

Wall Report - March 2021

Findings and Recommendations

Chapter 1 - Domestic Need for the Projects

In accordance with section 1 of the Terms of Reference, the Commission inquired into the extent to which Manitoba Hydro pursued the Keeyask and Bipole III projects when they were not necessary, or not necessary at the time, to meet the Province's then-anticipated electrical needs in a timely and cost-effective manner.

Finding #1.1: To meet the Province's electrical needs, Manitoba's electric system needed to be upgraded and diversified to ensure the availability of supply following a potential extreme weather event and catastrophic damage to Bipoles I and II or the Dorsey Converter Station. This was evidenced based on the growing peak deficit in the event of an HVDC outage. This should include a wide area ice storm which Bipole III will be of no use. Bipole III is of no use for the many blackouts that Manitoba Hydro's ratepayers suffer from.

Finding #1.2: Bipole III was not pursued in a timely manner. The need for a reliability solution was identified in 1975. The wind event that was repeatedly cited by Manitoba Hydro as a "near-miss" experience that highlighted the need for a major reliability enhancement occurred in 1996. Bipole III first appeared in Manitoba Hydro's capital expenditure forecast in 1999. The in-service date for Bipole III was then pushed back in order to pursue the western routing, and it only entered into service in July 2018.

Finding #1.3: While Bipole III now provides reliability benefits, the impetus for building it was not for reliability purposes. It may have originally been contemplated for that purpose; however the history of the project outlined in this chapter and the timing of its construction makes clear that it was built to accommodate new northern generation (including Keeyask) and export sales, despite representations to the contrary. As discussed later in this report, even though Bipole III was critical to enable the building of Keeyask, the former Government opposed a review of them together.

Finding #1.4: Bipole III was one of several possible solutions to address the reliability issue facing Manitoba's electric system. No independent review was carried out to determine which of these options was the best solution to address the reliability need at the lowest cost. Given the scale and cost of Bipole III, an independent regulatory review should have been performed to show that it was the best option to meet the Province's anticipated electrical needs. Yes

Recommendation #1.1: Transmission and generation should both be considered in an ongoing IRP process. If there is a need (e.g., for reliability), it should be discussed in such a process along with potential solutions. A need should not be allowed to go unaddressed for decades until a solution for that need can be justified by a profit motive, as was the case for Bipole III. An IRP process involves the consideration of alternatives well in advance of when a business case for an

option is finalized and ready for regulatory review. The Commissioner supports changes proposed in Bill 35, whereby Manitoba Hydro will have to regularly prepare and submit to the Minister an IRP, taking into account government policies, risk, and financial targets, among other things. However, the Commissioner is of the view that this IRP, while led by Manitoba Hydro based on criteria set by Government, should be developed through a public process involving independent experts and overseen by an independent regulator such as the PUB, rather than by Manitoba Hydro alone. Exactly. The key phrase is “independent regulator such as the PUB”. The PUB should not be controlled by government.

Recommendation #1.2: The Commissioner is supportive of the changes in Bill 35 that would require Treasury Board approval for Manitoba Hydro’s capital expenditure programs. This provides a process by which government (a party other than Manitoba Hydro) can assess the financial implications of a proposed capital expenditure program or project like Bipole III on the Province and taxpayers. Bill 35 would also require a review by the PUB for any new transmission line with a voltage higher than 230 kV, if \$200 million or more of investment is required by Manitoba Hydro. Such reviews would consider impacts on rates and Manitoba Hydro’s financial health. In the Commissioner’s view, an independent technical assessment of whether a proposed project is necessary and should be pursued over other possible alternatives, as well as the reasonableness of Manitoba Hydro’s underlying forecasts, should also be required, along with an assessment of whether a proposed project is consistent with provincial energy policy. Yes

Finding #1.5: Bipole III was not pursued in a cost-effective manner to resolve the reliability issue facing Manitoba’s electric system, particularly given its final cost of \$4.77 billion. Bipole III East would have been considerably less expensive due to the shorter line length and lower line losses. Unlike Bipole III West, Bipole III East could also have been built without requiring expensive converters (costing \$1.2 billion or more), at least until the completion of new northern generation projects in the future. Yes.

Finding #1.6: Bipole III West was inferior to Bipole III East from a technical perspective. In the event of an outage of Bipoles I and II, Bipole III East would have been able to provide at least 50% more electricity from northern generation than Bipole III West. This ability to provide more electricity would have required less of the shortfall to be made up by importing electricity and would have thus saved further costs. The shorter line length would have also reduced the exposure to outages as compared to Bipole III West. Following the addition of converters to Bipole III East to transmit new northern generation, Bipole III East would have provided the same reliability benefit as Bipole III West in the event of an outage of Dorsey.

Finding #1.7: Political considerations were more important than economic considerations in the choice of Bipole III West, which led to a \$4.77 billion project that was not the most cost-effective way to achieve reliability. The only options that were seriously considered to solve the reliability need were Bipole III East and Bipole III West. Bipole III East was effectively vetoed by the former Government because of its concerns with opposition by a U.S. environmental organization and some east side First Nations and possible effects on export opportunities in the U.S. due to a damaged reputation, at least the latter of which could not be objectively substantiated. Garland has comments on this.

