April 14, 2014

General Service Customer:

Re: Manitoba Hydro Needs For and Alternatives To (NFAT) Review Update from the Manitoba Industrial Power Users Group (MIPUG)

The Manitoba Industrial Power Users Group (MIPUG) has undertaken the NFAT Communication Initiative to communicate to other business customers in Manitoba about the ongoing progress and key facts and conclusions coming out of the PUB review of Hydro's NFAT. MIPUG was also encouraged by the Public Utilities Board (PUB) to help disseminate this information and help other businesses share their views.

This update letter is the second of a series of communication initiatives to help distribute NFAT hearing-related information that is likely to be of interest to commercial and industrial customers. The first communication document was distributed in October, 2013 and provided an overview of Manitoba original Hydro's NFAT filing.

The attached status update provides information as it currently exists on the NFAT filing.

The NFAT review hearing remains underway before the PUB and will be wrapping up in mid-May. The PUB is accepting 15-minute presentations from interested parties as part of the review in Winnipeg, and also in Thompson on May 14, 2014. Any customer interested in scheduling a presentation should contact Josée Lemoine at publicutilities@gov.mb.ca.

For questions or comments about this update, please contact Melissa Davies at mdavies@intergroup.ca.

INTRODUCTION

The Manitoba Hydro "Needs For and Alternatives To" (NFAT) hearing continues, having completed 25 days of testimony as of April 10, with 21 further days scheduled prior to final arguments being submitted in mid to late May.

What are the key issues being debated?

The NFAT hearing has been framed by Hydro, (based on the case as it now stands) as follows:

1) What should be the next major base load generation source for Manitoba – natural gas or hydraulic?
    - *This presumes that all economic DSM will be pursued, load forecasts will be monitored, Hydro will continue to be open to supply options like a wind Independent Power Producer (IPP) if economic option comes along etc., but at some point new base load resources will be required. The original NFAT was based on this date being 2022/23, but with updated load forecasts and new expected DSM levels the date is now more likely to be at least 2023/24 to as late as 2030/31 or beyond.*
    - *Using the last available figures, with the gas option, Hydro is expected to spend approximately $19 billion in capital over the next 20 years (all projects, both system renewal and new projects including Bipole III). With hydraulic generation, this increases to $24 billion, or a net increase of approximately $5 billion.*

2) If the answer to question #1 is hydraulic, then should Manitoba Hydro wait for the target date, or should they take up the current Minnesota Power opportunity (i.e., decide to build Keeyask for approximately 2019/20, sign a 250 MW export contract with MP, and build a new 750 MW transmission line to the United States)?
    - *The MP contract on offer **requires** new hydro generation in Manitoba by 2019/20 (with some provision for short delays in this date) which can only be Keeyask, as it is the only plant that is advanced enough in planning. At one time this option was offered with a lower cost 250 MW transmission line, but that option has been taken off the table in negotiations with MP, so the more costly 750 MW line is now required.*
    - *While the MP contract is the focus, as they are the other party that will invest in the line, there are other contacts that will also be part of this option.*
    - *The total net capital spend over the next 20 years is not increased by this option, it remains at $24 billion.*

3) Should a larger plan be pursued that also includes a 308 MW sale to Wisconsin Public Service with Conawapa GS?
    - *The contract to sell 308 MW to Wisconsin GS is predicated on Conawapa. If MH builds Conawapa by 2031 then the contract comes into play. If not (for example, if*

loads are lower and it is decided Conawapa is not yet needed), then there is a provision that either MH or WPS can walk away; however, there is an expectation that WPS would still be satisfied with buying the output of Keeyask and the deal would still go ahead.

- *Total 20 year capital spending is estimated at $32 billion, or $8 billion higher than without Conawapa.*

Hydro's Preferred Development Plan (PDP) remains Keeyask 2019, a 750 MW line to the US, take up the contracts with MP and WPS, and likely build Conawapa although Hydro acknowledges that it is not necessary to make final decisions on Conawapa for at least 4 years and it may turn out at that time that the best decision is to delay Conawapa up to 5 years, or cancel the project altogether.

