time, restoration costs and the magnitude of customer reliability). Determining the optimal trade-offs between outage probability and impact involves the asset health and risk-based analysis that the Applicant is yet to establish.

**PUB/COALITION I – 8**

**Reference:**

METSCO Review of Manitoba Hydro's 2017/18 and 2018/19 GRA Sustainment Capital, Page 41 of 54

**Preamble:**

"As discussed above, the Applicant's evidence indicates that it uses a wide variety of estimates in terms of their precision when preparing capital plans for regulatory filings, which has consistently resulted in underestimation of planning cost estimates relative to actuals. Our examination of 49 project costs across generation, transmission and distribution businesses revealed an average underestimation of 46.7% between the actual project costs and their initial estimates – a number that increases to 106% if the average is weighted by projects' final costs (suggesting that larger project costs are, on average, underestimated to a larger degree). While the applicant appears to materially underestimate the costs of individual projects, it appears to consistently overestimate its achievable levels of in-service additions. Based on the data provided by Manitoba Hydro, between 2014/15 and 2016/17 the Applicant came short of its forecasted in-service additions by the weighted average of 11% within the Major New Generation and Transmission category, and 18.4% in the Business Operations Capital category. "

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**Question:**

Given that Manitoba Hydro has been consistently underspending its in service addition programs while still maintaining top quartile reliability performance, does this indicate that planned program expenditures could be reduced without impacting reliability performance?

- i. If no, why not?
- ii. If yes, what would be METSCO's recommendation to Manitoba= Hydro in terms of reducing its in-service addition programs without impacting reliability performance?

**Response:**

Reliability performance (as measured by indices like SAIDI and SAIFI) is considered to be a lagging performance measure – that is, significant performance changes (whether improvement or deterioration) may not be typically seen for several years following changes in asset intervention practices. As such, and given the scope of information that it has had at its disposal up to this point in the proceeding, METSCO does not have sufficient evidence to ascertain the causality implied in the question. However, METSCO does encourage the PUB to explore this issue in more detail with the Applicant in the remaining stages of this proceeding, as the issues like “acceptable” level of performance degradation, or the time lag in performance reliability indicators require information that is only available to the Manitoba Hydro experts.

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**PUB/COALITION I – 9**

**Reference:**

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**Preamble:**

“As a “made-in-Manitoba” definition of energy poverty, however, the Report immediately stumbles.” Manitoba Hydro's response to Coalition/MH II-44 provides us with some visual evidence, reproduced as Appendix A at the end of this paper, that shows the expected pattern of a substantial rise in the hydro expenditure share as household income declines (around \$50,000), but more statistical analysis with the raw data would be needed to develop criteria for the definition of energy poverty among Manitoba Hydro customers.”

**Question:**

- a) Please describe the statistical analysis that should be undertaken to develop criteria for the definition of energy poverty?
- b) If the recommended statistical analysis was to be undertaken, please indicate the form of the resulting definition of energy poverty. That is, is it a fixed income amount like LICO, or a simple ratio of income approach, or some other measure?

**Response:**

- a) There is no review of the statistical basis in the literature for the energy poverty definitions adopted from evidence in other jurisdictions, i.e. 6% or 10% SRIA and income below LICO-125. A comparative statistical analysis of evidence associating the hydro expenditure share with household income, adjusted for household size (which is not done in Coalition/MH II-44 reproduced in my report), is needed. The comparison would be between the evidence used to develop the criteria used in the report and the evidence available on Manitoba Hydro customers. The analysis would need to involve nonlinear, and likely nonparametric, statistical models to

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see whether there are statistically significant differences between the evidence used to develop the energy poverty criteria used in the report and the evidence available for Manitoba. By nonlinear models I mean that the analysis would need to allow for a change in the relationship (correlation or slope of the regression line) between the SRIA and adjusted household income as income declines; since this may be difficult to specify precisely. Nonparametric methods that do not require specification of the exact nonlinear relationship between the SRIA and income may be useful.

- b) The criteria using SRIA and some household-size-adjusted measure of low income to categorize energy poverty makes sense, although the LICO does not reflect important regional differences in the cost-of-living, as I indicate in my report (pp.4-5).

**PUB/COALITION – 10**

**Reference:**

Simpson Evidence Page 6 of 20; AMC/MH II-23

**Preamble:**

“In other words, energy poverty not only grows for a longer period, as the proposed extension of substantial rate increases for three more years would suggest would happen, but assumes for all intents and purposes a permanently higher level than the current experience.”

**Question:**

Please explain whether, given Manitoba Hydro’s unchanged debt:equity target of 75:25 in 2027 (which drives the addition of a sixth 7.9% rate increase and a 4.54% rate increase), further rate increases in the short term that are less than

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what Manitoba Hydro requests (i.e. less than 7.9%) will exacerbate the numbers of customers experiencing energy poverty.

**Response:**

If I understand this question correctly, this appears to be so from the evidence provided in the Affordability Report, although the third scenario in the Report is not exactly the same as the original Hydro financial plan before the interim increase was announced.

**PUB/COALITION – 11**

**Reference:**

Simpson Evidence Page 14 of 20

**Question:**

Please identify potential options for Manitoba Hydro to collect income information and determine eligibility for the Affordable Energy Program or for rate assistance programs (i.e. lower income rates), with reference to successful practices in other jurisdictions.

**Response:**

A rate assistance program tied to low income would likely have to follow the Ontario plan and link the assistance to tax records, specifically the income tax filing of the previous year for the individual and his/her spouse (if any).

**PUB/COALITION – 12**

**Reference:**

Simpson Evidence Page 14 of 20: PUB MFR 61 Page 26 of 141

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**Preamble:**

“Manitoba Hydro develop an efficient rate assistance program that provides assistance to low-income energy poor households but that is not directly tied to the level of energy consumption, along the lines of the fixed credit approaches taken by Colorado and Ontario.”

**Question:**

Please identify the entities or customer groups that should fund the recommended assistance.

**Response:**

I address this issue on p.10 of my report: “The Ontario experience raises the question of how assistance to low-income households or the energy poor should be financed. It is evident in the Manitoba Hydro GRA that it is reluctant to finance any new and possibly expensive affordability program at the expense of other ratepayers or its own revenues and that such programs require new funding. The Ontario experience suggests that ratepayer concerns might be eased if the program were financed from government revenues. In this regard, the report (p.40) echoes an earlier proposal from the NFAT report (p.252) “that the Government of Manitoba direct a portion of the incremental capital taxes and water rental fees from the development of the Keeyask project to be used to mitigate the impact of rate increases on lower income consumers, northern and aboriginal communities.” Since the affordability program should be designed to ensure energy security for those unable to cope with rising energy costs, however, funding from all taxpayers rather than simply higher income ratepayers or dedicated fees seems most appropriate, much as other income security programs such as Manitoba’s Employment and Income Assistance are financed from general revenues. Moreover, funding from our progressive system of general taxation would ensure that higher income households provide the most support for energy poor households.”



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**PUB/COALITION – 13**

**Reference:**

Simpson Evidence Page 14 of 20; PUB MFR 61 Page 26 of 141

**Preamble:**

“Manitoba Hydro enhance its Affordable Energy Program that provides assistance to lower-income households to implement energy efficient upgrades.”

**Question:**

Please identify the recommended enhancements to Manitoba Hydro’s Affordable Energy Program, with specific references to shortfalls or inadequacies in the existing program.

**Response:**

I have relied (pp.11-12 of my report) on the Affordability Report (pp. 22-24 in particular) which would appear to reflect Hydro’s own assessment of its Affordable Energy Program. The Report reports modest program uptake and significant barriers to participation that include program awareness, unspecified features of the program, and program eligibility conditions and benefits. All of these features could be studied and enhanced, although time is limited due to the rapid nature of proposed energy cost increases. The Affordability Report also calls for better coordination to refer customers to programs to assist them to manage their energy bills, which could include enhancements to the AEP along the lines of the Colorado system that integrates weatherization assistance programming with rate assistance and arrearage management for low-income households.

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**PUB/COALITION - 14**

**Reference:**

W. Harper - Pg. 33 Schedule 18 Key Financial Outlook Results

**Question:**

- a) Please update schedule 18 with MH's proposed rate trajectory in Appendix 3.8 and compare with IFF16 U/I with MH15 Rate Incr.
- b) Please comment on the relative sufficiency of cash flow from an EBITDA interest coverage basis to meet interest payments and sustain MH's self supporting status.

**Response**

- a) As noted on page 13 of the ECS Evidence:

“The financial projection (IFF16) underpinning the 2017/18 & 2018/19 Application called for significantly higher rate increases in 2017/18 and 2018/19 than those in previous financial plans. In order to determine the extent to which the financial outlook for the Corporation has changed over this period, it is useful to compare the past financial outlooks with a financial projection that includes all with the forecast assumptions used in IFF16 but assumes rate increases for each of the two years (and beyond) similar to those included in the previous financial projections (i.e., 3.95%/annum in the initial years)”

The purpose of Schedule 18 was to summarize the results of this assessment. It is noted that integrated financial forecast provided in Appendix 3.8 has a fundamentally different trajectory for future rates. With this preface, attached is a revised version of Schedule 18 which includes IFF16 U/I based

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on the following rate trajectory: 2018 – 3.36% (August 1, 2017); 2019-2024 – 7.9%/annum; 2025 – 4.54%; 2026-2034 - 2%/annum.

