

Public Utilities Board
Needs for and Alternatives to Hearing

Final Submission
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Principles and Perspective

TomorrowNow: Manitoba's Green Plan (which advances and foreshadows other provincial policies mentioned in the Terms of Reference) sets this target:

“Manitoba’s goal is to be one of the most sustainable places to live on earth.”

That aspiration has guided Green Action Centre and its predecessors throughout its 29 year history. GAC supports the Province in this endeavour (and points out when GAC believes the Province diverges from this path).

The Terms of Reference for the NFAT have set out how the Board is to consider the information provided in this hearing:

The report will include recommendations to the Government of Manitoba on the needs for Hydro’s preferred development Plan and an overall assessment as to whether or not the Plan is in the best long-term interest of the province of Manitoba when compared to other options and alternatives.

From the commencement of the oral phase of this hearing, however, Manitoba Hydro has suggested that what is being sought is a recommendation of the Keeyask Generating Station, the first phase of the Preferred Development Plan (the PDP) with the implied acknowledgement that confirmation of the Conawapa project is not yet possible. In Mr. Thomson’s address to the Board, he stated:

And I do want to underscore that the Preferred Development Plan is not without flexibility. While construction on the Keeyask generating station and other aspects of the Preferred Plan must begin shortly, Manitoba Hydro will always maintain the flexibility to respond to future circumstances

when it comes to future resources identified as part of the path. Conawapa, for instance, will only get built if the business case remains sound.
(Transcript p 77)

In Ms Ramage's opening remarks, she stated:

Over the course of the next eight (8) or nine (9) weeks, as you listen to the evidence, remember there are key decisions that government must make this June. Mr. Wojczynski is going to outline them in his presentation later this afternoon. But in a nutshell they are: Do we continue to capitalize on our water-rich resources and commit to the construction of the Keeyask generating station? And do we commit to construction of a new interconnection with exp -- with our export customers to the south and the export contracts that facilitate that interconnection? And if so, will that be a 250 megawatt transmission line or a 750 megawatt transmission line?
(Transcript pp 71-72)

In effect, the PDP changed over the course of this review. Manitoba Hydro focussed its efforts and abilities on justifying the development of the Keeyask project and the 750 megawatt transmission line. In comparison, significantly less information has been provided to the Board to justify the Conawapa project. Over the course of this hearing the Board has heard from the experts within Manitoba Hydro as well as a myriad of experts on behalf of the Interveners and the Independent Experts. The Board ought to use the information provided as a collective discovery of whatever might be the best plan for now with recommendations for implementation and going forward. The Board has the opportunity to perform a belated and incomplete participatory Integrated Resource Plan to assist Manitoba Hydro and the Manitoba Government to move forward into the future.

The primary commitment to sustainability is further interpreted by *The Climate Change and Emissions Reduction Act*, committing Manitoba to lower greenhouse gas emissions as part of a global effort to mitigate climate change, and by *The Sustainable Development Act*, which sets forth Principles and Guidelines of Sustainable Development including the provision for full cost accounting that takes account of external factors not included in financial transactions.

A further consideration at the core of these proceedings is risk mitigation. While much of the focus has been on financial risks to ratepayers, Manitoba Hydro and the Province, it is crucial that solutions to Manitoba's need for power enhance rather than detract from global efforts to mitigate climate risk. Risk mitigation strategies require robust solutions that perform well whatever the future may bring while also contributing to a better future.

In Manitoba Hydro Exhibits #191 and 191-1 and its attachments, MH has compiled and summarized numerous studies on climate change impacts experienced and forecast in Manitoba, the U.S. as a whole, and the U.S. Midwest. Additional information was provided by Dr. David Barber, including an account of the stasis of the polar vortex over North America last winter (slide 11/23). While

some effects may be benign (e.g. a longer growing season in Manitoba), the experienced and predicted increase in extreme events can be quite costly. Think of some of the 1% increase in PST to repair infrastructure damaged by the 2011 floods, the recent 5% rate increase requested by Manitoba Public Insurance on account of increased collisions last winter, and the maintenance and disrupted transportation costs of the winter road system built over thawing permafrost as foretastes of the kinds of costs that might be expected.

Finally we note that, although rate impacts are mentioned as one consideration among many others, the Terms of Reference prescribe a societal perspective to determine:

If the Plan has been justified to provide the highest level of overall socio-economic benefit to Manitobans, and is justified to be the preferable long-term electricity development option for Manitoba when compared to alternatives.

GAC notes that the Manitoba Hydro Act states

Purposes and objects of Act

2 The purposes and objects of this Act are to provide for the continuance of a supply of power adequate for the needs of the province, and to engage in and to promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of power and, in addition, are