Finding #1.8: The environmental rationale for building Bipole III on the west side of the Province to preserve the east side area for a UNESCO World Heritage site was undermined by the support for a road through the same area, including the resulting environmental impacts. None of the many documents that the Commission received from the Government included any evidence that the construction of Bipole III through the area would have rendered the achievement of a UNESCO World Heritage site designation impossible, at least with mitigation (e.g., modified routing of Bipole III on the east side to avoid areas of higher value for purposes of the designation).

Finding #1.9: Partnerships with Indigenous peoples on the east side of Lake Winnipeg as part of the Bipole III project were not sufficiently explored by the Government of the day. Options such as equity partnership or meaningful impact benefit agreements would have provided benefits to Indigenous partners on the east side of the Province that could have effectively been paid for by savings from Bipole III East (compared to Bipole III West), while also addressing concerns about impacts of Bipole III on east side Indigenous communities. Instead of exploring partnership – which the Commission heard would have helped reduce or eliminate Indigenous opposition – the Government directed an alternative route and cited Indigenous opposition as a reason for that decision.

Recommendation #1.3: The Government should pursue Indigenous partnerships including equity, means of mitigating project impacts (e.g., modified routing within a preferred corridor), and other means of addressing concerns when a particular project is the most economical way of providing for the supply of power adequate for the needs of the Province, as opposed to rejecting the most economical option out of hand in favour of a more expensive option.

Recommendation #1.4: The Government needs to be aware of and transparent about the incremental costs of constraints and additional requirements that its policies impose on Manitoba Hydro with respect to its projects (e.g., route siting). While it is reasonable to expect a Crown corporation like Manitoba Hydro to adhere to government policies, those policies must be explicit and transparent so that the Government can be properly held accountable for them and their incremental costs. Those policies should be reflected in a policy statement published by the Government.

Finding #1.10: Keeyask was pursued by Manitoba Hydro, recommended for approval by the PUB, and approved by the former Government when it was not necessary at the time to meet the Province's electrical needs. The NFAT Panel concluded that Keeyask would not be needed to meet the Province's needs until 2024 at the earliest, and only if the 1700 GWh of pipeline load materialized. Given the degree of uncertainty surrounding the advanced, last-minute "proxy" pipeline load (much of which was unconfirmed and/or without regulatory approval), it was uncertain at the time whether Keeyask would be needed to meet the Province's electrical needs before 2031.

Finding #1.11: Keeyask was approved and construction on it was commenced for an in-service date of 2019, years before it would be needed to meet the Province's electrical needs, in order to fulfill export contracts. This created a situation in which Keeyask will be built for exports (at least for its initial years of service), which is inherently risky and exposes ratepayers to risks

around long-term projections for the export market. If those projections prove optimistic (which the NFAT Panel believed they would, as discussed in Chapter 3), Keeyask may not break even for a very long time and may prove very costly to ratepayers. **Yes**

Recommendation #1.5: The large and long-term investment in hydroelectric power generation requires the Government to provide guidance to Manitoba Hydro with respect to energy policy. This energy policy should address “merchant plants” if they are to continue being built in the future, including criteria for their commercial evaluation and the extent to which exports (firm and opportunity sales) may drive or advance the development of new generation by Manitoba Hydro. **Hydro plants are now unprofitable (Keeyask, Muskrat Falls and Site C)**

Finding #1.12: The pipeline load estimate of 1700 GWh that was introduced near the end of the NFAT was unreasonable. By August 2014 – the month after Keeyask was approved – the estimate was drastically reduced, and the need date for Keeyask deferred by years.

Recommendation #1.6: Manitoba Hydro, the PUB, and the Government of Manitoba should not respectively pursue, recommend, and approve a multibillion-dollar project based on a need date advanced by multiple years to serve last-minute load forecasted for a small number of customers. If a major project is being built based on a need date to serve load for a small number of customers, that load should be vigorously vetted and verified ahead of time as part of the mandatory public review of such a project (as discussed in other recommendations). The Commissioner notes that Manitoba Hydro’s load forecasts include a sensitivity analysis, including around the increase or decrease of one very large industrial customer and that, since the NFAT, Manitoba Hydro has changed the forecasting methodology for potential large industrial load in response to direction from the PUB, resulting in a more conservative methodology and significantly reduced load forecast. **Yes, Garland investigated this but was rejected by Hydro.**

Finding #1.13: If a more accurate, thorough, reasonable, and sound DSM analysis had been incorporated, the need date determined for Keeyask would have been much later and Keeyask likely could not have been justified at the time of the NFAT.

Finding #1.14: The lack of a robust IRP process precluded Manitoba Hydro from effectively weighing DSM and other energy options equally with hydroelectric generation.