**Schedule 18 (per PUB/COALITION 14)- Key Financial Outlook Results (Electric Operations)**

<b>Proceeding</b>	<b>2015/16 &amp; 2016/17 GRA</b>	<b>August 1, 2017 Interim Rates</b>	<b>IFF16 with MH15 Rate Increases</b>	<b>IFF16 U/I with MH15 Rate Incr.</b>	<b>IFF16 U/I</b>
Reference IFF	IFF14	IFF15	IFF16	IFF16 U/I	IFF16 U/I
Period Covered	2015-2034	2016-2035	2017-2036	2017-2036	2017-2036
Major New Plant	BP III – 2018/19 Keeyask - 2019/20	BP III – 2018/19 Keeyask - 2019/20	BP III – 2018/19 Keeyask - 2021/22	BP III – 2018/19 Keeyask - 2021/22	BP III – 2018/19 Keeyask - 2021/22
Annual Rate Increases	3.95% - 2016->'31 2% - thereafter	3.95% - 2017->'29 2% - thereafter	3.95% - 2017->'29 2% - thereafter	3.95% - 2017->'29 2% - thereafter	2018 – 3.36% 2019->24 -7.9% 2025 – 4.34% 2026-2034 -> 2%
Debt Ratios	2019 – 86% 2027 – 90% 2034 – 75%	2019 – 87% 2027 – 86% 2034 – 69%	2019 – 86% 2027 – 86% 2034 – 75%	2019 – 85% 2027 – 88% 2034 – 81%	2019 – 86% 2027 – 75% 2034 – 48%
Maximum Debt Ratio	90% in 2022/23 -> 2026/27	88% in 2021/22- >2023/24	87% in 2019/20 ->2020/21 and 2021/23->2024/25	88% in 2024/25 ->2027/29	86% in 2018/19-> 2019/20
Debt Ratio at/below 75% in	2034 (Year 20)	2032 (Year 17)	2034 (Year 18)	After 2036	2027 (Year 11)
Base Capital Coverage Ratio<1.0	- 6 of the first 10 Years - 8 of the first 15 Years	- 2 of the first 10 Years - 2 of the first 15 Years	- None of first 10 Years - None of first 15 Years	- None of first 10 Years - None of first 15 Years	- None of first 10 Years - None of first 15 Years
Base Capital Coverage Ratio (Average)	2018-19 – 1.13 2018-27 – 1.09 2018-34 – 1.47	2018-19 – 1.23 2018-27 – 1.38 2018-34 – 1.74	2018-19 – 1.23 2018-27 – 1.46 2018-34 – 1.65	2018-19 – 1.38 2018-27 – 1.37 2018-34 – 1.52	2018-19 – 1.44 2018-27 – 2.00 2018-34 – 2.33
Retained Earnings (\$M)	2019 – 2,812 2027 - 2,007 2034 - 5,557	2019 - 2,663 2027 - 3,219 2034 - 7,402	2019 - 2,912 2027 - 3,632 2034 - 6,395	2019 - 2,990 2027 - 2,879 2034 - 4,619	2019 - 3,053 2027 - 6,564 2034 - 13,680
Years with Negative Overall Capital Coverage <sup>(1)</sup>	- 9 of the first 10 years - 9 of the first 15 years	- 7 of the first 10 years - 7 of the first 15 years	- 7 of the first 10 years - 7 of the first 15 years	- 7 of the first 10 years - 7 of the first 15 years	- 6 of the first 10 years - 6 of the first 15 years
Overall Capital Coverage (Average \$M))	2018-19 – -2,209 2018-27 – -608 2018-34 - -107	2018-19 – -2,029 2018-27 – -454 2018-34 - 29	2018-19 - -2,644 2018-27 - -766 2018-34 - -217	2018-19 - -2,613 2018-27 - -842 2018-34 - -321	2018-19 – 2,581 2018-27 - -477 2018-34 - 209
EBITDA (Average)	2018-19 – 1.44 2018-27 – 1.45 2018-34 – 1.71	2018-19 – 1.49 2018-27 – 1.62 2018-34 - 1.88	2018-19 – 1.58 2018-27 – 1.67 2018-34 – 2.00	2018-19 – 1.59 2018-27 – 1.61 2018-34 – 1.76	2018-19 – 1.63 2018-27 – 1.98 2018-34 – 2.49
Source	GRA, Appendices 3.3 & 3.5 & 11.13	Interim Rate Application, Tab 1	Appendix 3.4	PUB/MH I-34, Attachment 2	Appendix 3.8

b) As noted at page 4 of the ECS Evidence:

The purpose of this Evidence is to specifically examine the claim that Manitoba Hydro's financial outlook has deteriorated significantly, which it links to a reduced outlook for domestic load growth, continued delay in the recovery of opportunity export prices and substantially increased carrying costs related to increased capital costs associated with several projects.

The ECS Evidence was not prepared with a view to commenting "on the relative sufficiency of cash flow from an EBITDA interest coverage basis to meet interest payments and sustain MH's self-supporting status". Indeed, as also noted in the Evidence (page 4):

Other experts retained by the Coalition will be addressing the issue of Manitoba Hydro's financial performance in terms of how it should be measured and its "acceptability".

Mr. Harper is not in a position to provide the requested comments.

## **PUB/COALITION - 15**

### **Reference:**

W. Harper - Pg. 41 Gains and Losses on Disposal of Assets

### **Question:**

- a) Please explain the implications of recognizing gains and losses on the disposal of assets in the period they occur versus amortization and whether either approach would or would not be appropriate from a regulatory perspective.
- b) In light of your response to (a), should a deferral and amortization approach be followed for the forecast \$50.4 million in restructuring charges in 2017/18 and \$2.2 million forecast for 2018/19?

### **Response:**

- a) Either expensing the gain/loss in the period it is incurred or amortizing the gain/loss could be appropriate from a regulatory perspective.

As explained in the ECS Evidence (page 41):

“the purpose of deferring Losses on Disposal of Assets is not to improve intergenerational equity since the losses (or gains) are experienced when assets are retired earlier or later than expected and therefore are associated with benefits the retired assets have already provided. Rather the purpose appears to be to smooth out the impact of these one-time costs.”

Since the expense is related to assets that are no longer in-service the objective of matching costs and benefits does not come into play. Which approach (expensing versus amortizing) and what amortization period is more appropriate are matters of judgement and balancing the regulatory objectives of i) the utility being permitted the opportunity to recover prudently incurred expenses and ii) rate stability.

b) The restructuring costs are not comparable to the loss/gain on disposal of assets from a regulatory perspective. As noted in the response to part (a) there is no basis for deferring and amortizing gains/losses on disposal of assets based on intergenerational equity. However, in the case of the restructuring costs, future customers will benefit from Manitoba Hydro's 2017/18 and 2018/19 restructuring expenses and therefore the question of intergenerational equity does come into play. Overall, it would be reasonable (and likely preferable) if the restructuring costs were deferred and amortized over a reasonable period.

**PUB/COALITION - 16**

**Reference:**

W. Harper Pg. 47

**Question:**

Please provide the definition of each of the economic impacts set out in figure 20 and provide an illustrative description if appropriate to describe the factor.

**Response:**

This interrogatory was withdrawn at the request of the PUB.



## **PUB/COALITION - 17**

### **Reference:**

Harper Evidence Page 82 of 120

### **Preamble:**

Mr. Harper's discussion of the zone of reasonableness and the COSS methodology has the following excerpt: "At this point, the choice of an appropriate ZOR should also recognize that the COSS methodology is still evolving as further work on Manitoba Hydro's part is required. This would suggest that a broader range, at least in the interim, is more appropriate."

### **Question:**

Please provide the specific areas where the COSS is still evolving, given the Board's Order 164/16. Include your estimate of the impact Mr. Harper believes that these issues, when resolved, could have on the revenue target and RCC of each rate class using PCOSS18.

### **Response:**

The areas where further work on the COSS methodology is required and that are the basis for the observation that the methodology is still evolving are those associated with:

- i. The areas where the Board determined further study/updating are required and Manitoba Hydro has yet to address. These include:
  - o Directive 1 (gg) regarding the allocation of common costs and the development of allocators that are more directly related to the causes of the common costs,
  - o Directive 1 (v) regarding adopted the allocator for services, and
  - o Additional study/data regarding the appropriate treatment of primary and secondary distribution lines.

- ii. Those areas that the ECS Evidence has suggested should be reviewed/refined based on the principle of “cost causality”, specifically the functionalization of generation outlet transmission and the inclusion of radial lines in the allocation of export revenues.

In addition, Mr. Chernick’s evidence identifies (page 44) an additional issue which he recommends the Board should direct Manitoba Hydro to examine further (i.e., load diversity among classes on distribution stations) and as does section 7.1 of Mr. Bowman’s evidence (i.e., the allocation of certain Customer Services costs).

Mr. Harper is unable to quantify (due to a combination of data, model and time limitations) the likely impacts that “resolving” these issues will have on the revenue to cost ratios of each customer class. However, in most cases, it is anticipated that the impact will be minor.

## **PUB/COALITION - 18**

### **Reference:**

Harper Evidence Page 85 of 120

### **Preamble:**

Mr. Harper discusses the Manitoba Hydro “metric for ensuing rate stability and gradualism [which is] a requirement that the annual adjustments to revenue by any customer class should be less than two percentage points greater than the overall proposed increase.”

### **Question:**

- a) In regards to use of the 2% metric for establishing the annual adjustments to revenue by customer class, does Mr. Harper agree with Manitoba Hydro's guideline? If not, what guideline(s) does Mr. Harper suggest?
- b) Please provide the ratemaking proceedings (jurisdiction, name, and number) in which a similar guideline has been used in a Board or Commission’s decision on how to apportion an overall rate increase among specific rate classes. Please provide the nature of the case and how the metric was used, as well as whether Mr. Harper supported this element of the decision or not.

### **Response:**

- a) Mr. Harper does not support setting a general guideline for establishing annual adjustments to revenue by class (i.e., RCC ratios) that is independent of the overall rate/bill increase customers will see due to the combined impact of any general rate increase, RCC ratio adjustments and changes to rate design.

Such a guideline would be acceptable if it was accompanied by bill impact criteria that also addressed the total bill impact.

- b) An example of this is the total bill impact criterion of 10% currently used by the OEB when reviewing cost of service-based rate applications by Ontario distributors. This criterion was first established by the Board in its “Report of the Board – 2006 Electricity Distribution Rate Handbook” following a generic proceeding (RP-2004-0188) where the purpose was to establish how the Board would generally address applications for electricity distribution rates. The 10% criterion was (and is) not meant to create an absolute ceiling for total bill impacts but rather establish a threshold or action level beyond which the distributor will be obliged, as part of its rate filing, to outline its mitigation plan respecting the impacted class or group of customers.