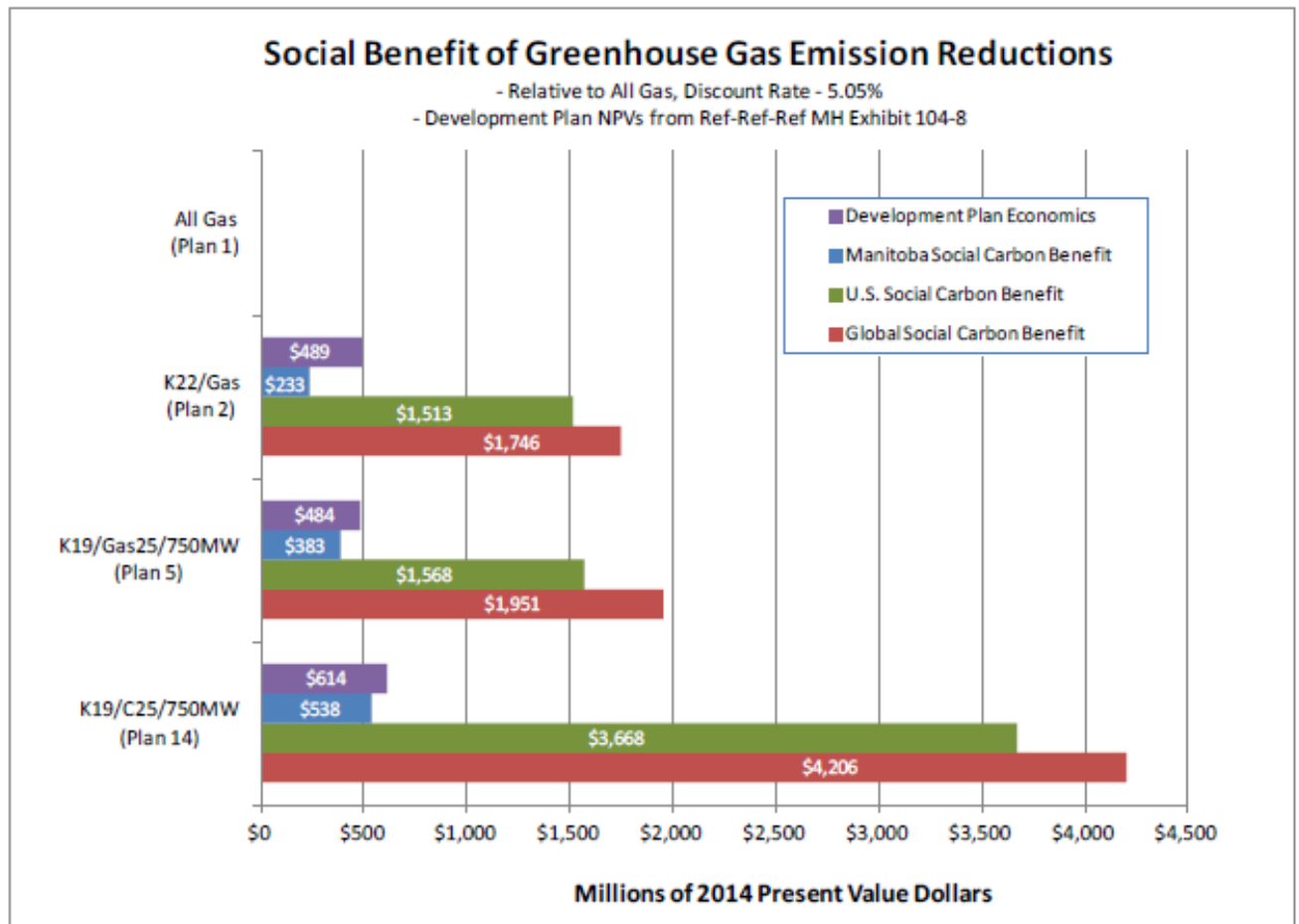
(a) to provide and market products, services and expertise related to the development, generation, transmission, distribution, supply and end-use of power, within and outside the province; and

(b) to market and supply power to persons outside the province on terms and conditions acceptable to the board.

It is the position of GAC that when considering the societal perspective the Board ought to be considering the broader societal issues such as jobs and other economic benefits; revenue flows to the Province from water rentals, taxes and the debt guarantee fee; and the impact of the PDP and its alternatives upon GHG emissions both within and outside of Manitoba. The Act specifically states that its purpose includes the consideration of the end-use of power within and outside of the province.

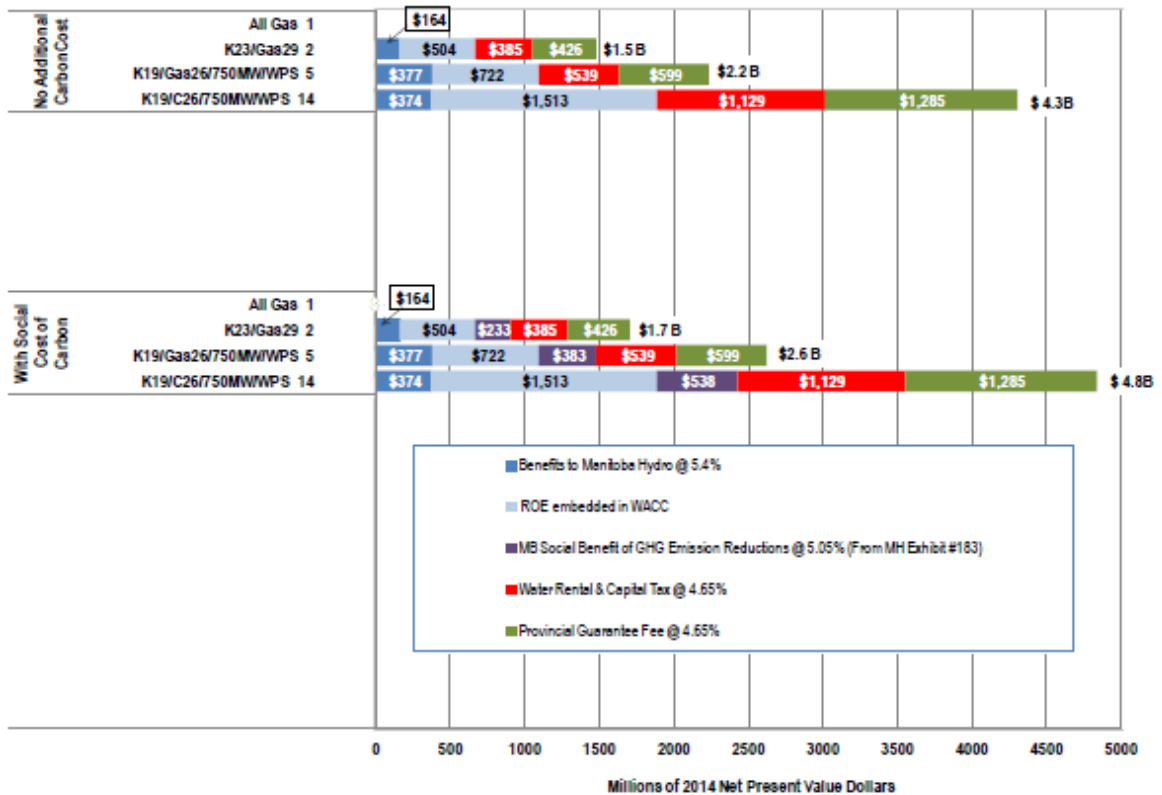
The social benefit of greenhouse gas reductions and the economics of plans with the 750 MW interconnection, including provincial benefits are illustrated in MH Exhibits # 185 and # 190 (revised), whose figures are excerpted below.