Recommendation #1.7: The Commissioner concurs with the PUB’s call for a comprehensive and regularly occurring IRP process in which DSM will be evaluated as a stand-alone resource and placed on an equal footing with other energy resource options. The Commissioner acknowledges that IRP is part of Manitoba Hydro’s new management plan, which marks an improvement to the previous resource planning process, and that Bill 35 will mandate IRP. In the Commissioner’s view, this IRP process should be led by Manitoba Hydro **based on criteria set by the Government but developed through a public process involving independent experts and overseen by an independent regulator such as the PUB.** **Exactly**

Finding #1.15: By the time of the NFAT, Manitoba Hydro had been over-forecasting short-term domestic load growth for years, particularly in the Top Consumers sector which included

pipelines. This over-forecasting distorted the need date analysis and resulted in a determination at the time of the NFAT that Keeyask would be needed much earlier than it actually will be.

Recommendation #1.8: The Commissioner agrees that independent expert consultants made useful recommendations during the 2017/18 GRA that Manitoba Hydro should consider implementing into its load forecasting methodology, particularly regarding elasticities, scenario analysis, and use of longer-term data to estimate weather-dependent load. The Commissioner supports the PUB's direction for Manitoba Hydro to provide details of the implementation of these recommendations, or reasons for not implementing them, at the next GRA.

Recommendation #1.9: Given the inherent unreliability in long-term forecasts, projects and development plans should be evaluated using a study period that is significantly shorter than 78 years (the length of the period used during the NFAT). Benefits forecasted over the long term should not be relied upon to justify a project or development plan that does not make sense within a reasonable time frame (e.g., the 35-year detailed analysis period used during the NFAT).

Finding #1.16: The NFAT Panel's recommendation to approve Keeyask was influenced by key constraints that effectively pre-determined that Keeyask would proceed, including already-executed agreements, \$1.2 billion already spent, Bipole III already being built, and the Province's Clean Energy Strategy that favoured new hydroelectric generation. Recommendations addressing these constraints are contained elsewhere in this report.

Finding #1.17: The NFAT Panel recommended Keeyask for approval for an in-service date of 2019 – despite it not being needed until years later – in order to avoid Manitoba Hydro having to renegotiate the GCC and the numerous First Nation agreements that had already been executed. These findings highlight the pitfalls of making material investments and executing complex agreements before a project has been sanctioned, which is addressed in Recommendation #1.10 below. Inferior economics of a deferral scenario was another stated reason for the PUB's recommendation; however, Manitoba Hydro's economic analysis was problematic and alternative generation plans may have been more cost-effective, as discussed in Chapter 3 of this report.

Recommendation #1.10: While it may be reasonable for Manitoba Hydro to negotiate agreements for project construction and agreements with impacted Indigenous groups to establish costs of a project, these contracts should not influence a decision to proceed with a project before it is actually needed or approved. Such agreements should not be executed until after project approval or sanctioning, or if execution occurs beforehand, Manitoba Hydro should ensure that it has the right to terminate the agreement without any material penalty or delay the effective date of the contract if a project is not needed until further in the future. Furthermore, as recommended in more detail in Chapter 2 of this report, limits should be placed on how much advance costs can be spent on a major capital project prior to final approval and sanctioning of that project.

Finding #1.18: Even though Bipole III supported the building of Keeyask, the former Government opposed a review of them together and excluded Bipole III from the scope of the NFAT review of Keeyask. This exclusion biased the analysis in favour of Keeyask, which

depended on Bipole III to transmit all its new generation but did not have Bipole III's costs attributed to it during the NFAT.

Chapter 2 - Government Directions

In accordance with section 2 of the Terms of Reference, the Commission inquired into the extent to which the directions that the Government gave to Manitoba Hydro:

(i) Promoted economy and efficiency in the generation, transmission, distribution, and supply of power in the Province; and

(ii) Resulted in Manitoba Hydro having to address matters beyond its statutory mandate.

Finding #2.1: Together, the mantra of “Manitoba’s oil” and the policy expressed in the Clean Energy Strategy constrained Manitoba Hydro’s decision making by prioritizing new hydroelectricity over other supply options and encouraging the development of projects to serve the export market. These government directions precluded any fair assessment of alternative generation and transmission options which might have promoted more economy and efficiency in the generation and transmission of power in Manitoba, and inexorably moved Keeyask and Bipole III forward. In particular, the Clean Energy Strategy from 2012 (the year before the NFAT began) confirmed that the Government had already decided to proceed with Keeyask. While that decision could have been changed based on the results of the NFAT (as in the case of Conawapa), there was a high threshold to do so, given the requirement for an alternative to align with the Clean Energy Strategy which prioritized new hydroelectric generation over other supply options.

Finding #2.2: Project labour agreements constrained Manitoba Hydro when tendering work for Bipole III and Keeyask. They required Manitoba Hydro to employ labour from select unions, which may have resulted in higher project costs.

Finding #2.3: The current policy in Manitoba allows for companies other than Manitoba Hydro to build new generation in Manitoba for export, but there is little evidence that any are doing so on a significant scale. Transmission tariffs and Manitoba Hydro’s control of access to transmission may be limiting their ability to do so.

Recommendation #2.1: The Government should commission an independent review and public report regarding transmission tariffs, access to transmission in the Province, and related government policies to ensure that they are not a barrier to other companies building new generation in Manitoba for export, in accordance with its policy of allowing same. Fostering competition for merchant plants will likely drive efficiencies and cost reductions for all such projects, including those pursued by Manitoba Hydro. Open access to transmission essential, to accommodate peer-to-peer trading as recognized in MH’s Strategy 2040 plan.