During this same proceeding Mr. Harper co-authored evidence that noted bill impact considerations varied across jurisdictions and reflected to some extent historical experience with rate increases. In the context of the Ontario and the recent rate increases seen/expected the evidence recommended the following with respect to bill impacts:

- i. The increases in a customer class’ average distribution rates due to cost allocation changes and harmonization should be limited to the all customer average increase (i.e., the maximum customer class increase would be double the all customer average increase).
- ii. In addition the following total bill impact considerations should apply:
  - a) For those situations where increases in the total bills for individual customers in a rate class, based on the overall average distribution rate increase for the LDC, is less than or equal to the greater of 9% or \$5 / month, the maximum bill impact should be limited to 9.5%.
  - b) For those situations where increases in the total bills for individual customers in a rate class, based on the overall average distribution rate increase for the LDC, is over 9%, the bill impacts arising from cost allocation changes should be limited to 0.5%.

## **PUB/COALITION - 19**

### **Reference:**

Harper Evidence Page 88 of 120

### **Preamble:**

In this section of his evidence, Mr. Harper discusses block rates without specific preferences being stated or justified.

### **Question:**

Please provide the specific ratemaking proceedings (jurisdiction, name, and number) where Mr. Harper has had a specific opinion or recommendation or both regarding the use of block rates. Please briefly describe Mr. Harper's position and the basis for Mr. Harper's opinion.

### **Response:**

Mr. Harper has provided evidence with respect to block rates before both the Manitoba Public Utilities Board and Quebec's Regie de l'energie.

With respect to Manitoba Hydro, Mr. Harper provide in evidence in the following two proceedings:

- i) 2004/05 & 2005/06 GRA – In this proceeding Manitoba Hydro was proposing to eliminate its existing Residential declining block rate structure and move to a customer charge/flat energy rate over a period of three rate adjustments by applying all of the class' the general rate increase to the second block's energy rate. Mr. Harper's evidence was supportive of Manitoba Hydro's proposal as it was reflective of both the marginal costs and the cost of service results at the time.
- ii) 2008/09 GRA – In this proceeding Manitoba Hydro proposed to implement inclining rates (i.e., a higher energy rate for usage over 900 kWh per month). Mr. Harper's evidence again found Manitoba Hydro's proposal to be supported by its cost of service results, improved the alignment

between energy rates and marginal costs and, given the modest differential between the energy rates for the two “blocks”, the bill impacts were reasonable. However, his Evidence expressed concerns about the bill impacts that continuing to increase the differential over time could create and the practical ability of certain segments of Residential class (e.g., those using electric space heating in non-gas areas and low income customers) to respond to the higher prices and manage their bills. The evidence recommended that before taking the rate differentiation further, Manitoba Hydro should ensure that its DSM programs provided the necessary tools (particularly for those segments identified) to respond.

With respect to the Regie, Mr. Harper provided evidence in a number of proceedings dealing with the “blocks” used in Hydro Quebec-Distribution’s inclining Residential rate structure:

- i) 2005/06 Rate Application (R-3541-2004) – At the time Hydro Quebec Distribution already had an inclining Residential rate structure. The proceeding dealt with Hydro Quebec Distribution’s (HQD) rate design principles and plans for future rate design changes which called for increasing the price differential between the two energy blocks used in the rate structure. Mr. Harper’s evidence supported HQD’s proposed energy blocks as it was consistent with cost of service principles. The evidence also supported the proposal to gradually increase the differential and maintain its monthly service charge at current levels as both were consistent with the Company’s cost of service study results.
- ii) 2006/07 Rate Application (R-3579-2005) – HQD’s application called for a continued freeze of its monthly customer charge and a further increase in the price differential between the first and second usage blocks of the Residential rate structure. Mr. Harper’s evidence was again supportive of the proposal as both the cost of service study results and the Company’s marginal costs indicated higher energy prices for the last block of usage

- were appropriate and rate impacts were acceptable (i.e., less than 0.5% of customers would experience a total bill impact in excess of 4%).
- iii) 2007/08 Rate Application (R-3610-2006) – HQD’s application called for a continuation of its current rate strategy and the main issues in the proceeding with respect to Residential rates were the size of the first energy block, whether there should be any seasonal differentiation in the size of the energy blocks and the price differential between the energy blocks. On issues related to the energy blocks, Mr. Harper’s evidence favoured as seasonal differentiation of the energy block (i.e., larger first energy block in the winter) on the basis that: a) it would permit the energy rate to move closer to marginal cost and b) it reflected a higher basic (non-heating use) in the winter.
  - iv) 2008/09 GRA (R-3644-2007) - The main issues in the proceeding with respect to Residential rates continued to be the size of the first energy block, whether there should be any seasonal differentiation and the degree of price differentiation between the two blocks, along with the question of whether there needed to be a third energy block. On this last issue Mr. Harper’s evidence was not supportive of a third energy block on the basis that: a) it would reduce the energy rates in the first two blocks thereby diluting the price signal seen by customers whose marginal use fell in these blocks and b) it would increase the bill impact dispersion.

## **PUB/COALITION - 20**

### **Reference:**

Harper Evidence Page 89 of 120

### **Preamble:**

In Schedule 23, Mr. Harper adjusts the marginal costs related to transmission and distribution but not to generation. Mr. Harper also indicates that losses are not factored into Manitoba Hydro's calculation of marginal costs.

### **Question:**

Please explain whether adjustments to the generation marginal costs should be made, what those adjustments should take into consideration, and how those adjustments should be made.

### **Response:**

First, as a point of clarification, the initial issue regarding losses was that the same loss factor had been used for all customer classes whereas some customers are served off the transmission or subtransmission systems while others are served off the distribution system. This issue was addressed in Manitoba Hydro's response to GAC/MH II-24 b).

With respect to marginal generation costs, an adjustment should be made to recognize the differences in load factor across customer classes. However, the Manitoba Hydro's marginal generation cost has both a capacity and an energy component as can be seen from the response to PUB/MH I-131 b). Since the adjustment for load factor would apply only to the capacity component of the costs it is necessary to have breakdown between the two components, which Manitoba Hydro is unwilling to provide for commercial reasons.

If the winter and summer capacity costs (\$/kW) were known then customer class seasonal load factors and season energy use data would also be required to translate them into a \$/MWh equivalent for each customer on a seasonal basis.



Further refinements to the marginal generation cost by customer class could be made if the marginal energy costs were broken down into hourly detail or even on a peak versus off-peak basis. However, Manitoba Hydro has indicated that such details are not available (see PUB/MH I-133 and COALITION/MH II-27 b)).

## **PUB/COALITION - 21**

### **Reference:**

Harper Evidence Page 103 of 120; Chernick Evidence Page 33 of 101

### **Question:**

Please provide your views on whether LICO-125 is an appropriate measure with which to provide a more targeted subset of customers for rate assistance, or whether other measures, such as energy burden or energy burden alone or in combination with LICO-125, would be more appropriate.

### **Response:**

Mr. Harper is not sufficiently familiar with how the various measures are determined and energy poverty issues overall to provide view as to which one of the measures cited is the most appropriate measure of low income purposes of providing more targeted assistance. Please see the evidence prepared for the Consumers Coalition by Dr. Wayne Simpson titled – “Energy Poverty in Manitoba and the Impact of the Proposed Hydro Rate Increase: An Assessment of the Bill Affordability Study in the Manitoba Hydro GRA” - for more discussion regarding the definition of energy poverty and low income.

Mr. Harper is of the view that if targeted rate assistance to low income customers is going to be offered and a measure used to determine eligibility (and perhaps even the level of assistance) then the measure used should be one that is readily understood and practical to apply. Also, to avoid customer confusion and simplify the administration of Manitoba Hydro’s various low-income income programs, a standard definition of low income should be used. On this point, Mr. Harper notes that 125% of the Low Income Cut-Off (LICO) thresholds for Winnipeg (e.g. city with a population of 500,000 or greater) set by Statistics Canada (LICO-125) is currently the low income definition used for the Affordable Energy Fund’s programs (per PUB/MH I-126 b)).

## **PUB/COALITION - 22**

### **Reference:**

Harper Evidence Page 104 of 120; Appendix 10.5 Pages 26 to 28 and 109 to 112 of 242

### **Question:**

Please provide comments on the merits and drawbacks of the rate design options considered in Manitoba Hydro's 2017/18 GRA Appendix 10.5 (straight rate discount, fixed charge waiver, percentage of income payment plan, or other rate design options identified in Table 22 of Appendix 10.5).

### **Response:**

Mr. Harper was not actively involved with the Bill Affordability Working Group and his understanding of the various rate design options is limited to and based on the descriptions provided in Appendix 10.5. Furthermore, in requesting comments on the merits and drawbacks of the rate design options reference is made to Mr. Harper's evidence and it is assumed that the merits and drawbacks assessment requested is similar to that provided in Schedule 25 of the ECS Evidence.

The following tables provide an assessment of the three rate design options assessed in the Working Group report. The other rate design options set out in Table 22 of the report appear to either a) not address the bill impact issue for low income customers or b) be some variation of one of the three options assessed below.