Figure 1



Economics of 750 MW Interconnection Plans including MH ROE Embedded in WACC

- 2013 Reference Scenario Assumptions
- 2014 Capital Cost
- NPV Relative to All Gas
- Base DSM Level



It is the position of GAC that the presentation of Manitoba Hydro was deficient in several areas. In particular, GAC points to the failure to treat Demand Side Management as an alternative to new generation and to inadequate analysis of wind as an alternative to northern dam construction.

Demand Side Management

In previous GRAs, Green Action Centre has noted that demand side management (DSM) is a robust investment in sustainable energy whether or not further development is contemplated.

Figure 2: Comparison of Manitoba Load Winter Peak Capacity Forecast for 2008-2012

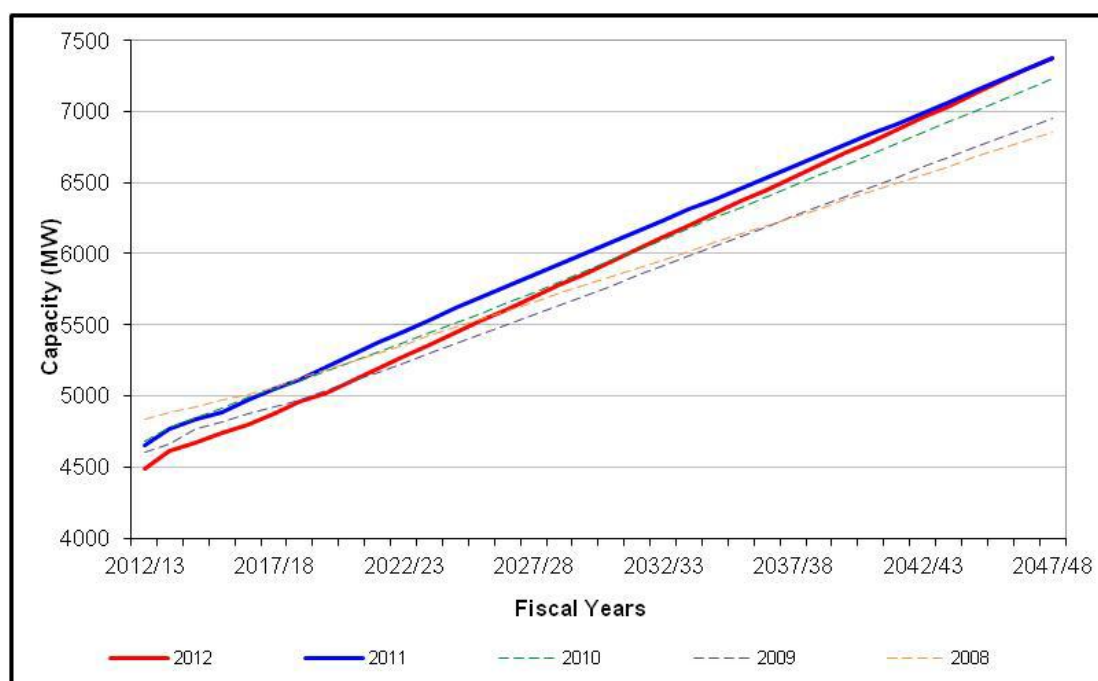


Figure 2 above from Manitoba Hydro's 2012 load forecast shows winter peak load rising 2900 MW over 35 years, i.e. 2/3 higher than the present and exceeding Conawapa + Keeyask by another Keeyask. That is an unsustainable rate of demand growth for our renewable, but finite hydroelectric system. There are limited generation sites on the Nelson River. Such a rate of growth erodes our ability to pay for our system through export earnings and build resilience among Manitoba consumers through efficiency. DSM maintains or adds to the exportable surplus and builds customer resilience while extending the potential of hydroelectricity to meet our needs.