Finding #2.4: The former Government’s ideological aversion to P3s precluded the consideration of a P3 model to allocate the risk of the projects among those involved in their construction. Cost overruns from the time of approval for Bipole III (\$1.49 billion), Keeyask (\$2.2 billion), and

Wuskwatim (\$400 million) alone suggest that the current design/build/own model is not working properly and not reasonably minimizing risks and costs for ratepayers. The former Government's ideology also precluded the consideration of an equity option for Indigenous groups along the east side route of Bipole III – the route that Manitoba Hydro preferred for reasons including cost and reliability. The construction of Bipole III East with an equity option for Indigenous groups could have reduced construction costs for Manitoba Hydro (and, ultimately, ratepayers) and reduced the financial exposure of the Province, while also providing equity and financial opportunities for Indigenous partners.

Recommendation #2.2: The Government of Manitoba and Manitoba Hydro should consider P3 arrangements for any future high-value capital projects. Under a P3 model, the allocation of risk and cost overruns to the private partner(s) on a project like Keeyask may make this option more favourable than the classic design/build/ own model. Keeyask has experienced significant cost overruns and delays like many other public infrastructure projects, at least in part because Manitoba Hydro is not a construction manager. By contrast, cost overruns and delays are less common on P3 projects, in which risks and responsibilities are allocated to the private sector based on its areas of expertise (e.g., construction management). Such a P3 arrangement could include a takeout option in the future and help avoid multibillion-dollar cost overruns in the future.

Recommendation #2.3: The Government should be open to equity options or other opportunities with Indigenous partners for all activities, including transmission projects like Bipole III. In addition to helping to fulfill the goal of reconciliation, such partnerships with Indigenous peoples may help to ensure that projects can be completed on schedule and on budget by allowing Manitoba Hydro to proceed with its preferred development option without delays caused by Indigenous opposition.

Finding #2.5: The elimination of a Bipole III East option was a clear direction from the Government that did not promote economy and efficiency in the generation, transmission, and distribution and supply of power in the Province. It also eliminated an option to engage Indigenous peoples along the east route as equity partners in Bipole III, which might have helped earn their support. As discussed elsewhere in this report, this government direction introduced significant cost increases, complexity, and risks for the Bipole III project.

Finding #2.6: Bipole III and Keeyask should have been evaluated together given their inherently interconnected nature. If they were considered together, and Bipole III and its alternatives were included in the NFAT, the costs of Bipole III would not have been treated as a common cost to all plans and some plans may have included a different reliability option.

Finding #2.7: The former Government's decision to exclude Bipole III from the NFAT caused the review to be incomplete and skewed the results of the process. Expert witnesses were prevented from considering Bipole III as anything other than a "sunk cost," which skewed the economic analysis of Keeyask and unfairly favoured plans that required Bipole III relative to alternative options that did not (as discussed in Chapter 3 of this report).

Recommendation #2.4: The Commissioner believes that the requirement in Bill 35 for public review and Cabinet approval of any new power generating station with a peak capacity of at least 200 MW, and any new transmission with a voltage of at least 230 kV, that will require an investment by Manitoba Hydro of \$200 million or more, is reasonable. However, the Commissioner would propose that this mandatory public review should include an evaluation of any other new project or facility upon which the new generating station or transmission line is dependent (in the way that Keeyask was dependent on Bipole III to transmit power that it produces).

Finding #2.8: Based on the indication in a briefing note that there would be negative consequences of delaying Keeyask if the MHEB cancelled plans to move forward with the KIP (as it was contemplating in 2010), and the fact that the KIP was not cancelled, it appears that the former Government did not want the Keeyask project delayed and it influenced Manitoba Hydro's decision to proceed with the KIP. It also appears that the MHEB was very much doing its job in canvassing the option of pausing Keeyask without clear evidence of power sales. It is apparent that Cabinet rejected this advice and pushed forward and licensed the KIP despite prior government policy which did not permit such earlier, separate licensing.

Finding #2.9: The approval of the KIP and associated funding in 2012 (in advance of the NFAT and approval of the rest of the Keeyask project) was a form of direction that the Government gave to Manitoba Hydro. It signaled the Government's support for Keeyask even prior to the start of the NFAT and the formal approval of the project. This approval also resulted in the expenditure of a significant portion of the \$1.2 billion in sunk costs that were spent on Keeyask prior to the start of the NFAT, and which in turn influenced the NFAT Panel in its recommendation to proceed with Keeyask (as discussed in Chapter 1 of this report).

Recommendation #2.5: Limits should be placed on how much advance costs can be spent on a major capital project prior to final approval and sanctioning of that project. The only costs that should be incurred prior to a major project's approval are for activities required to assess the merits of the project (such as preliminary engineering and environmental work, Indigenous engagement, and, in some cases, costs to negotiate material agreements provided that the agreements can be cancelled if the project does not proceed – as discussed in Chapter 1). Prior to the major project being approved, costs should not be incurred that unnecessarily constrain the subsequent decision-making process.