## 1. Straight Rate Discount for Eligible Customers

<b>Ratemaking Objective</b>	<b>Comments</b>	<b>Merits</b>	<b>Drawbacks</b>
Recovery of Revenue Requirement	It is assumed the discount is a fixed 25 % off the bill (WG Report, page 26)	Once eligible customers are identified impact of discount reasonably easy to estimate.	Impact on revenues not known until eligible customers identified
Fairness and Equity	.	Unknown, depends upon load characteristics of eligible customers and whether “cost-to-serve” is greater or less than the Residential class overall	
			Customers receiving similar service will pay different “rates”
Rate Stability		Improved rate stability for eligible customers	Possibly less rate stability for non-eligible customers depending upon how lost revenues recovered
Efficiency		.	Will reduce the marginal price signal for eligible customers relative to marginal costs.
Simplicity and Understandability	Assumes eligibility based on LICO-125	Simple for eligible customers to understand bill calculation.	New administrative procedures required to identify and qualify “eligible” customers.
Public Acceptance and Public Policy		Addresses previous public interest issues raised by PUB regarding low income. Level of relief tied to level of use-> helps to also address electric space heating concerns. Percentage discount can be fine-tuned to balance low income benefits/lost revenue.	Degree of general public acceptance unknown

## 2. Fixed Charge Waiver for Eligible Customers

Ratemaking Objective	Comments	Merits	Drawbacks
Recovery of Revenue Requirement	Based on August 1, 2017 rates and 1,000 Kwh use, fixed charge, 10% of bill.	Once eligible customers are identified impact of discount easy to estimate.	Impact on revenues not known until eligible customers identified
Fairness and Equity	.	Unknown, depends upon load characteristics of eligible customers and whether “cost-to-serve” is greater or less than the Residential class overall	Customers receiving similar service will pay different “rates”
Rate Stability		Slightly less bill/rate stability for eligible customers	Minor impact on rate stability for non-eligible customers depending upon how lost revenues recovered
Efficiency		Does not alter pricing signals to eligible customers.	
Simplicity and Understandability	Assumes eligibility based on LICO-125	Simple for eligible customers to understand bill calculation.	New administrative procedures required to identify and qualify “eligible” customers.
Public Acceptance and Public Policy		Addresses previous public interest issues raised by PUB regarding low income.	Degree of general public acceptance unknown. Level of “assistance” pre-determined by customer charge. Level of assistance same regardless of usage (i.e. electric vs. non-electric heat)

### 3. Percentage of Income Payment Plan for Eligible Customers

Ratemaking Objective	Comments	Merits	Drawbacks
Recovery of Revenue Requirement	.		Impact on revenues not known until eligible customers and incomes identified
Fairness and Equity	.	Unknown, depends upon load characteristics of eligible customers and whether “cost-to-serve” is greater or less than the Residential class overall	Customers receiving similar service will pay different “rates”
Rate Stability		Rate/bill stability depends on frequency of “income” updates	Impact on rate stability for non-eligible customers depending upon income updates and how lost revenues recovered
Efficiency			Will reduce the marginal price signal for eligible customers relative to marginal costs. May reduce energy efficiency incentive if lower use would lead to “energy poor” disqualification.
Simplicity and Understandability	Assumes eligibility based on LICO-125 <u>and</u> meeting energy poor threshold		New administrative procedures required to identify and qualify “eligible” customer and to regularly update income levels. Efficient low-income customer may question “ineligibility” determination. Income level needed to calculate bill → increased complexity.
Public Acceptance and Public Policy		Addresses previous public interest issues raised by PUB regarding low income and space heating on a holistic basis.	Degree of general public acceptance unknown. Credibility of the program would likely require regular “income” updates. More intrusive in terms of level of personal information needed. (i.e.,

			actual income level)
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## **PUB/COALITION - 23**

### **Reference:**

Harper Evidence Pages 102 and 109 of 120

### **Preamble:**

Mr. Harper indicates that in regards to the impacts of higher rates on low income and electric heating customers: "...there is insufficient information regarding the public acceptability of Alternative Rate Design, particularly in view of the fact that there may be more focused alternatives available."

### **Question:**

- a) Can Mr. Harper identify the following:
  - i. The preferred focused rate design alternatives for low-income customers and specifically those with electric heat,
  - ii. Specific data requirements and terms of service needed to establish the design and application of such rate alternatives, and
  - iii. To the extent existing evidence is not sufficient to design such rate alternatives, additional data that must be made available in the present case or future proceedings to establish such rates.
- b) Please elaborate on the recommended research to be undertaken regarding public acceptability of Alternative Rate Designs. Specifically, what customer groups should be targeted, what consultation process would be preferred, what material prerequisites would be needed, and what project timelines would be preferred.

### **Response:**

- a) & b) At this point Mr. Harper does not have a "preferred" rate design alternative. Rate design is really only a "tool" to be used as a means of achieving



certain objectives. In this case, the objective is to provide rate assistance to certain groups of customers. However, until one defines the targeted “groups” the appropriate/preferred rate design cannot be determined. The choice of a “preferred rate design” is also influenced by: i) the statutory framework within which the utility operates, ii) customer preference and attitudes and iii) the current operating limitations of the utility.

As the ECS evidence notes the concerns expressed by the PUB regarding the impact of electricity rates focused on a number of particular segments of the Residential class, such as low income customers and space heating customers, particularly those without access to natural gas. In contrast the Alternative Rate Design put forward by Manitoba Hydro results in low rates for all space heating customers, regardless of income or accessibility to natural gas. It also provides a discount to space heating customers in the non-heating months.

At pages 98-102 the ECS evidence addresses this matter and notes that a more focussed rate design that provided a rate discount to narrower segment of the Residential class (e.g., i) just low income customers, ii) just for electric space heating customers in the heating months of the year, ii) just those space heating customers without access to natural gas or some combination of the preceding) may not only more directly address the public policy/interests issues raised by the Board but also do so at lower cost (in terms of lost revenue) thereby finding more acceptance with other rate payers and the public overall.

The starting point is to establish what the objectives are and, to that end, any initial direction that the Public Utilities Board could provide as to what customer segments were considered to be a priority would be invaluable. The customer research suggested could also help inform the choice regarding which segments to target.

However, to be able to develop a more focused rate design that can be practically applied more information/work is needed:

- For low income-based rates: Manitoba Hydro already has a definition of “low-income” for purposes of programs funded by the Affordable Energy Fund and an application/eligibility process. However, annual program participation is less than 5% of the estimated number of low income customers (see GAC/MH I-2 and PUB/MH I-126). As noted in response to PUB/COALITION 21, there is merit in having standard definition of “low income”.

Having said this, the introduction of a low income rate assistance program would significantly expand the use of the definition and consideration may want to be given to whether the current definition is appropriate on a “going forward” basis. Please see the evidence prepared for the Consumers Coalition by Dr. Wayne Simpson titled – “Energy Poverty in Manitoba and the Impact of the Proposed Hydro Rate Increase: An Assessment of the Bill Affordability Study in the Manitoba Hydro GRA” - for more discussion regarding the definition of energy poverty and low income.

Also, it is likely that, if a definition similar to the current LICO-125 is used, the number of applications/eligibility requests Manitoba Hydro will receive will increase significantly. As a result, additional work/information is needed to determine what changes or new processes would be required to manage what would likely be an orders of magnitude increase in the number of applications.

In addition, the feedback from organizations that participate in the delivery of Manitoba Hydro’s Affordable Energy Program (see Appendix 10.6) indicates they were of the view that customers may not communicate their true financial hardship to Manitoba Hydro staff. Given this perspective and the likely need to manage a significantly larger volume of eligibility applications, some assessment should also be made of the possible role that community-based organizations or social agencies might play in the administering the eligibility/application process. The need to design an enrolment and eligibility determination process that maximizes low income customer participation is

compounded by the fact that those not participating will, by default, pay higher rates.

If Manitoba Hydro were to revisit its definition of “low income” then consumer related research involving low income customers and their comprehension of various low income measures and ability to provide the necessary inputs required would also be useful, as these are the customers that will be “filling out” the eligibility applications.

Also, the Bill Affordability Work Group Report (Appendix 10.5, page 2) indicates that Manitoba Hydro’s reluctance to fund rate assistance program was based, in part, on its view that non-subsidized customers in the residential class or other customer classes would not agree to fund those amounts through their future rates. As a result, more general customer/consumer research on the public acceptability of offerings discounts to all space heating customers versus low income customers versus some combination of the two considerations and what degree of discount might be acceptable in either case could assist in determining the “practicality” of various rate design options from a broader public perspective.

- For a more focused space heating related discounts: The additional information required would include determining the practicality of limiting discounts to and/or offering higher discounts to areas without access to natural gas. It would also involve an assessment as to the practicality of offering seasonal rates including how best to do so given Manitoba Hydro’s current meter reading and billing practices as well as what is the appropriate definition for the “winter” or “heating” season. In this area consumer-related research regarding space heating customers’ understanding/acceptance of alternative approaches to implementing seasonal rates would likely be invaluable.

Also, similar to the low income situation, more general customer/consumer research regarding the public acceptability of offerings discounts to space

heating customers for all usage versus just usage in the “heating” season and what degree of discount is acceptable in either case could assist in determining could assist in determining the “practicality” of various rate design options related to space heating from a broader public perspective.

One approach to addressing the foregoing would be to establish a working group/steering committee with representatives from relevant stakeholder groups to establish identify the specific requirements to implement each “focused rate option”, to develop a work plan as to how best to flesh out these requirements (i.e., would involve who would undertake the work, what approach, etc.) and practical timelines. With respect to the latter, with some direction from the PUB as the priorities and commitment from those participating, hopefully six to 12 months would be sufficient time to complete the initiative.

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**PUB/COALITION - 24**

**Reference:**

Simpson/Compton Pg. 7 Table 2

**Preamble:**

The report indicates based on a real increase in electricity rates in year 1 households are expected to adjust spending to make up for a .09% increase in household budget cost.

We expect a decline in spending on household equipment and furnishings to fall by 0.11% and transportation spending to fall by 0.13%. On the other hand, we expect spending on food purchased from stores to fall by only 0.04% and spending on health care to fall by 0.05%. The largest spending category is Shelter Excluding Electricity, which is estimated to fall by 0.06%.

The adjustments to other categories are based on their income elasticities of demand.

**Question:**

Please explain how the percentage change in spending was allocated by categories with supporting calculations.

**Response:**

Here, we expand the description from Appendix C to include calculations. The household (final consumption) table shows broad spending categories in columns (e.g. food, garments, electricity, parking, major tools and appliances, legal services, etc.) and detailed products in rows (canola, fresh potatoes, coal, funeral services, books, etc.). We determine the required increase in spending on hydro-electricity (Table 1) and the proportion of household spending that this represents. Other goods and services must decline to offset this increase, as we

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have made the assumption that total spending by households remains constant in the direct effect.