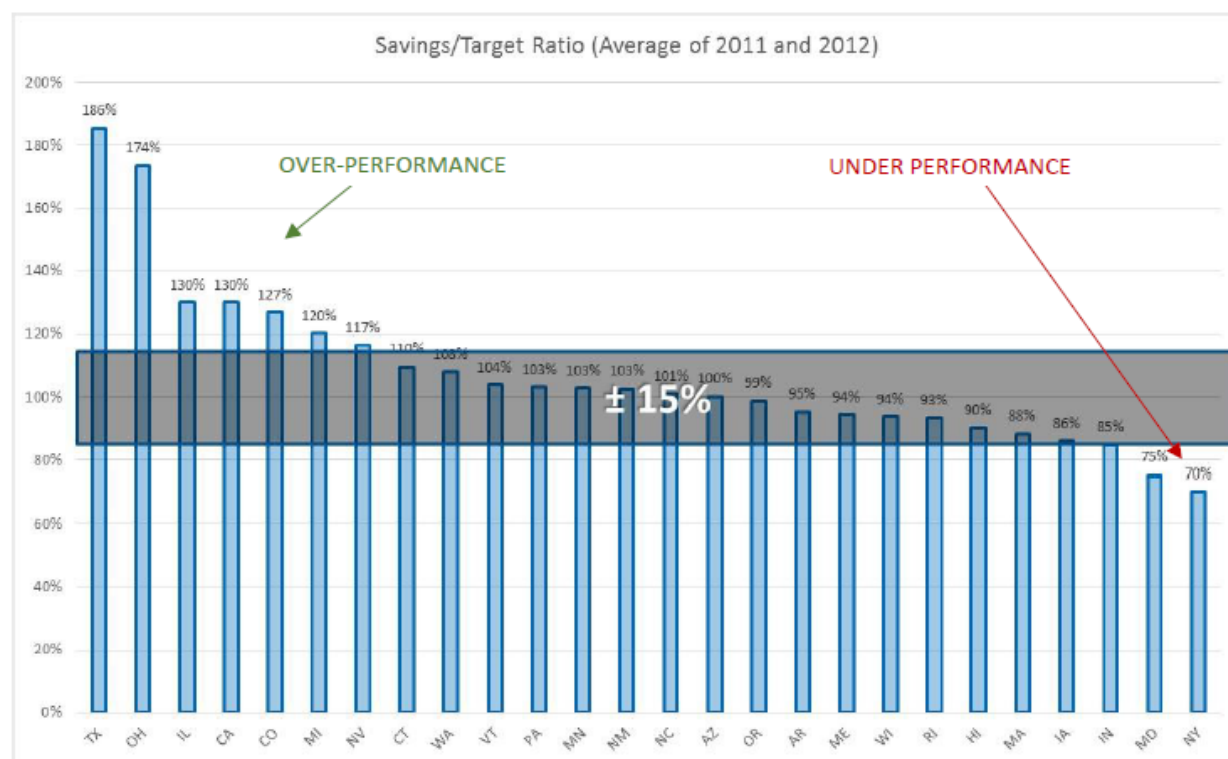
The evidence of several witnesses suggests that Manitoba Hydro can offset all of its currently projected growth in domestic load with DSM measures. The Board heard this position advanced by the La Capra witnesses, Dunskey, Chernick and Harper. The evidence from these witnesses was that other utilities have offset all load growth, and even reduced their load over time.

Energy efficiency reduces costs to customers; reduces heat loss during outages; reduces Manitoba Hydro's need to invest in generation, transmission and

distribution; reduces line losses; creates local jobs in existing communities; increases export revenues; and reduces emissions of greenhouse gases and other pollutants. Moreover DSM has been a very dependable resource for utilities (See the excerpt below from Undertaking #133, CAC Exhibit #90)

Response:

The chart below summarizes the information provided in Appendix D of the ACEE report. Specifically, this shows **average realized DSM savings over the two years covered by the report (2011 and 2012)**, expressed as a % of the planned savings for that same two-year period. The chart shows a range of +/-15%. The cases that fall below this range will be discussed below.



As part of its DSM effort, Manitoba Hydro needs to focus on a problem that it has recognized, but failed to meaningfully address: fuel choice.

- Manitoba Hydro recognizes that using gas for most space and water heating applications is superior in every way to using electricity:
 - Lower cost for the user
 - Lower cost for Manitoba Hydro and other customers
 - Beneficial to other Centra customers
 - Reduces greenhouse gases and other pollutants
 - Improves provincial balance of payments
- Manitoba Hydro has only studied the problem in single-family residential, but it is probably similar in multi-family and commercial
- Serious market failures:
 - Most new homes have electric space and water heat, which developers select for their convenience and profit
 - Contractors switch gas customers to electric water heating, for their convenience
 - Customers have been switching from gas to electricity
- Manitoba Hydro response has been limited to an information campaign

- No technical assistance, no cash incentives, no changes in Manitoba Hydro and Centra line-extension and hook-up policies
- Manitoba Hydro recognizes that it needs to do more, and can do more.

Manitoba Hydro Rebuttal to DSM Evidence Exhibit MH 85-2.

- First, the analysis on p. 6 starts with load forecast that includes Manitoba Hydro's speculative projection of new pipeline load.
- Manitoba Hydro has not demonstrated that new pipelines would choose electricity over natural gas for compression and pumping energy, especially since waste energy from gas compressors can be used to generate electricity.
- If Manitoba Hydro prices the power for pipelines at the projected export price (which is greater than the cost of new gas generation), it is hard to see why the pipeline would choose electricity.

- Second, Manitoba Hydro then subtracts its “Level 2 DSM,” from MH Exhibit 104-3 p19, which is a mere shadow of the scale of DSM programs from leading utilities and jurisdictions:
 - Serious utilities get savings over 1.3% annually, with some ramping up to more than 2%.
 - The Level 2 DSM plan raises energy savings from 0.5% of usage in 2013/14 to a creditable 1% in the next two years and to a first-rank 2.1% in 2016/17, but then drops savings back to about 1% for three years, 0.5% in 2020/21, and ramps the savings down to just 0.2% by 2028/29.
 - Even those Level 2 savings include conservation rates and customer-owned generation, which are not generally counted in DSM savings. So MH’s projected energy-efficiency savings (as those are defined by comparison utilities) are even smaller than shown in Exhibit 104-3.
- Third, Manitoba Hydro compares the expected surplus to the “Economic and Model Standard Deviation” from Appendix D, p. 44.

- That standard deviation was estimated somehow from “Variations in annual weather adjusted load that have occurred in the past” (ibid). Manitoba Hydro provides no other explanation for how it computed future load forecast uncertainty from the annual variation in load. A recession, for example, produces low growth for a year or two, followed by recovery; even though there is lots of variation in the short term, it may make no difference in the long term.
- In this computation, Manitoba Hydro does not reflect the fact that higher loads create additional opportunities for DSM.
- Nor does Manitoba Hydro reflect any probability that the speculative pipeline load will not materialize.
- As its conclusion, Manitoba Hydro presents what it claims to be the probability that “Load Growth Uncertainty Exceeds Surplus.” Manitoba Hydro seems to mean “the probability that actual load exceeds the adjusted forecast by less than the adjusted surplus.”
- This is a bit confusing, since the large numbers are actually low probabilities of a problem.