The only major capital investment decisions Hydro absolutely requires today is whether to start building Keeyask for 2019, and to pursue the 750 MW line.

How are the options being compared?

Hydro has produced many economic/financial metrics to measure the benefits of the different plans. The metrics each tell a different aspect of the proposals. Among the three more important metrics are the following (each is described below): 1) the economic analysis of what is termed the "REF-REF-REF 78 year NPV"; 2) the average annual rate increases necessary under the plan over 19 and over 50 years; and, 3) the peak level of debt that Hydro reaches during the first 20 years of the plan.

For the REF-REF-REF 78 year NPV, this is measured as follows:

- **REF-REF-REF** refers to reference, or most likely, conditions. Hydro has also produced analyses for varying conditions for HIGH and LOW export and natural gas prices, project capital costs, and interest or discount rates. The "weighted average" of all of the future ranges is called the Expected Value (EV) and is an alternative measure to the REF-REF-REF metric.
- **78 year** refers to the horizon of the analysis over the very long term (35 years of detailed analysis, and a further 43 years of extrapolation). Other shorter periods can be calculated as well, but these tend to be very unfavourable to hydraulic generation as one of its key benefits is that it lasts very long (in some case 125 years or more).
- **NPV** means that all incremental costs and export revenues of the plan are calculated. The total net costs and export benefits of the plan are calculated over this period to a single number, the Net Present Value, or NPV. The NPV is not particularly meaningful in and of itself, it is only meaningful in comparison to the other plans – it indicates which plan is the most economic option over this long-term period.

For the rate impacts, the calculations are approximated assuming that rate changes will be equal each year for the first 19 years. However, the rate change analysis has not been updated recently, despite the major changes that have been included in Hydro's recent plans, as noted below. As a result, not as much focus is currently being placed on the rate impact measure until the updated data is provided in the next week.

How have the plans changed since the NFAT was filed?

There have been 4 major changes since the NFAT was filed:

1) Hydro has now decided that it is likely to pursue far more DSM than originally assumed. Also the load forecast is somewhat lower, but there remains a large potential offsetting load related to new pipelines. Overall, net loads (after DSM) are down and are well below that originally assumed in the NFAT. This does not affect some of the plans, but has major effects on others.
2) Hydro has now received bids to build the Keeyask generating station and they are somewhat higher than anticipated. As a result Hydro has raised its estimates for Keeyask costs and Conawapa costs (each by about 5%).
3) The WPS export deal has been finalized (108 MW from 2016-2021 and 308 MW for up to 10 years starting 2027). The final deal is somewhat different than the deal assumed in the NFAT, most notably as WPS will no longer make any investment in the US transmission line.
4) After the NFAT was filed, based on 2012 information, various items were updated to 2013 values. This includes such matters as interest rates, export prices, and load forecasts.

This overall update is particularly hard on the PDP economics.

ECONOMIC RESULTS

What are the most up-to-date economic analysis results?

The economic analysis provides a Net Present Value (NPV) measure of the entire sequence of economic impacts of deciding on one plan versus another. It does not tell the whole story – for example, economic analysis ignores costs spent to date (sunk costs) as these cannot be changed now. It is only an assessment of the choices ahead.

Also, the economics must be understood in light of size of Hydro's system. In approximate terms, over the next 50 years, Manitoba ratepayers will pay somewhere on the order of $40 billion in rates (NPV). So a comparison of two projects with $100 million NPV difference may practically mean very little if any difference in rates over the long-term; however, they may make a major contrast in rates over the short-term versus the long-term (i.e., the "it's our

turn to invest" message touted by Hydro may mean higher rates today in exchange for theoretically lower rates many years ahead, with a net return (if it arises) that could be quite poor).