To determine the amount by which spending on each good and service declines, we apply income elasticities of demand (IED) – the percentage change in quantity demanded due to a percentage change in income. The additional spending required for hydro is treated as equivalent to a fall in income (i.e. income available for spending on other goods and services). If we ignored differences in income elasticity of demand, we could simply reduce the spending on each good or service by the same amount. However, we know that households do not respond to changes in income by proportionally adjusting their spending on goods and services. In response to a fall in income, spending on certain goods (goods with a small elasticity of demand) will not decline substantially while spending on other goods (goods with a large elasticity of demand) will drop more. We apply previously published income elasticities of demand (Appendix D) to calculate the reduced spending on broad categories (e.g. food, garments).

For example, the income elasticity of food is 0.54, while the income elasticity of Household Equipment and Furnishings is 1.31. In the first year, household spending on hydro increases by 4.26% (Table 1). Hydro comprises 2.18% of total household spending, so total household spending increases by 0.095%. If we assumed a zero income elasticity of demand, we would simply decrease each spending category by 0.095% to offset the rise in hydro. Instead, we multiply the decline in spending by the income elasticity, so that spending on Food categories declines by  $(0.095\% \times 0.54 = 0.0513\%)$  while spending on Household Equipment and Furnishings declines by  $(0.095\% \times 1.31 = 0.125\%)$ . The full list of income elasticities of demand is included in Appendix D.

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Within each broad spending column, the row components (detailed goods and services) are reduced proportionally. We sum across rows to determine the amount by which spending on each detailed good and service is lessened to offset the rise spending on hydro.

**PUB/COALITION (COMPTON/SIMPSON) - 25**

**Reference:**

Simpson- Compton Pg. 13-14, Table 5 – Direct Effect of Fall in Demand by Industry Affected

**Preamble:**

It is important to note that most, but not all, of the fall in demand is borne by the provincial economy. Sixty-six percent of the decline is borne by provincial industries, but 14% is borne by international imports and 20% by interprovincial imports.

**Question:**

- a) Please explain the concept to leakage in the context of the economic impacts being modeled.
- b) Please indicate how Provincial leakage was determined to estimate that only 66% of demand is borne by the Provincial economy
- c) Please explain why the decline in output demand is indicated to be 34% but the proportion of total output in table 5 is 26.7%.

**Response:**

- a) This issue is addressed in Appendix C. Briefly, the required increase in spending on hydro reduces spending on other goods and services – both

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by households, and by industry and governments as we assumed that all sectors would respond to the hydro spending increases by reducing spending across other categories. This reduction in spending on other goods and services is the direct effect (shock) to the Manitoba economy. A portion of these goods and services with reduced demand are produced in Manitoba. The industries that produce the goods and services will respond to the lower demand for their output by further reducing demand for their inputs, etc. At each round, some portion of the inputs are imported so that a proportion of the effect “leaks” out of the economy.

- b) Statistics Canada’s Supply and Use tables outline the proportion of each input that is produced within Manitoba and the proportion that is imported either provincially or internationally. We assume that the proportion of each input that is imported does not change, so that the demand decline is a decline both in provincial production and imports. Summing across all goods and services, we calculated that the proportion of the input demand decline that affects provincial producers was 66%, the remaining third is a fall in imports.
- c) We assume this question refers to the sum of International and Interprovincial Imports in table 5 (given as 26.7%) compared to the previously quoted figure in part (b) in which the 34% of the decline in demand is calculated to be a decline in imports. These figures are not inconsistent. In table 5, we are providing the proportion of total output that is imported. However, the decline in output is more heavily weighed to imported goods. This is potentially due to two factors. First, household spending declines are greater for goods and services that have high income elasticities of demand, and these goods may be more likely to be imported than goods with low income elasticities of demand. Second, industries that have relatively high spending on hydro may also have



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relatively high spending on imported inputs. Note in table 5 that while total provincial output falls by 0.048%, the fall in imports is much higher.

**PUB/COALITION - 26**

**Reference:**

Simpson- Compton Pages 14-15, Table 6 & 7

**Question:**

Please provide economic impact table 6 and table 7 based on an assumed 3.36% and 3.95% rate increase and provide summary commentary on the results of the analysis.

Please indicate the tax revenues impact related to the assumed rate increases.

**Response:**

Three tables are presented. The first provides the nominal change in hydro spending and the cumulative change in hydro spending with and without behavioural response (i.e. applying the price elasticity of demand). The second table provides the overall results for the 3.95% price increase and the third for the 3.36% price increase. For each of the price increases the results are shown using the simple and total multipliers and for each of these, applying the PED to households only and to all sectors.

	PUB Request - 3.95			PUB Request - 3.36		
Fiscal year ending	Nominal Rate Increase	Real Cumulative Increase in Spending, No PED	Real Cumulative Increase in Spending With PED = 0.29	Nominal Rate Increase	Real Cumulative Increase in Spending, No PED	Real Cumulative Increase in Spending With PED = 0.29
2019	3.95	2.05	1.46	3.36	1.46	2.92

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2020	3.95	4.14	2.94	3.36	2.94	5.88
2021	3.95	6.28	4.46	3.36	4.44	8.90
2022	3.95	8.46	6.00	3.36	5.97	11.97
2023	3.95	10.68	7.58	3.36	7.52	15.10
2024	3.95	12.95	9.19	3.36	9.09	18.28
2025	3.95	15.26	10.84	3.36	10.68	21.52

**PUB REQUEST 1: Rates increases of 3.95**

<b>Applying the Simple Multiplier</b>								
	<b>PED=0.29 on Households Only</b>				<b>PED = 0.29 on all Sectors</b>			
	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>
2019	-0.023	-0.031	-0.031	-36	-0.019	-0.026	-0.026	-29
2020	-0.072	-0.095	-0.097	-110	-0.059	-0.079	-0.080	-91
2021	-0.145	-0.192	-0.195	-221	-0.120	-0.160	-0.162	-184
2022	-0.243	-0.323	-0.328	-372	-0.202	-0.269	-0.272	-309
2023	-0.368	-0.489	-0.496	-527	-0.306	-0.406	-0.412	-438
2024	-0.518	-0.689	-0.698	-683	-0.431	-0.573	-0.581	-568
2025	-0.695	-0.924	-0.937	-1062	-0.578	-0.769	-0.780	-884

  

<b>Applying the Total Multiplier</b>								
	<b>PED=0.29 on Households Only</b>				<b>PED = 0.29 on all Sectors</b>			
	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>
2019	-0.027	-0.042	-0.040	-47	-0.022	-0.034	-0.033	-39
2020	-0.082	-0.128	-0.124	-145	-0.068	-0.106	-0.103	-120
2021	-0.166	-0.258	-0.250	-292	-0.138	-0.214	-0.208	-243
2022	-0.279	-0.434	-0.421	-491	-0.231	-0.361	-0.350	-408
2023	-0.421	-0.656	-0.636	-695	-0.350	-0.545	-0.529	-578
2024	-0.593	-0.923	-0.896	-901	-0.493	-0.768	-0.745	-750
2025	-0.794	-1.238	-1.200	-1401	-0.661	-1.031	-1.000	-1167

**PUB REQUEST 2: Rates increases of 3.36**

<b>Applying the Simple Multiplier</b>								
	<b>PED=0.29 on Households Only</b>				<b>PED = 0.29 on all Sectors</b>			

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	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>
2019	-0.015	-0.020	-0.020	-23	-0.013	-0.017	-0.017	-19
2020	-0.047	-0.062	-0.063	-71	-0.039	-0.051	-0.052	-59
2021	-0.094	-0.125	-0.127	-144	-0.078	-0.104	-0.105	-119
2022	-0.157	-0.209	-0.212	-241	-0.131	-0.174	-0.176	-200
2023	-0.237	-0.315	-0.320	-340	-0.197	-0.262	-0.266	-282
2024	-0.333	-0.443	-0.450	-439	-0.277	-0.369	-0.374	-365
2025	-0.446	-0.593	-0.601	-682	-0.371	-0.494	-0.501	-568
<b>Applying the Total Multiplier</b>								
	<b>PED=0.29 on Households Only</b>				<b>PED = 0.29 on all Sectors</b>			
	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>	<b>Output</b>	<b>GDP</b>	<b>Labour Income</b>	<b>Jobs</b>
2019	-0.017	-0.027	-0.026	-31	-0.014	-0.022	-0.022	-25
2020	-0.053	-0.083	-0.081	-94	-0.044	-0.069	-0.067	-78
2021	-0.107	-0.167	-0.162	-190	-0.089	-0.139	-0.135	-157
2022	-0.180	-0.281	-0.272	-318	-0.150	-0.233	-0.226	-264
2023	-0.272	-0.423	-0.410	-448	-0.226	-0.352	-0.341	-373
2024	-0.382	-0.595	-0.577	-579	-0.317	-0.495	-0.480	-482
2025	-0.510	-0.795	-0.771	-900	-0.425	-0.662	-0.642	-749

We assume that the increase in spending on hydro will be met with a fall in spending on other goods and services. As a result, we expect that the initial effect on tax revenues will be nil. With the decline in the economy (relative to the counterfactual) that occurs with the indirect and multiplier effects, tax revenues will be lower than otherwise would occur. However, we did not consider the exact calculation of tax revenue declines in this project.

**PUB/COALITION - 27**

**Reference:**

Simpson- Compton Pages 17, Carbon Pricing

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**Preamble:**

Policies that raise the price of carbon will reduce the behavioral response of households, industry and government to the proposed hydro price increase. That is, the incentive to switch to alternative forms of energy or to relocate production will be lessened, although the precise policy and its impact is not yet clear.

**Question:**

- a) Please elaborate on why the introduction of carbon pricing is going to reduce the behavioral response to switch to alternative forms of energy or to re-locate production.
- b) Please indicate directionally how the advent of carbon pricing will impact the Provincial economy IE a further impact than that modeled from assumed rate increases.