- Manitoba Hydro claims that, “given uncertainty in load growth, new supply could be required in 2023 with 41% probability or 2022 with 31% probability.” (p. 5)
- Increased DSM and fuel switching would greatly reduce these probabilities.
- This additional load will not appear overnight and (using Manitoba Hydro’s methodology) most of the probability would be in small exceedences. Of the 31% probability of load exceeding the surplus in 2022, Manitoba Hydro’s method implies a third of the exceedences could be met with the addition of less than 100 MW of wind, and two thirds with 250 MW.
- If growth rates turn out to be higher than expected, MH can add wind resources within two years, at lower cost and risk than Keeyask.
- In order to maximize the economic and environmental benefits of energy efficiency and appropriate fuel choices, Manitoba Hydro must do more than simply express interest in those resources.

- Manitoba Hydro has a tradition of projecting substantial (although much less than state-of-the-art) DSM savings for a few years, followed by a rapid decline to trivial levels.
- In the course of this proceeding, Manitoba Hydro has proposed additional energy savings beyond the level proposed at the time of the filing, but has not been able to provide consistent values for those savings.
- The Level 2 DSM savings from MH Exhibit 104-3 (p. 19) match the Level 2 DSM savings from the table on MH's original Rebuttal (p. 31) through 2017, but are only about 75% of the Rebuttal values in 2018 and half the Rebuttal savings in 2019.
- The graph of DSM levels on p. 31 of the Rebuttal shows still higher Level 2 savings, inconsistent with both the table on the same page and MH Exhibit 104-3 p. 19.

The Rebuttal evidence on Oral Evidence suggests that there is significant uncertainty regarding the potential savings achievable through DSM (Exhibit MH 85-2). Mr. Dunskey in his presentation (CAC 62) discusses the Planner's Dilemma of how to account for the not-perfectly known. Mr. Dunskey's evidence on this

point is that the DSM potential replenishes itself at roughly the same cost.

Manitoba Hydro has been concerned with its ability to continue to find DSM savings in the future. Mr. Kuczek spoke at length on this issue in the 2011/2012 GRA hearing at pages 5767-5771.

GAC is of the view that the demand side management team has not been given the credit it deserves in the planning process by Manitoba Hydro. GAC is of the view that conservation rates, fuel switching measures and load displacement programs provide significant opportunities to Manitoba Hydro to meet and exceed the targets set as DSM savings in the foreseeable future. The demand side management team is an award winning group that has introduced programs that have produced significant savings to the Manitoba consumer and that have resulted in substantial reduction of the Manitoba load. This group can achieve the targets believed to be realistic by Messrs Dunskey and Chernick if given the opportunity.

However Manitoba Hydro's rebuttal cautions "Further work will need to be undertaken prior to making a decision on the initiatives included in Level 2 DSM" (MH Rebuttal at 30). We are mindful of the difficult history of establishing

conservation rates and fuel switching programs and the need for resolve and support from Manitoba Hydro to create a significant and enduring level of DSM.

Wind as an alternative

GAC submits that the evidence establishes that the analysis of wind as a source of power in these proceedings has been inadequate. MH's assumptions about the cost of wind are incorrect in a number of respects, all of which have exaggerated the cost of wind. Areas of concern include

- Capital cost
- Construction schedule
- Expected project life
- Assumption that costs will remain constant over the long term
- Wind integration costs

Using evidence-based assumptions, Power Advisory has estimated that the cost of wind on a Levelized Cost Of Energy (LCOE) basis, is lower than that of either Keeyask or Conawapa.

- See table from p. 9 of GAC's evidence on wind

Technology	LCOE	Source
On-shore Wind (MH Original)	\$84.07	LCOE spreadsheet, tab 22 (MH response to IR LCA/MH I-308)
On-shore Wind (PA)	\$64.88	Power Advisory
Keeyask (updated)	\$68.26	MH Undertaking #41 (Exhibit #114)
Conawapa (updated)	\$72.29	MH Undertaking #41 (Exhibit #114)

In addition, MH has not adequately considered wind in the Plans that it analyzed. Wind was only considered in two of these plans. Neither of these plans was optimized with respect to the quantity and timing of new wind and gas generation. No consideration was given to the potential of wind to be integrated with hydro to increase Manitoba's exports. None of the Plans considered include both wind and new interties.

- Here's what should be done with the [ideal] IRP process regarding wind

- Reasonable cost assumptions, based on evidence from a range of sources that focus specifically on wind
 - For capital costs, the U.S. Department of Energy's annual *Wind Technologies Market Report* is an excellent source, as it is based on a survey covering most of the capacity installed in the U.S. in each year. This could be supplemented by an engineering report on the *difference* between average U.S./North America costs and costs specifically in Manitoba, due to factors such as special cold-adapted equipment (higher cost), and the ease of installation (lower cost)
 - For project life, consult wind developers
 - For trends in costs, consider surveys from multiple reports, taking into account trends toward larger turbines and taller towers.
 - For wind integration costs, take into account MH's actual experience to date.
- Consider the potential for wind-hydro integration to increase exports
 - Detailed (at least hourly) computer modelling of Manitoba's system with additional wind, with reduced hydro generation

when wind is available to service domestic load, resulting in more hydro generation available for export when value is highest

- Consider scenarios/plans that include additional wind PLUS additional hydro and/or additional inerties
 - All scenarios/plans should be optimized to minimize net cost before comparison to other scenarios.
- Consider the potential for wind to mitigate the risk of supply shortfalls
- Wind sites could be developed to a preliminary level (requiring approximately 5% of the total capital cost) and held in reserve
 - In case of supply shortfalls (due, for example, the higher-than-expected economic growth, a large industrial load, or under-performance of DSM measures), wind projects could be brought to commercial operation in approximately two years, adding energy and freeing hydro capacity to serve peak times and/or export commitments.