Finding #2.10: The approval of export contracts set to begin in 2020, on the understanding that new hydroelectric generation and transmission was required to serve them, created an imperative for new generation and transmission to be built and operational by 2020. This imperative constrained the decision making of both Manitoba Hydro and the NFAT Panel.

Recommendation #2.6: Manitoba Hydro's ratepayers should not bear the risk associated with new generation projects that will, for an extended period of time, be commercial in nature, used for exports, and not needed to serve domestic demand. In other words, they should not be used as involuntary equity investors for projects to serve export demand in a risky market. Since it is the Government that approves export contracts and new generation projects like Keeyask, not ratepayers, and the Government that benefits (through water rentals, capital taxes and debt

guarantee fees from Manitoba Hydro) even if such projects do not turn out well financially (as discussed in Chapter 4), it is the Government that should bear this risk. Accordingly, if a Government in the future approves a generation project that is, for an extended period of time, primarily for export and not needed for domestic demand, then the Government should bear the risk if this commercial plant is not successful during that period. If the market plan fails and export revenues do not cover the costs of operating the plant during that period and the proportion of capital costs for that part of the plant's operating life, then the Government should reduce or suspend its collection of transfers from Manitoba Hydro until those cost shortfalls are made up. This will have the effect of putting government's budget at risk for decisions that are made by Government, rather than ratepayers.

The Commissioner believes that this recommendation will add accountability that will improve decision making at the government level and will provide a proper incentive to the Government of Manitoba to provide greater oversight and accountability with respect to any future major capital projects.

To implement this recommendation, Government may wish to legislate a reduction or suspension in the transfers that Manitoba Hydro is required to pay to the Government in the circumstances set out above.

Recommendation #2.7: As recommended in Chapter 1 of this report, the Government should develop new policy regarding merchant plants that includes evaluating the commercial merits (i.e., profit potential) of those projects differently than projects built to serve domestic demand. In addition, the Government should develop new policy regarding the extent to which exports should drive or advance the development of new generation by Manitoba Hydro. This policy should address how much of those exports should be supported by firm sales agreements (as opposed to opportunity sales). **Merchant plants could be small generators such as solar farms who may wish to sell energy within the province such as to a Distributed Energy Resource (DER) and participate in peer-to-peer trading as discussed in Manitoba Hydro's Stratgy 2040 plan.**

Finding #2.11: The lack of government direction through the absence of a substantive review by the Treasury Board Secretariat of Manitoba Hydro's capital plans exposed the Province to undue risk without appropriate oversight with respect to the financial health of the Province.

Recommendation #2.8: Treasury Board should continue to monitor the financial health of Manitoba Hydro. This should include the continued review of Manitoba Hydro's annual operating and capital budgets against financial targets set by the Government. This would provide the Government with an oversight process involving its financial experts reviewing these plans and advising the Government on their financial implications for the Province and, by extension, the public. **This is a conflict of interest to the government. On one hand the treasury receives substantial funding approaching \$0.5B pa and on the other hand, cutting back future developments will not increase this annual Manitoba Hydro payment to the government. Both past and present governments have cherished Hydro's debt to ensure these annual payments to the treasury are sustained and increased.**

Recommendation #2.9: Government should strengthen its internal oversight processes to ensure Cabinet is fully aware, on an ongoing basis, of the need, benefits, and risks of Manitoba Hydro capital projects. The intent would be to assess projects proposed by Manitoba Hydro before public regulatory bodies review them. This would likely require additional resources with the capacity to understand complex economic and technical energy matters. The benefits of such a measure would significantly outweigh the costs given the magnitude of the impacts mega-projects have on the provincial economy. For example, the Crown Services Secretariat could assess the rationale for the need for new generation and transmission and confirm options that have been comprehensively considered. **What they may know about the technical and economic implications is questionable. In any case it should be passed to the PUB to receive the benefits of experts.**

Finding #2.12: The Government’s failure to analyze Manitoba Hydro’s DSM plan prior to the NFAT represented a lack of government direction and oversight. Government direction and oversight in the form of analyzing Manitoba Hydro’s DSM plan might have led to a more ambitious (and realistic) DSM plan and reduced its load forecast, and thus delayed the need date for Keeyask based on that forecast. As discussed in Chapters 1 and 3 of this report, significantly higher levels of DSM post-NFAT have contributed to a flattened load forecast and a more than ten-year delay in the domestic need date for Keeyask.

Finding #2.13: A more robust structure that formally incorporated professional oversight from Treasury Board and resources from other government departments would have enhanced the oversight and direction to help ensure a more complete evaluation of Keeyask. **Government is not known for its expertise in matters of energy under this rapidly evolving industry.**

Recommendation #2.10: For any future major capital project like Keeyask or Conawapa, the Government should create a formal management structure to oversee the project, similar to what was put in place for Conawapa in the 1990s. Within that structure, there was involvement at all levels from various ministries (including the Ministry of Industry, Trade and Tourism that existed at the time). If such a structure is used on a major capital project that is underpinned by export contracts to the U.S., like Keeyask, there could be similar involvement from the Department of Intergovernmental Affairs and International Relations so that it might provide advice regarding U.S. policy affecting export opportunities. **Government is not known for its expertise in matters of energy under this rapidly evolving industry. Eg. Government interference in the Muskrat Falls and Site C projects.**