**Response:**

- a) Consumers and firms react not only to absolute price changes, but to relative price changes. If the introduction of carbon pricing raises the costs of alternative sources of energy, this may reduce the incentive of firms and businesses to switch away from hydroelectric power to other sources of energy. Similarly, firms would have a reduced incentive to relocate to another province in response to the hydro price increase if energy prices in other provinces rise in response to carbon pricing.
- b) In this report, we focus our attention on the effect of the Manitoba Hydro projected price increases on the Manitoba economy and we consider the effect of these price changes in isolation. The separate effect that carbon pricing may have on industry - and on the economy - lies outside the scope of our mandate.

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Please also see the response to MIPUG/COALITION 1.

1 **PUB/Coalition - 28**2 **Reference:**

3 MPA Report Page 9 &amp; 10, PUB/MH II-19 (a), PUB/MH II-23

4 **Preamble to IR (If Any):**

5 MPA indicated that the Capital coverage ratio. This metric is not a typical part of financial  
6 analysis, and its value is somewhat obscure. Certain typical financial measures do take into  
7 account capital expenditures (such as “Free Cash Flow”), but determining whether funds from  
8 operations are sufficient to pay for capital expenditures does not in itself indicate much about  
9 the company. Knowing the amount of Cash Funds from Operations generated by a company  
10 is often useful when compared to interest 11 charges or debt (in which case it becomes a  
11 cash flow metric), since debt providers often wish to understand whether a company has  
12 sufficient cash to make good on debt obligations.

13 **Question:**

14 a) MH has introduced a modified capital coverage ratio, Cash flow to Capex ratio. Please  
15 provide your assessment of this metric versus a Free Cash Flow or Discretionary Free  
16 Cash Flow metric.

17 b) Please indicate whether such a metric is commonly used by credit rating agencies and  
18 if so for what purpose.

19 **RESPONSE:**

20 a) It is critical to note that there are very few “definitive” definitions of financial terms  
21 (apart from the most basic financial terms). Different market analysts (or analytical

1 firms) may use slightly different formulas for a given financial term, based on their point  
2 of view, the purpose of their calculation, the nature of the enterprise they are analyzing,  
3 and the particular financial technicalities that may apply. For example, different  
4 analysts may take different positions on the treatment of one-time costs, accrued  
5 revenues and expenses, income from “non-core” activities, and the appropriate way to  
6 “standardize” line items in an enterprise in order to make them comparable to other  
7 firms. These and many other nuances will affect the calculation of many superficially  
8 “common” financial metrics.

9  
10 In Manitoba Hydro’s response to PUB/MH II 19(a), they provided their understanding of  
11 the way that DBRS and S&P analysts calculate each of their own versions of the ratio  
12 “Cash Flow from Operations (CFO) : Capex”. They differed from each other in several  
13 ways. Moreover, Manitoba Hydro noted that Moody’s does not include a “CFO : Capex”  
14 metric in its reports. This variation among these different market analysts is not  
15 surprising, and in fact should be viewed as typical.

16  
17 However, it should be noted that both DBRS and S&P calculated their version of “CFO  
18 : Capex” based on the total Capex of Manitoba Hydro, and not a Capex figure which  
19 was adjusted to remove “Major New Generation and Transmission” amounts, as is  
20 Manitoba Hydro’s practice. As a result, the Manitoba Hydro formulation of the “Capital  
21 Coverage Ratio” was not relevant to the analysis of the two agencies.

22  
23 It is also notable that on pages 64 and 65 of Appendix 4.1 of the Application (the May  
24 2015 KPMG Report), a comparison of “CFO : Capex” is provided as between Manitoba  
25 Hydro and several other provincial electricity utilities in Canada. In this case, KPMG  
26 also chose to use total Capex in their calculations, rather than Manitoba Hydro’s  
27 adjusted capex figure.

28  
29 If Manitoba Hydro wishes to track and publicize a “CFO : Capex” metric, then it may be

1 better served by adopting one of the versions used by at least one of the credit rating  
2 agencies that currently report on the company's credit-worthiness, or adopt a definition  
3 which allows for more straightforward comparison to other utilities.  
4

5 A more basic issue is the fact that Manitoba Hydro is calculating a ratio which provides  
6 only limited information. This ratio provides directional information; namely, if the ratio  
7 is greater than 1, then Manitoba Hydro has generated net cash flow from internal  
8 resources which may be used to retire debt (or the cash may be used for other  
9 purposes), while if the ratio is less than 1 it has not. This metric can be contrasted to  
10 Free Cash Flow or Discretionary Free Cash Flow, which are amounts rather than  
11 ratios: these will be either positive or negative dollar totals (there are several potential  
12 definitions of both of these terms, but at the most basic level Free Cash Flow can be  
13 defined as "Cash Flow from Operations less Capital Expenditures", and Discretionary  
14 Free Cash Flow is "Free Cash Flow less Dividends", assuming dividends are payable).  
15 Either of these calculations will provide information on how much debt might actually  
16 be retired (any value greater than zero means that debt theoretically could be retired  
17 by that amount). Both Free Cash Flow and Discretionary Free Cash Flow provide more  
18 useful information than the ratio "CFO : Capex". Moreover, Free Cash Flow or  
19 Discretionary Free Cash Flow can then be compared to outstanding Debt levels, which  
20 provides additional useful information (e.g., the multiple calculated by dividing  
21 outstanding Debt by Discretionary Free Cash Flow is a theoretical number of years  
22 required to retire debt, which in turn can be compared to the average remaining useful  
23 life of assets, etc.).

- 24 b) Free Cash Flow and Discretionary Cash Flow (as they are variously defined by  
25 different analysts) are useful in that they provide an indication of the ability of an  
26 enterprise to generate value which can be distributed to shareholders, or reinvested in  
27 the business. For credit rating agencies, positive Free Cash Flow indicates that the  
28 enterprise is generating sufficient value to allow for the retirement of debt principal.



1 Note, however, that the retirement of debt principal in and of itself does not necessarily  
2 indicate any specific change in the Debt to Equity ratio of the enterprise, since  
3 information about the relationship between Capex and Depreciation is also required in  
4 order to make that calculation (if Depreciation is greater than Capex, then the asset  
5 base of the enterprise is shrinking, and other things being equal, debt should be retired  
6 in proportion to the ratio between Depreciation and Capex in order to maintain the  
7 capital ratio; whereas if Capex is greater than Depreciation the asset base is growing,  
8 and at the same time there is positive Free Cash Flow which is used to retire Debt,  
9 then the capital ratio is definitely improving).

10  
11 In a regulated utility environment, where investments sometimes stretch across several  
12 financial years and do not begin to generate revenue until they are “used and useful”, it  
13 is not atypical to find that Free Cash Flow swings up and down from year to year (as  
14 would the CFO : Capex ratio). If a regulated utility is consistently expanding its asset  
15 base for a period of time, then it will likely have negative Free Cash Flow, but in a  
16 subsequent period it might “harvest” its investments and have positive Free Cash Flow  
17 (because Capex will be reduced). Over time, the net balance of these flows should be  
18 related both to the rate of growth of the utility’s asset base, and to the return on  
19 investment that is built into the regulated utility economic model.

20  
21 For credit rating agencies, or any other financial analyst reviewing a regulated utility,  
22 cash flows and capital expenditures must be understood in the context of the growth of  
23 the company’s asset base, its customer base, and the ability of customers to pay for  
24 the services that will be delivered based on the asset base that the utility invests in.

25  
26 However, the primary consideration for a credit-rating agency is the ability of a utility to  
27 service its debts (and ultimately repay them). As a result, the primary focus for analysis  
28 is not the relationship between cash flows and capital expenditures, but instead the  
29 focus is on cash flows and debt, as well as cash flows and debt service costs. As noted

1           on page 33 of the MPA Report, there are many such metrics, and S&P identifies seven  
2           of them. Other agencies have similar lists.

3  
4           The growth plans of Manitoba Hydro, its capital expenditure plans, and the impact of  
5           the same on its customer base are obviously all of concern to market analysts and  
6           potential lenders, but this is all secondary information which colours the basic  
7           inferences that are drawn from comparison of cash flows and debt.

1 **PUB/Coalition - 29**2 **Reference:**

3 MPA report Pg. 9, PUB/MH I -1-23 (a-b)

4 **Preamble to IR (If Any):**

5 MPA indicate that the Interest Coverage Ratio, that incorporates both finance expense and  
6 capitalized interest represents the approximate net cash cost of debt for the year and that at a  
7 1.80X level, creditors would be comfortable that the business is producing enough cash flow  
8 to service outstanding debt. Manitoba Hydro has previously stated “Manitoba Hydro accepts  
9 that the EBITDA interest coverage ratio is a superior measure of how much cushion the  
10 Corporation has on a cash flow basis before it is necessary to borrow to make interest  
11 payments, as well as allowing for better peer and credit rating comparisons.” [Supplemental  
12 Filing for April 1, 2016 Rates Page 31] MPA further indicates that there are other cash flow  
13 metrics beyond the Interest Coverage Ratio such as Free Cash Flow and Discretionary Free  
14 Cash flow metrics.

15 **Question:**

- 16 a) Please indicate whether this metric should be used as a primary metric for rate-setting.
- 17 b) At what level above 1.0x would this metric not produce enough cash flow to service  
18 outstanding debt?
- 19 c) What other Cash flow metrics should be used for rate setting purposes and why?
- 20 d) Please review and comment on the Free Cash flow information provided in PUB/MH I-  
21 23.