The 78 Year NPVs are shown in Table 1, below:

Table 1: Project NPVs

Project NPVs over 78 years ($millions)
All values shown as compared to an All Gas scenario

	Original Economics	Updated Economics (added DSM, 2013 inputs, higher capital costs for Keeyask/Conawapa, possible added pipeline load)
1. Keeyask as next base load resource for Manitoba	$887	$111 *note 1*
2. Advance Keeyask to 2019 and build New 750 MW line	$1,091	$339-$410
3. Wisconsin Power 308 MW contract, plus Conawapa	$1,696	$45-$139

notes:

1 - Estimated. This is the value provided for 2013 updates, higher capital costs, and some added DSM, but not the full degree that Hydro now proposes (Level 2). It is not expected that the NPV will change materially (compared to All Gas) for the added DSM, but the actual value has not been run by Hydro.

The results in Table 1 highlight that with the present assumptions, pursuing Keeyask rather than gas is economically beneficial, but much less so than when the NFAT was filed (now an estimated NPV of $111 million rather than $887). This is known as "Plan 2".

Also, the highest NPV option today on the pure long-term economics are to advance Keeyask, build a 750 MW line, but not proceed with the WPS 308 MW contract nor build Conawapa. This is known as "Plan 6".

Information that has been provided in the hearing that estimates that accepting the WPS contract even without Conawapa may reduce the NPV of Plan 6 (by approximately $180 million), but at the same time significantly reduce some of the risks of the plan. This revised option, known as "Plan 5" is being presented as a credible alternative to both Plan 6 and the PDP, most notably because selecting Plan 5 today reduces risks compared to Plan 6 and keeps open the option to pursue the PDP and build Conawapa when that decision needs to be made 4-8 years from now, if conditions have improved.

Do the analytical numbers tell the whole story?

Not necessarily, for three reasons:

1) **78 Year Duration:** The economic numbers above only highlight the lifetime NPVs. They do not at all reflect the trade-offs between the short-term and long-term generations of ratepayers. That assessment has to come from the financial analysis (see below).
2) **Items not included in economic analysis:** There are a number of other aspects of the plans that are not included in the economic analysis that supports the larger plans:
    a. **Added Contracts:** The PDP economics are being analyzed with most of Keeyask output pre-sold through 2036, but basically all of Conawapa output being uncontracted. The idea is that over the next 4 years this would fill up with contracts, and each of these contracts would likely have a better price than the generic long-term price Hydro uses in the modelling today. Discussions are underway with SaskPower, Great River Energy, and Northern States Power, but those contracts do not presently exist. If new contracts do not get finalized, it is unlikely Conawapa would proceed. If they do get finalized, it is likely that the NPV of the PDP will be higher, and the risks lower.
    b. **Sell US transmission:** Manitoba Hydro does not want to be an owner in US transmission, but has had to take a 49% ownership position in the 750 MW line to get it built (as well as paying MP to up their ownership from their desired 33% to 51%). Manitoba Hydro thinks it is likely that they will find a buyer for this transmission asset, which will improve the economics of the PDP (as well as any other case that includes the 750 MW line).
    c. **Adds reliability:** The addition of Keeyask brings on somewhat more capacity than Manitoba requires for some time, and Conawapa brings considerably more. While under normal conditions this power would be sold to exports, under extreme reliability events (like major system-wide transmission outages and extreme droughts worse than have ever been seen), this power would be available to serve Manitobans. Although this power is far in excess of the normal minimum planning standard for reliability, it is still a reliability benefit, and the benefit can be estimated based on how much outages cost ratepayers. It is expected that the PDP brings over $100 million in reliability benefits related to avoiding short-term outages, and additionally a further value larger than this related to avoiding extremely unlikely, but still possible, long-term supply constraints in the event of extremely unprecedented droughts. Without Conawapa there is still

a benefit, but it is likely half this amount. Hydro's economic analysis does not consider this extra value of the Keeyask and PDP scenarios as compared to All Gas. Note that although many observers have commented that natural gas generation (or other options) provides better reliability and economics in the case of a drought, this is not shown to be the case – large hydro plants still provide better backup for drought than smaller gas plants built only when needed.

d. **NPV of debt rate versus equity:** Hydro's economic calculations are based on achieving a particular rate of return, or discount rate. The latest analysis uses 5.4% for REF conditions. This is sufficient to cover the cost of borrowing (3.65%), the cost imposed by the province for the "Debt Guarantee Fee" which is charged (1% on all borrowings), plus a notional Return on Equity, which is assumed to be 7.65% on 25% of the overall cost of the projects (the portion of the project that will ultimately be financed with "equity", or more accurately funds provided by ratepayers to build up Hydro's reserves). In other words, a project with a $1 NPV compared to another is, economically speaking, fully covering its cost of debt *plus* the Government debt guarantee "fee" *plus* a return on equity of 7.65% *plus* a further $1 more. For this reason, Hydro asserts that even an NPV that is $0 or slightly negative can still mean a project pays its own way and helps contribute to development of the Province.