Finding #2.14: The former Government’s directions to Manitoba Hydro with respect to the routing of Bipole III and the NFAT Terms of Reference forced Manitoba Hydro to act beyond its statutory mandate “to engage in and to promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of power.” In the case of Keeyask, it resulted in the pursuit of a project at least 10 years before it would be needed domestically. **Yes**

Recommendation #2.11: Manitoba Hydro’s statutory mandate should be amended to provide clarity in terms of its objectives and priorities. In the Commissioner’s view, Manitoba Hydro’s statutory mandate should not include socio-economic development. Rather, **Manitoba Hydro’s**

mandate should be to provide the most economic and efficient electric system within the boundaries of the Province's energy policy (which should not pre-determine projects or resource options). Manitoba Hydro should pursue and choose projects based on lowest cost and technical performance, not based on socio-economic development benefits. Issues of socio-economic development are broader matters of public policy and the responsibility of Government. It is the Government that is the custodian of the economy and pursues social policies in the collective interest.

If the Government decides that Manitoba Hydro should pursue and choose a project based on socio-economic development benefits, rather than lowest cost to ratepayers, the Government must be publicly transparent about that decision so that it can be held accountable, and taxpayers should be responsible for the incremental costs of that policy decision, not ratepayers. **Yes**

Chapter 3 – Net Benefits

In accordance with section 3 of the Terms of Reference, the Commission inquired into the extent to which the estimated net benefits projected at the planning stages for Keeyask and Bipole III were:

1. (i) determined in accordance with best practices then applicable for such projects;
2. (ii) demonstrably superior to the estimated net benefits of proceeding with other options then

available for addressing the Province's then-anticipated electrical needs in a timely and cost-effective manner; and
3. (iii) based on sound export market forecasts.

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Finding #3.1: Manitoba Hydro's economic analysis did not fully account for changes in underlying assumptions by the time the NFAT ended. This limited the NFAT Panel's ability to compare plans (particularly on a risk-adjusted basis) and to make an informed decision. Further, Manitoba Hydro's limited analysis showed that as of March 2014 the PDP was not the optimal development plan from an NPV perspective (neither Reference NPV nor Expected NPV). While the NFAT Panel concluded that plans with Keeyask and a transmission intertie outperformed the All-Gas Plan, it also indicated that the "high" range of capital costs for Keeyask (\$7.2 billion) – which would make plans with it less economical than the All-Gas Plan – was likely. These findings should have caused the PUB, Government, the MHEB, and Manitoba Hydro to seriously reconsider whether Keeyask should have been pursued at that time. However, the Commission was not provided with any evidence to suggest that such reconsiderations occurred.

Recommendation #3.1: Manitoba Hydro's assessment of project alternatives must be flexible enough to account for changes in underlying assumptions up to the point in time when a final approval/sanctioning decision is made. Often, a project gains momentum as it proceeds through

the planning phases. However, before significant long-term capital is invested in a project, it is critical for the ultimate decision makers to make a fresh, objective assessment of the need for the project and whether it should proceed instead of other possible alternatives. The PUB's review process should similarly ensure that projects are not recommended to proceed unless they are the best solution for the Province, based on the best available information at that time.

Finding #3.2: The NFAT Panel faced time constraints given that the NFAT Report was to be provided by June 20, 2014. These time constraints appear to have led the NFAT Panel to proceed based on the partially updated March 2014 information and without fully updated analysis, including fully updated Expected NPVs which the NFAT Report described as “one of the important decision-making tools at its disposal.”

Recommendation #3.2: The Government should ensure that the timelines provided for public reviews of major new facilities are reasonable in light of the scope of such reviews and their terms of reference. The PUB must have the ability to request an extension if more time is necessary to complete a review of a major new facility, including if more evidence is needed to fulfill its mandate.

Recommendation #3.3: Members of the PUB should be appointed for long terms with limited ability for the Government to terminate them during their terms, in order to ensure that members are less sensitive to politics in making their decisions. Currently, The Public Utilities Board Act provides that each member of the PUB holds office during pleasure of Cabinet (i.e., Cabinet can terminate them at pleasure). Some provinces have legislated minimum terms for members of utility commissions and boards. The Government of Manitoba should consider amending The Public Utilities Board Act to include such minimum terms for members of the PUB. Yes

Finding #3.3: A socio-economic analysis was required pursuant to the NFAT Terms of Reference, even though socio-economic benefits are beyond Manitoba Hydro's statutory mandate, which is focused on “economy and efficiency in the development, generation, transmission, distribution, supply and end-use of power,” as discussed in Chapter 2.

Particularly in combination with the exclusion of Bipole III from the NFAT Terms of Reference (which, as discussed elsewhere in this chapter, biased the analysis in favour of Keeyask), the Commissioner concludes that the addition of a socio-economic analysis favoured Keeyask and the PDP by giving additional justification for proceeding with hydroelectric generation options even if those options were riskier and more expensive than other resource options.