1 **RESPONSE:**

2 *Please note that on the broad issues of minimum financial targets and rate-setting*  
3 *mechanisms, it may be useful to read MPA responses to six IRs in tandem. These are*  
4 *PUB/Coalition 29, 30, 31, and 32, and GSS-GSM/1 and 2.*

- 5 a) Debt Service Coverage is critical for Manitoba Hydro, as it goes to the heart of the  
6 question of whether the corporation is “self-supporting” in the eyes of the capital  
7 markets. The Interest Coverage Ratio as defined by Manitoba Hydro provides positive  
8 and useful information about Debt Service Coverage, and is therefore a useful  
9 indicator. In our view, it is the most important of the three indicators tracked by  
10 Manitoba Hydro.
- 11 b) The Interest Coverage Ratio that is calculated by Manitoba Hydro is based on figures  
12 drawn from the corporation’s Income Statement. As a result, it reflects accrued  
13 revenues and expenses, regulatory movements, and other non-cash items, while at the  
14 same time it does not capture certain other cash obligations (such as payments related  
15 to Winnipeg Hydro and mitigation, which strictly speaking are not related to current  
16 operations, but nevertheless are cash obligations that must be paid). Notwithstanding  
17 these issues, it provides an indication of the sufficiency of cash flows to meet debt  
18 service obligations. However, the exact relationship between this ratio and actual cash  
19 flowing through the business will change over time, as each of these various non-cash  
20 and non-expense items fluctuate. It is therefore not possible to say with certainty the  
21 exact minimum level of this metric that should be maintained over time.
- 22 c) In addition to income statement-based cash flow measures, the PUB may wish to  
23 consider tracking strict cash flow measures that seek to forecast the actual cash  
24 requirements for Manitoba Hydro. For example, “Cash Flow from Operations less  
25 mitigation less payments to Winnipeg” would capture the net cash flows from the  
26 enterprise before capital investments, sinking fund management and debt financing.

1 While in exceptional years (such as severe drought) this figure may be negative, on  
2 average it must be positive, or Manitoba Hydro would no longer be financially self-  
3 supporting.

- 4 d) In response to PUB IR 1-23, Manitoba Hydro provided a forecast of the CFO : Capex  
5 ratio, without adjusting for Major New Generation and Transmission, at both 7.9% and  
6 3.95% rate paths. Both of these forecasts show the expected relationships: capex  
7 greatly exceeds cash flows for the next few years as the Keeyask project is completed,  
8 and then cash flows exceed Capex in later years. Subtracting Capex from CFO is a  
9 measure of Free Cash Flow. Obviously, given a series of higher rate increases, the  
10 7.9% rate path shows a much more pronounced surplus of cash flow over Capex  
11 beginning in 2023.

12  
13 Notably, both of these forecasts are provided based on reference assumptions for all  
14 underlying variables (for example, inflation, interest rates, operating costs, domestic  
15 demand, export prices, and, crucially, average hydrological conditions). There is no  
16 indication of what the range of results might be (which is provided elsewhere, in  
17 response to other IRs, for example PUB/MH II-41).

18  
19 These estimates of Free Cash Flows confirm basic expectations, however, what  
20 additional value does this metric provide? Are the curves too steep, or not steep  
21 enough? Is it problematic that in the 3.95% rate path there is a five-year period from  
22 2023 to 2027 where net cash flow after Capex is approximately zero? Is the much  
23 more aggressive forecast in the 7.9% rate path an appropriate use of ratepayer  
24 money? In order to get deeper insights into the finances of the firm, it would be useful  
25 to have information about the relationship between Capex and Depreciation, total  
26 assets employed in the business, outstanding Debt levels, the average remaining life of  
27 assets over time, etc. Free Cash Flow information is a useful starting point for analysis

1 (and it is certainly better to have access to this information than not), but it does not  
2 provide particularly deep insight into the firm's progress over time.

3

1 **PUB/Coalition - 30**

2 **Reference:**

3 MPA Report Pg. 35

4 **Preamble to IR (If Any):**

5 MPA states that on page 35 “Certainly, the capital structure of a utility is important, and all  
6 analysts do recognize that, but few if any appear to make capital structure a centerpiece of  
7 their analysis in the way Manitoba Hydro does.”

8 **Question:**

9 Does MH require a capital structure of 75:25 or can other targets be considered based on the  
10 risks faced by the Corporation.

11 **RESPONSE:**

12 *Please note that on the broad issues of minimum financial targets and rate-setting*  
13 *mechanisms, it may be useful to read MPA responses to six IRs in tandem. These are*  
14 *PUB/Coalition 29, 30, 31, and 32, and GSS-GSM/1 and 2.*

15 Manitoba Hydro must maintain its financial self-supporting status, and as a result ensuring  
16 sufficient debt service coverage must be a priority.

17 The company faces substantial volatility in its cash flows because of hydrology, and to a  
18 lesser extent because of export price risk, operating risks, and other risks. If rates were set  
19 annually, and solely on the basis of debt service coverage, then domestic rates could be  
20 expected to swing dramatically based on these underlying volatile factors. That would not be

1 an acceptable balancing of regulatory principles resulting in just and reasonable rates,  
2 because ratepayers have the right to expect some stability and predictability in their rate  
3 regime. As a result, it would be appropriate for Manitoba Hydro to maintain some level of  
4 reserves (equity) that would allow it to manage its volatile cash flows, while keeping rates  
5 relatively stable and predictable.

6 However, there is a cost to maintaining reserves: ratepayers are contributing those reserves,  
7 and ratepayers have other uses for their money. From a capital efficiency perspective, it  
8 would be best if reserves were not larger than absolutely necessary to manage the expected  
9 degree of volatility in Manitoba Hydro cash flows. At the same time, no group or cohort of  
10 ratepayers should be unfairly burdened with contributing the reserves, because doing so  
11 violates the regulatory principle of cost causality. Therefore, from a cost causality perspective,  
12 it would be best if all ratepayers could contribute equally to reserves over time (on an  
13 inflation-adjusted basis), and the volume of reserves would go up and down as required to  
14 manage the volatile cash flows as they occur. Notably then, regulatory principles suggest at  
15 least two different ways to manage reserves, but in neither case is a fixed reserve target  
16 required.

17 The absolute level of reserves at any given time is not actually critically important, only the  
18 expected sufficiency of the reserves for the upcoming period of time, however long that  
19 “period” is deemed to be. For example, if the intention is to keep rates on a stable path for the  
20 next five years, then existing reserves plus contributions to reserves over the five years  
21 should be sufficient to manage the expected volatility in cash flows. If rates are reset every  
22 two years, but the time horizon is always five years forward, then changes in rates should be  
23 much more moderate than would be the case with annual rate-setting on a pure debt service  
24 coverage basis. Alternatively, if the desire was to ensure stability over a longer 10-year period,  
25 then a calculation would be made about the level of annual contribution to reserves that would  
26 be sufficient to ensure that reserves never bottom out during the 10-year horizon. Again, if



1 rates are set every two years, and the horizon is always 10 years forward, then changes in  
2 rates should be moderated.

3 Note, however, that in this construct rates ARE adjusted periodically based on prevailing  
4 conditions, which means they are not completely stable and predictable. Once again,  
5 regulatory principles must be balanced against each other when making decisions about rate-  
6 setting mechanisms. Moreover, this kind of calculation requires careful analysis about which  
7 volatile factors will be managed through the use of reserves, and which will not. For example,  
8 hydrological variation is undoubtedly an extremely volatile factor that should be managed  
9 through reserves, while inflation, which only affects the company slowly over time, is not  
10 (moreover, inflation affects the general price level in the economy in real time, and there is no  
11 good reason to attempt to manage its effects).

12 Based on the foregoing logic, it is not apparent that targeting an arbitrary 75:25 debt to equity  
13 ratio is necessary. In particular, it is not clear that setting an arbitrary target, and an arbitrary  
14 goal to achieve that target as of March 31, 2027 or any other date, is in any way related to the  
15 expected levels of cash flow volatility that Manitoba Hydro is tasked with managing.

16 In PUB/MH II – 41, Manitoba Hydro provided its Interest Coverage Ratio estimates for 918  
17 runs of its model based on the revised 7.9% for six years rate path. In that model, at the P5  
18 position, interest coverage is 1.40 times in 2020, rising to 1.87 by 2027. This means that 95%  
19 of the time, interest coverage will be higher than this level, and in fact substantially higher  
20 than the minimum level required for cash flow sufficiency in any given year. At the P50  
21 position, interest coverage at the corresponding dates are 1.76 and 2.41. Interest coverage is  
22 far, far higher than it appears it needs to be to manage any potential volatility in cash flows,  
23 according to Manitoba Hydro's own risk analysis. This suggests that reserves are  
24 unnecessarily high at the levels proposed, and a lower rate path may be sufficient to satisfy  
25 minimum financial conditions.

1 **PUB/Coalition - 31**2 **Reference:**

3 MPA Report Pg. 44 L6-14

4 **Preamble to IR (If Any):**

5

6 **Question:**7 a) How would MH establish a drought fund cash reserve? Would this equate to a  
8 Minimum Retained Earnings Target?

9 b) How does the \$500M operating line play into the establishment of a drought fund?

10 **RESPONSE:**11 *Please note that on the broad issues of minimum financial targets and rate-setting*  
12 *mechanisms, it may be useful to read MPA responses to six IRs in tandem. These are*  
13 *PUB/Coalition 29, 30, 31, and 32, and GSS-GSM/1 and 2.*14 Please note that this IR invites consideration of possible new and alternative ways of  
15 managing certain issues related to Manitoba Hydro rates. While MPA is pleased to offer  
16 suggestions and ideas, it should be recognized that these are necessarily tentative and  
17 reflective of the limited time and resources available during a general rate-setting process.  
18 Adequately reviewing all possible pros and cons of new options and rules is well beyond the  
19 limitations of an IR response. It would be very much appreciated if the following response was  
20 understood in this light.

1 a) As described in response to IR 30, above, the sufficiency of reserves could be  
2 calculated on a rolling-forward or periodic basis. Depending upon the current state of  
3 reserves, and all of the forecasted risks pertaining to the forward period, an  
4 assessment could be made of how much ratepayers should contribute to reserves as  
5 part of their rates in the coming years.