Keeyask and the 750 MW Transmission Line

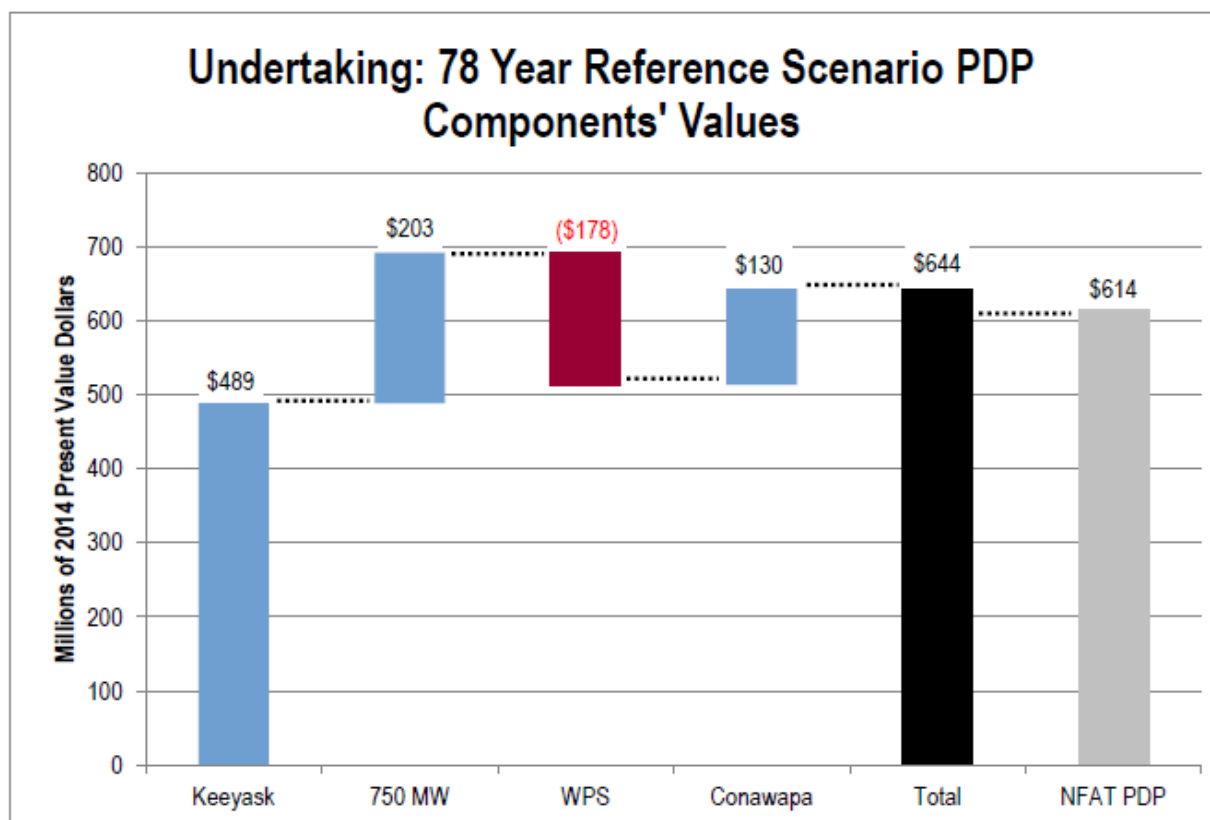
Even if Keeyask is not needed or economic for domestic load, it may be beneficial for firm export sales and facilitating construction of additional transmission to the US.

The transmission line appears to be valuable for additional firm and economy exports (including revenues from firming and integration of US wind resources), imports in drought conditions and Northern transmission outages, increased reliability, and reduced GHG emissions.

Manitoba Hydro appears to have many options for additional firm exports. The Board should give Manitoba Hydro an opportunity to demonstrate the cost-effectiveness of Keeyask for firm and surplus exports, without excessive delay.

Although Manitoba Hydro has indicated that it seeks approval at this time only for Keeyask, the 750 MW transmission line to the U.S., and its signed export contracts, their analyses are predominantly of entire development plans including future phases with Conawapa and/or gas. However La Capra Associates has provided some insight into the value of plan components with its waterfall analyses. Exhibit LCA-57 Undertaking #108 shows that most of the value in Hydro's PDP stems from the construction of Keeyask and the 750 MW intertie. It

is not clear why, with Keeyask and the intertie built, the WPS contract should be a loss in this depiction, but there is no opportunity to investigate at this point.



UPDATED Figure 9-99U: Value of PDP Components – 78 Year NPV vs. All Gas

On the opening day of the oral hearing, Green Action Centre asked Scott Thomson whether their development plan would be profitable under the assumption that a flat domestic load could be achieved through DSM and other measures. Mr. Thomson replied (transcript p. 245):

But if -- if we -- if we built the -- the -- if we built the projects and never needed them domestically and we were selling power under those contracts at the -- at

the prices that we've -- we've done in the early stages, and that lasted over the life of the project, I think they'd be wildly successful and profitable.

Manitoba Hydro supplied Exhibit #156 to demonstrate Mr. Thomson's claim (although the public version is more conservative because it uses forecast prices rather than the higher contract prices – presumably the PUB has had access to the more optimistic result). Hydro also indicated that the demonstration did not include Conawapa in the exercise because export interties could not accommodate Conawapa's additional capacity under the assumption of a flat domestic load. MH-156 does include two cases – the NPV of a flat load without new generation or transmission and the NPV with the addition of Keeyask and the 750 MW intertie. These results are shown in the tables below. The first includes an equity component which the second excludes. Depending on which assumption is used, a flat load without new generation or transmission returns either 3.160 or 3.675 billion dollars. Adding Keeyask and the 750 MW intertie adds either 0.402 or 1.190 billion dollars in NPV. Additional benefits accrue to the Province.