Recommendation #3.4: Unless Manitoba Hydro is directed by the Government to pursue and choose a project based on socio-economic benefits, such benefits should not be considered in the assessment of a development plan or project unless more than one development plan or project are equal in terms of cost and technical performance. The primary assessment of a development plan or project in terms of cost and technical performance is consistent with Manitoba Hydro's current (and recommended) mandate to “engage in and to promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of power.”

If Manitoba Hydro is directed by the Government to pursue and choose a project based on socio-economic benefits, rather than lowest cost to ratepayers, the socio-economic benefits of a development plan or project should be evaluated against its incremental costs relative to the lowest-cost option (which, as stated in Recommendation #2.11, should be borne by taxpayers, not ratepayers).

Finding #3.4: While use of NPV as a metric for economic analysis is generally a best practice, Manitoba Hydro’s NPV analysis used a very long study period of 78 years (including a 43-year extrapolation), which is not normal practice in the industry according to La Capra Associates Inc. and the Commission’s review of recent long-term electricity projects and major transmission lines in Canada (see Appendix E). Its NPV analysis was heavily reliant on long-term assumptions, which was not reasonable given their inherent uncertainty and the inability to anticipate potential fundamental structure change. The COVID-19 pandemic demonstrates that even short-term assumptions can be unreliable, let alone 78-year assumptions.

Recommendation #3.5: In addition to Recommendation #1.9, the Commissioner recommends that CPV be used as a metric for economic analysis along with NPV, in order to capture important information regarding the timing of costs and benefits of a project or development plan through the study period (and not just at the end of the study period, like NPV). CPV allows for economic analysis within more certain time frames and discloses intergenerational costs and benefits. Given the increasing unreliability of assumptions over time, this information captured by CPV should be considered in any economic analysis.

Finding #3.5: The “sunk costs” of Keeyask (including the KIP) and Conawapa impacted the analysis of net economic benefits and favoured the hydro-based plans. If \$1.2 billion and \$400 million had not been spent on Keeyask and Conawapa, respectively, the relative economic benefits for development plans that did not include Keeyask and Conawapa would have been much higher. If those costs had not already been spent, they would have only been attributed to development plans with Keeyask and/or Conawapa, rather than to all development plans (including those with neither Keeyask nor Conawapa).

Finding #3.6: By incurring substantial costs on Keeyask and Conawapa and then treating them as “sunk costs” common to all plans along with the costs of Bipole III, Manitoba Hydro did not assess alternatives based on a “like to like” comparison (i.e., a comparison using consistent inputs). In a “like to like” comparison, each of the plans would only include the costs properly attributable to their components, so that they could be compared on a similar, consistent basis. Keeyask and Conawapa were not components of every plan, and neither was included in the All-Gas Plan. In a “like to like” comparison, their “sunk costs” would have been added to the hydro-based plans that included them and only to those plans. Such a comparison is important because without consistent inputs, no logical and reliable conclusions about relative net benefits can be drawn.

The way in which “sunk costs” of Keeyask and Conawapa were treated also assumed that those costs would be a total write off, which may not have been the case. Limestone was delayed for years following preliminary construction before it was later completed (as discussed in Chapter

5). Costs spent on its preliminary construction were not lost, just as costs spent on Keeyask and Conawapa may not have been.

Recommendation #3.6: In identifying the preferred option to meet Manitoba’s energy needs, alternatives should be assessed based on a “like to like” comparison of their individual merits. Only costs associated with the specific development plan being considered, as well as associated facilities required for that development plan, should be assessed as the costs for that development plan.

Finding #3.7: Export contracts such as the 250 MW contract with MP influenced the NFAT Panel’s conclusions and recommendations. The NFAT Panel concluded against recommending even a delay of Keeyask based on the affected export contracts (e.g., the 250 MW sale to MP) and potential commercial and future negotiation consequences.

Recommendation #3.7: While it is reasonable for Manitoba Hydro to negotiate long-term power sales agreements, the contracts should not pre-determine the preferred energy supply option before that option has been approved and sanctioned. Similarly, the fact that a contract has been executed should not be the justification for proceeding with one resource option over another, otherwise preferable, option. To the extent that Manitoba Hydro enters into a power sales agreement that is contingent on a particular project proceeding that has not yet been sanctioned, Manitoba Hydro should ensure that it has the right to terminate the contract without any material penalty if that project is ultimately not sanctioned.

Finding #3.8: If a more accurate, thorough, reasonable, and sound DSM analysis was incorporated, the NPV analysis of the plans would have been very different and Keeyask would likely have only been justifiable under a deferral scenario, if at all.

Recommendation #3.8: As noted in Chapter 1 of this report, the Commissioner concurs with the PUB’s call for a comprehensive and regularly occurring IRP process in which DSM would be evaluated as a stand-alone resource and placed on an equal footing with other energy resources options.

Finding #3.9: Manitoba Hydro’s assessment of the benefits of Keeyask for KCN partners appears to have been overly optimistic. Unreasonable project cost estimates and export market forecasts resulted in projected levels of economic benefits that have declined significantly from levels that KCN partners expected when they signed the JKDA. This has resulted in at least some KCN partners wanting to renegotiate the economic terms and revenue sharing formulas in the JKDA so that they may receive the long-term economic benefits that they expected from Keeyask.