6  
7 Rather than establishing an arbitrary minimum level of reserves, the PUB could focus  
8 on a probability assessment. For example, a rule could be that current reserves plus  
9 contributions be set at a level high enough so that 95% of all hydrological scenarios  
10 could be managed, from an interest coverage perspective, without interim rate  
11 increases beyond the rate path chosen. In the 5% of extreme cases, then additional  
12 steps would be required. Alternatively, the PUB could choose a 99% standard, or a  
13 90% standard, or whatever standard was deemed to be balanced and fair to  
14 ratepayers, taking into account rate stability and predictability, cost causality, and  
15 efficiency.

16  
17 Finally, the question refers to “cash reserves”. As discussed in MPA’s Report at page  
18 44, “reserves” in our view should be considered “equity” in the parlance of Manitoba  
19 Hydro. “Cash reserves”, properly so called, are relatively expensive to maintain and not  
20 particularly desirable except in limited cases, as discussed in the Report.

21 b) Credit lines are a means to manage very short-term liquidity needs. It would be  
22 appropriate to take these financial resources into account to manage very short-term  
23 cash flow needs (such as a one-year, massive change in water inflows, as occurred in  
24 1940 or 2003). However, on a five-year or ten-year rolling average basis, it would not  
25 be appropriate to include credit-line type resources as “reserves”. In these cases,  
26 “equity” may be a better analogy.

1 **PUB/Coalition - 32**2 **Reference:**

3 MPA Report Pg. 48

4 **Preamble to IR (If Any):**5 **Question:**

6 a) Confirm that from an economic efficiency perspective, when one considers that capital  
7 cost of ratepayers, a 7.9% rate trajectory is not the most efficient use of ratepayer  
8 capital when compared to a 3.95% rate trajectory.

9 b) Please describe what information MH would be required to employ an optimal  
10 probability – weighted break-even point.

11 **RESPONSE:**

12 *Please note that on the broad issues of minimum financial targets and rate-setting*  
13 *mechanisms, it may be useful to read MPA responses to six IRs in tandem. These are*  
14 *PUB/Coalition 29, 30, 31, and 32, and GSS-GSM/1 and 2.*

15 a) If ratepayers are assumed to have a 5% “Social” cost of capital (i.e., 3% real cost plus  
16 2% inflation), then in the reference scenario, ratepayers will always be better off in the  
17 3.95% rate path versus the 7.9% rate path. The cumulative discounted cost of power  
18 for ratepayers in the 7.9% rate path is always higher, despite the fact that nominal rates  
19 in the 7.9% path are actually lower beginning in eleventh year of the model.

20  
21 The tables on the next page show this comparison:  
22

1 Rate Path based on 7.9%, Discounted at 5%

Year Ending in March	2017	1 2018	2 2019	3 2020	4 2021	5 2022	6 2023	7 2024	8 2025	9 2026	10 2027	11 2028	12 2029	13 2030	14 2031	15 2032	16 2033	17 2034	18 2035	19 2036	
Change in Units																					
Annual Units Purchased	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Price Increase		3.36%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	4.54%	2.00%	2.00%	-19.75%	-3.12%	-1.11%	1.81%	-1.05%	0.57%	0.40%	0.72%	3.26%	
Nominal Price	1	1.03	1.12	1.20	1.30	1.40	1.51	1.63	1.71	1.74	1.77	1.42	1.38	1.36	1.39	1.37	1.38	1.39	1.40	1.44	
Discount Rate	5%	1	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48	1.55	1.63	1.71	1.80	1.89	1.98	2.08	2.18	2.29	2.41	2.53
Discounted Price		0.98	1.01	1.04	1.07	1.10	1.13	1.16	1.15	1.12	1.09	0.83	0.77	0.72	0.70	0.66	0.63	0.61	0.58	0.57	
Annual Nominal Cost of Power	1000	1,033.60	1,115.25	1,203.36	1,298.42	1,401.00	1,511.68	1,631.10	1,705.15	1,739.26	1,774.04	1,423.67	1,379.25	1,363.94	1,388.63	1,374.05	1,381.88	1,387.41	1,397.40	1,442.95	
Cumulative Nominal Cost of Power		1,033.60	2,148.85	3,352.21	4,650.64	6,051.64	7,563.32	9,194.42	10,899.58	12,638.83	14,412.87	15,836.54	17,215.79	18,579.74	19,968.36	21,342.41	22,724.29	24,111.70	25,509.09	26,952.05	
Annual Discounted Cost		984.38	1,011.57	1,039.51	1,068.22	1,097.72	1,128.04	1,159.19	1,154.12	1,121.14	1,089.11	832.39	768.02	723.33	701.35	660.94	633.06	605.32	580.65	571.02	
Cumulative Discounted Cost		984.38	1,995.95	3,035.46	4,103.67	5,201.39	6,329.43	7,488.63	8,642.74	9,763.88	10,852.99	11,685.38	12,453.40	13,176.73	13,878.08	14,539.02	15,172.07	15,777.39	16,358.04	16,929.07	

2

3 Rate Path based on 3.95%, Discounted at 5%

Year Ending in March	2017	1 2018	2 2019	3 2020	4 2021	5 2022	6 2023	7 2024	8 2025	9 2026	10 2027	11 2028	12 2029	13 2030	14 2031	15 2032	16 2033	17 2034	18 2035	19 2036	
Change in Units																					
Annual Units Purchased	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Price Increase		3.36%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	3.95%	-1.16%	-23.77%
Nominal Price	1	1.03	1.07	1.12	1.16	1.21	1.25	1.30	1.36	1.41	1.46	1.52	1.58	1.65	1.71	1.78	1.85	1.92	1.90	1.45	
Discount Rate	5%	1	1.05	1.10	1.16	1.22	1.28	1.34	1.41	1.48	1.55	1.63	1.71	1.80	1.89	1.98	2.08	2.18	2.29	2.41	2.53
Discounted Price		0.98	0.97	0.96	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.85	0.84	0.79	0.57	
Annual Nominal Cost of Power	1000	1,033.60	1,074.43	1,116.87	1,160.98	1,206.84	1,254.51	1,304.07	1,355.58	1,409.12	1,464.78	1,522.64	1,582.79	1,645.31	1,710.29	1,777.85	1,848.08	1,921.08	1,898.79	1,447.45	
Cumulative Nominal Cost of Power		1,033.60	2,108.03	3,224.89	4,385.88	5,592.72	6,847.23	8,151.30	9,506.87	10,916.00	12,380.78	13,903.42	15,486.20	17,131.51	18,841.80	20,619.65	22,467.73	24,388.81	26,287.60	27,735.04	
Annual Discounted Cost		984.38	974.54	964.79	955.14	945.59	936.14	926.78	917.51	908.33	899.25	890.26	881.35	872.54	863.81	855.18	846.63	838.16	788.99	572.80	
Cumulative Discounted Cost		984.38	1,958.92	2,923.71	3,878.85	4,824.45	5,760.58	6,687.36	7,604.87	8,513.20	9,412.45	10,302.70	11,184.06	12,056.60	12,920.41	13,775.59	14,622.21	15,460.37	16,249.36	16,822.16	

4

1 In this set of reference conditions (hydrology, export prices, inflation, interest rates,  
2 operating costs, domestic demand, etc.), Manitoba Hydro's financial performance is  
3 adequate under either rate path, and the corporation continues to be financially self-  
4 sufficient throughout. Given that the 7.9% rate path imposes greater burdens on  
5 ratepayers, it would appear that the 3.95% rate path would be preferable.

6 However, the reference scenario does not reflect the potential volatility that Manitoba  
7 Hydro might suffer. It is merely the notional mid-point of a range of forecasted  
8 possibilities.

- 9 b) In order to more closely examine the scenarios, and calculate what level of rates might  
10 be best for ratepayers, it is important to establish that both scenarios satisfy minimum  
11 financial conditions such as "self-supporting" status. In PUB/MH II-41, Manitoba Hydro  
12 provides risk analysis for rate paths that are similar to what is shown in the table above  
13 until 2027. However, after 2027 the risk information provided by Manitoba Hydro is for  
14 different rate paths, and so is not applicable.

15  
16 Based on the risk analysis Manitoba Hydro has provided, it appears that both the 7.9%  
17 and the 3.95% rate paths meet minimum financial conditions, as defined by the P05  
18 position of interest coverage, through the year 2027. From the information in  
19 Coalition/MH II-1, it would appear that even at the P01 position both rate paths may  
20 meet minimum financial requirements (though note that the information in Coalition/MH  
21 II-1, was not updated for the interim rate decision, so it is not identical to the rate paths  
22 considered in the tables above). It is possible that an even lower rate path than 3.95%  
23 would also meet the minimum conditions, but Manitoba Hydro has not provided that  
24 data.

25  
26 Assuming two rate paths are calculated which both meet minimum financial health  
27 conditions under the same worst case probability scenarios (e.g., using Manitoba

1 Hydro's nomenclature, the P01 position, or the P05 position), then the rate paths can  
2 be fairly compared on a discounted basis.

3  
4 Alternatively, it is possible to structure a rate path which is conditional: for example, it  
5 will meet minimum financial conditions at the P05 position, but not if risks turn out to be  
6 worse than that (such as at the P01 position). In those cases, an interim rate increase  
7 will be required of some amount (which should be calculated). Effectively, that creates  
8 a rate path with a "fork" in it. It would be necessary to calculate the discounted costs to  
9 ratepayers in both forks of the rate path, and then produce a probability-weighted  
10 average cost to ratepayers for the forked path. Then, and only then, the forked path  
11 could be fairly compared to the higher rate path.

12  
13 With a larger data set on possible rate paths, and risk analysis of each of them, it  
14 would be possible to perform discounted cost analysis on all of the options to  
15 determine which was best for ratepayers.

16

1 **PUB/Coalition - 33**

2 **Reference:**

3 MPA Report Pg. 53 Line 26

4 **Preamble to IR (If Any):**

5

6 **Question:**

7 Please provide a description of how a debt servicing ratemaking formula could be employed  
8 in Manitoba.

9 **RESPONSE:**

10 Please see GSS-GSM/Coalition - 1.

11