	Present Valued at a real WACC of 5.4%		
	Capital Costs PV Millions 2014\$	Revenue PV Million 2014\$	Revenues – Costs NPV Millions 2014\$
No new Generation	0	3160	3160
Keeyask 2019 & 750MW interconnection	4605	8167	3563
Incremental NPV			402

	Present Valued at a real WACC of 4.65%		
	Capital Costs PV Millions 2014\$	Revenue PV Million 2014\$	Revenues – Costs NPV Millions 2014\$
No new Generation	0	3675	3675
Keeyask & 750MW interconnection	4816	9681	4865
Incremental NPV			1190

Unfortunately the comparison lacks any investment for achieving a flat load. We asked for an updated comparison assuming a cost of 3 cents/kWh set alongside the other plans under consideration but were told, “Manitoba Hydro is not able to complete this request within the time allotted to this process” (email from Marla Boyd, May 9, 2014).

So we are left with this imperfect demonstration that, under flat load conditions, Keeyask plus the intertie are still able to provide incremental value. We also learn from Manitoba Hydro’s responses that there could be a major risk from

overbuilding with Conawapa beyond export transmission capacity. Under this circumstance, the temptation would be strong for Manitoba Hydro to cut its otherwise cost-effective DSM programs when the alternative to revenue-generating domestic load growth is to spill water while paying down the enormous debt from Conawapa.

Recommendations

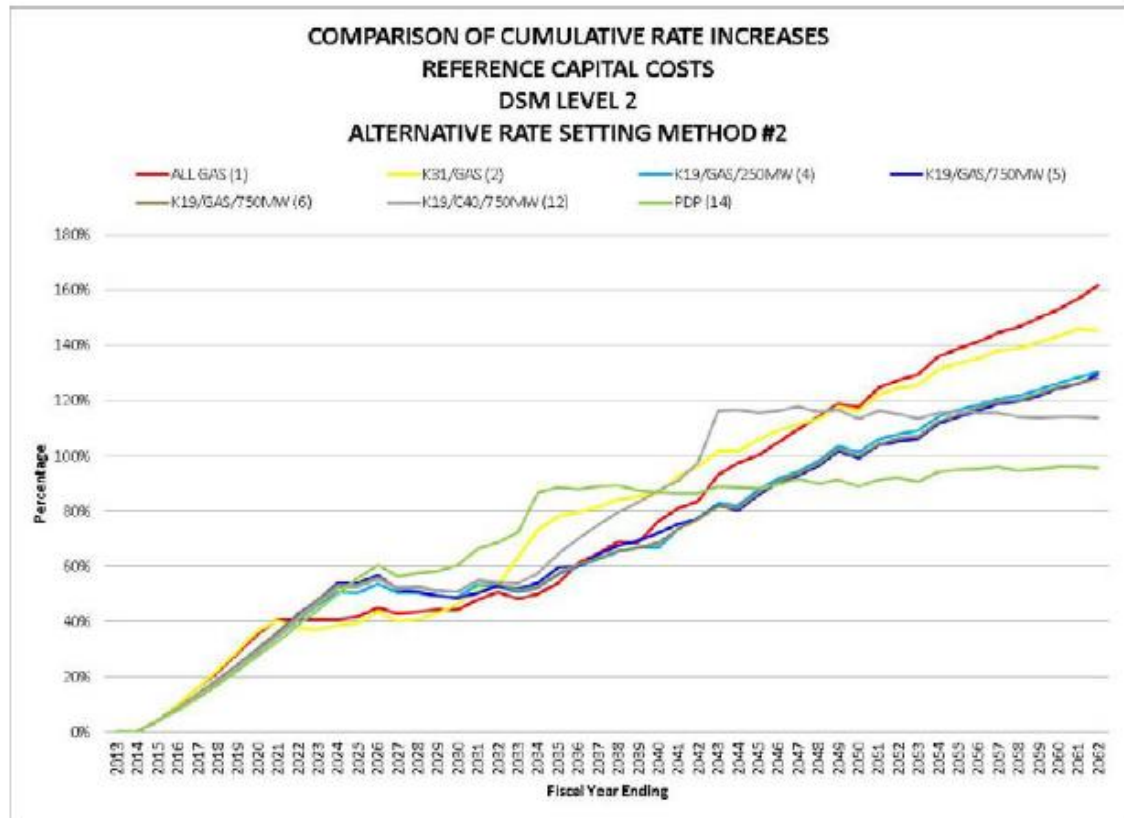
In light of these policies and considerations and the evidence provided, Green Action Centre makes the following recommendations.

1. MH should immediately and aggressively pursue DSM in the short term as proposed for Hydro's level 2 DSM but augmented farther out with the goal of achieving a flat load in accord with evidence from Philippe Dunskey and Paul Chernick.
2. Ancillary to an aggressive and enduring DSM commitment, MH should pursue enabling and supportive policies, including conservation rates, programs encouraging the selection of alternative fuels over electric heat, and

mechanisms for facilitating customer-owned generation and energy substitution using waste heat and industrial and agricultural byproducts.

3. Because rates will rise faster than inflation under all plans, vulnerable persons with a high energy burden require bill mitigation through targeted retrofit and efficiency programs, special rate design and, in some cases, discounted bills. It would be a mistake to pick a sub-optimal plan that will cost everyone more in the long run because of marginally different rates in early years. Instead pick the plan with the greatest environmentally sustainable socio-economic benefits and use the wealth it generates to devise mitigation measures for vulnerable persons. (See figure 1 from p. 2 of MH Exhibit #104-12-5 below.)

Figure 1 compares the cumulative rate increases of the development plans without the potential pipeline load at **DSM Level 2** under Alternative Rate Methodology #2.