3) **Government and Other Benefits:** As compared to an all gas scenario, each of the above scenarios generates major returns to the Province of Manitoba with almost no risk to the Provincial payments if future conditions change. The larger plans also provide more benefits in terms of global Greenhouse Gas reductions, employment, First Nations investment, etc. The PDP generates the largest returns to these other areas. It will be important to assess whether the PDP may be pursued based on potentially poor financial results for ratepayers (should it show higher rates, more risks) largely due to generating benefits for the Government revenues.

FINANCIAL RESULTS

As compared to the economic analysis above, the financial analysis allows for prediction of the magnitude of future domestic rate changes over time under each plan. It also provides a pro forma picture of Hydro's future books, including Hydro's net debt.

The total maximum net debt amount over the first 20 years, by available plan, is set out in Table 2 below. These values compare to current long-term debt level of approximately $10 billion:

Table 2: Peak Net MH Debt Reached Over Next 20 Years

Peak MH Net Debt Over Next 20 Years ($billions)

"Net" references long-term debt plus current portion of debt, less sinking funds

All Gas	$15.5
Plan 2 - Keeyask as next base load resource for Manitoba	$20.0
Plan 6 - Keeyask advanced to 2019 plus new 750 MW US transmission	$20.6
PDP - add WPS 308 MW contract, plus Conawapa	$28.4 (since updated to $29.6)

NOTES ADDED BY MH

(as described in the NFAT filing Chapter 11):

1 - In the medium term, while net debt levels are the highest with the development plans that include both Keeyask and Conawapa generating stations, as these plans have the overall highest capital investment, they also have the highest fixed asset and retained earnings. [Chapter 11, page 23]

2 - Net debt levels converge towards the end of the study period for all development plans. [Chapter 11, page 23]

3 - The All Gas plan has the greatest variability in net debt by the end of the study period compared to all other development plans, primarily due to the requirement for capital re-investment in gas resources. [Chapter 11, page 13]

The above table highlights that although Keeyask is a large investment, the gas option also requires major investment and borrowing. Also, although not shown in the Table, after year 20 the gas option begins to need reinvestment which is not required to the same degree with the Keeyask cases (e.g., Plan 2, Plan 6, PDP).

Also of note is that proceeding from Plan 2 to Plan 6 does not materially change the peak debt level. It is expected that Plan 5 would have similar net debt as Plan 6.

Finally, it should be noted that the PDP net debt shown above is $28.4 billion in the NFAT materials, but the latest Hydro financial forecasts show the company now needing $29.6 billion in peak debt, and this does not yet include the full capital cost increases expected for Conawapa in particular – it is expected that peak net debt under the PDP will likely exceed $30 billion with this revision.

The final remaining information that can inform the decision-making is the indicative rate increases required. This information is not yet updated for the latest assumptions. Based on the original NFAT filing in summer 2013, and looking only at the first 19 years, the expected rate increases required was presented as follows, in Table 3.

Table 3: Comparison of Indicative Rate Increases

Development Plan	**Projected Annual Rate Increase for 18-20 years**
All Gas ("Plan 1)	3.43% per year
Keeyask in 2022, Gas, No Interconnection ("Plan 2")	3.49% per year
Keeyask in 2019, Gas, 750MW US Interconnection ("Plan 6")	3.50% per year
Manitoba Hydro's Preferred Plan (Keeyask in 2019, Conawapa in 2026, 750MW US Interconnection) ("Plan 14")	3.95% per year

The values in Table 3 should be used with caution pending updated information.