4. The PUB should approve Keeyask and the 750 MW transmission intertie to Duluth for immediate construction.

The new 750 MW intertie to Minnesota (expandable to 1100 MW), with complementary reserved transmission to Wisconsin, is the most important asset in Hydro's plans. It has net benefits to Manitoba and contributes to regional sustainability, including facilitation of economic firm exports,

economic imports (particularly in drought conditions and to meet winter peak load, but also for profitable resale on-peak), enhancing other renewable resources by firming wind and solar power, and enhancing the reliability of domestic power supply. While the evidence in support of Keeyask for domestic need is more equivocal and the analysis under flat loads is sketchy, Green Action Centre believes that Keeyask is likely to be justified for exports, especially because a commitment to that plant appears to be necessary to promote the prompt construction of the intertie and it already has its capacity contracted out in profitable sales for the early years.

5. No comparable case for Conawapa has yet been presented and no approval of Conawapa should be granted at this time. Indeed, with present and planned transmission capacity there is a risk of overbuilding with Conawapa to create the unwelcome situation of Hydro Quebec, as described by Mr. Dunsky. Conditions that might make Conawapa more attractive include higher gas prices, carbon pricing, additional transmission (beyond the 750 MW intertie) and a suite of long-term export contracts at favourable prices.

6. There is a strong case against adopting a development plan that includes new natural gas generation, especially for baseload.

Minnesota's legislation against new base power supply from fossil fueled generation is (a) a complement to Manitoba's Clean Energy Strategy and (b) a warning that, as US states adopt various renewable energy standards, Manitoba may lose export customers (or pricing advantages) if it surrenders its clean energy brand and adopts gas generation for new supply. These economic considerations only strengthen Manitoba's own policy commitments to clean energy. In the coal-dominated generation fleet of the MISO region, replacement of coal by natural gas generation is seen as a carbon mitigating transition, but the opposite is true for a choice of natural gas instead of wind or hydro power. To see gas generation as an attractive option, one has to ignore environmental externalities and be willing to accept subsidization of our power from unmitigated, uncompensated climate change harms and look only to the narrow utility account while ignoring the broader social perspective prescribed by the Terms of Reference. And, while gas may put less capital at risk than new hydro generation in the short term, there are greater fuel and carbon cost risks. Moreover, unlike gas, hydro investment produces a

significant cash flow to the Province from water rentals, capital tax, and the debt guarantee fee, which could be used for a variety of social benefits including the mitigation of bill impacts on vulnerable persons, tax relief or economic stimulus measures.

It is important to distinguish the impacts of natural gas used for heating in Manitoba and natural gas used to generate electric power, whether in Manitoba or elsewhere. Because of the difference in their efficiencies, (>90% for a gas furnace vs 20-50% for gas turbine or coal power generation), heating with electricity causes significantly more GHGs to be produced by the North American energy system than heating with a high-efficiency gas furnace (GAC #22, slides 5-14). This could change in several decades when the generation mix changes significantly, but for now converting to electric heat to achieve fossil freedom only increases the net environmental impacts of your heating choice. Because of potential confusion and because the practice with the least impact may change over time, both public education and natural gas policy development are desirable. For example, what are the possibilities for implementing a “renewable natural gas” premium option for gas customers who wish to green their heating without increasing emissions elsewhere, such

as Mr. Thomson's former employer, FortisBC offers?

7. Options for future resource plans should be developed through an integrated resource planning process – planning done right.

The current NFAT process has had to accommodate new alternatives proposed by Manitoba Hydro, Green Action Centre, Consumers Association of Canada and La Capra Associates. It is a testament to the hard work and dedication of all parties, Hydro in particular, that a considerable volume of re-analysis has been accommodated within the process. Nonetheless Green Action Centre believes there is ample evidence from the last-minute scramble and inadequate attention to alternatives within the rigid timeline of the formal NFAT review to demonstrate that earlier exploration of considerations and alternatives from informed stakeholders and outside experts in the course of integrated resource planning would have been preferable. For example, Manitoba Hydro has indicated to us that they are unable to provide a comparative economic evaluation of the two flat load plans (with and without Keeyask and new transmission) within the timeframe of the NFAT process despite considerable interest shown by the PUB in these options.

Here are a few items that a future IRP process should consider:

Hydro

- i. Identify opportunities for increasing the ability of Manitoba's hydro resources to provide valuable services to complement wind
 - 1. Ramping and load following
 - 2. Storage
- ii. Identify events and conditions that would trigger reviving Conawapa option, such as new intertie capacity, higher gas prices and carbon pricing, and new firm contracts with long horizons reflecting the higher prices.

Remaining fossil resources

- i. Maintain some as backup in drought
- ii. Determine whether backing out usage in normal water years is cost-effective, using wind, small hydro, solar

With respect to process, we believe that outside facilitation, say by PUB staff, and staged input by stakeholders into the consideration of resource options before a plan is completed and sewn up can benefit the planning outcomes and increase understanding and ownership of the planning process by Manitoba citizens.

8. Finally Green Action Centre believes that stakeholder input can benefit other planning topics like conservation rates, bill mitigation, and natural gas strategies with respect to both gas generation and gas heating that optimize commitments to global and local reduction of GHGs. We note that Mr. Kuczek has already scheduled a stakeholder meeting in early June to consider the design of and issues around conservation rates and that MH Exhibit #199 indicates that “Manitoba Hydro is open to expanding the discussion arrangements concerning the Corporation’s resource planning including DSM, supply technologies and options and how they might fit into resource plans.” Green Action Centre welcomes these indications and notes that they are consistent with the principles of sustainable development as found in the Sustainable Development Act; the Consultation on Sustainable Development Implementation (COSDI) recommendations, to which the Province has subscribed; and the practices of other utilities such as Seattle City Light and BC Hydro.

All of which is respectfully submitted this 20th day of May 2014.

W.S. Gange

Counsel to Green Action Centre