Finding #3.10: The NFAT Panel’s assessment of socio-economic impacts highlights the different types of benefits and impacts that a major project can have, and the need for clear direction from government on how these types of projects should be assessed. For example, if the priority is meeting energy demand at the lowest cost, the number of construction jobs should be a peripheral consideration. Alternatively, if the priority is maximizing overall benefits to Manitobans, the number of construction jobs should be one of the considerations.

Recommendation #3.9: As noted in Chapter 2 of this report, the Government should clarify Manitoba Hydro’s mandate in selecting projects to meet future energy demand. If Manitoba Hydro’s primary focus should be on impacts to ratepayers (as recommended by the Commissioner in Recommendation #2.11), then many “benefits” from the perspective of government should actually be assessed as “costs” from the perspective of ratepayers. Under its current statutory mandate to provide adequate supply of power for the needs of the Province, a public and recurring IRP process provides a framework to determine those needs and select the right supply option to fulfill them.

Finding #3.11: Given the scale and cost of Bipole III, the political decision by the former Government to exclude Bipole III from the NFAT and therefore from any independent assessment of benefits, costs, and overall justification is itself contrary to best practices. This finding is addressed by Recommendation #1.2.

Finding #3.12: It appears that the comparisons of the All Gas option to Bipole III did not account for the fact that the former would include 2000 MW of additional generation in Manitoba along with associated revenues, unlike Bipole III. It is also questionable that the new imports alternative to Bipole III required 1500 MW of firm purchase commitments, as stated by Manitoba Hydro. These shortcomings unfairly biased Manitoba Hydro’s analysis against these alternatives to Bipole III.

Finding #3.13: As noted by BCG and discussed in Chapter 1 of this report, Bipole III East was a better option from an economic and technical perspective than the west-side route that was ultimately constructed. However, a political decision communicated in 2007 by then-Minister Selinger effectively vetoed this option and mandated a western Bipole III route over any other alternatives, such as a natural gas option. At this point the selection of a Bipole III (west) option was a *fait accompli*.

Finding #3.14: The costs and benefits of Bipole III West, and their comparison to other possible options, were not closely scrutinized to ensure that Bipole III West was superior to other options. This finding is addressed by Recommendation #1.2.

Finding #3.15: Manitoba Hydro’s export price forecast was overly optimistic and created risks that the forecast prices would not materialize over the long-term. It does not appear that these risks were adequately considered when choosing to proceed with Keeyask over other options that were less dependent on export sales. This finding is addressed by Recommendations #1.6 and #2.6.

Finding #3.16: As found in Chapter 1 of this report, Keeyask is being built (at least for the initial many years) for exports and its economics are thus subject to significant export market risk. Generation from Keeyask must compete in the export market with new technology, U.S.-based renewables, a stable, low price natural gas alternative, and an uncertain political environment. There are firm contracts in place that provide some protection for the near term, but there is no guarantee that they will be renewed at the current prices or for a significant period of time. Nor is there any certainty regarding opportunity sales prices. While domestic demand will likely grow to require Keeyask’s generation capacity eventually, that will likely not be until well after

2037/38. Until that time, Keeyask will be at the mercy of the export market, the risk of which currently rests on the bottom line of Manitoba Hydro and its customers. Keeyask will generate electricity at over 12 cents/kwh. For the 6 years or more, the total export market generates 4 cents/kwh except for one year low water year it averaged 6 cents/kwh.

Chapter 4 - Risk and Fiscal Implications

In accordance with section 4 of the Terms of Reference, the Commission inquired into the extent to which the Keeyask and Bipole III planning and approval processes of Manitoba Hydro and the Government, and any other applicable approval or review processes, appropriately

1. (i) evaluated the commercial risk associated with each project and the risks of the two projects proceeding concurrently;
2. (ii) assessed the allocation of the risks among those involved in the construction of the projects; and
3. (iii) considered the immediate and long-term fiscal implications of the projects for the Province and

Manitoba taxpayers and Manitoba Hydro and its ratepayers.

Finding #4.1: Based on a review of Corporate Risk Management Reports from Manitoba Hydro from the period shortly following the NFAT, and overviews of the risk registers for Keeyask and Bipole III, it appears that Manitoba Hydro performed a detailed analysis of individual, discrete risks that were identified with respect to each project. However, it did not give due consideration to compound risk (i.e., the combination of two or more related risks) associated with each project, let alone with the projects together. These documents do not reveal a comprehensive risk mitigation strategy, either; rather, they include specific strategies for each of the discrete risks identified.

Recommendation #4.1: Manitoba Hydro should assess long-term risks and the compound risks of executing multiple projects together as part of the IRP process. For project-specific risk, the risk register should incorporate and address compound risk for the project. These changes would assist Manitoba Hydro in effectively identifying and managing risks.

Finding #4.2: The Commissioner agrees with BCG that Bipole III and Keeyask should have been evaluated together along with the tie-line, instead of individually, in order to properly assess the collective risks of executing all projects at once. Keeyask (and the tie-line) were dependent on the construction of Bipole III and conducting separate reviews of the projects was not the best choice given their inherently interconnected nature. One example of a factor that was not properly identified was the risk that a carbon price would not develop in the U.S. Given that the economic case for Keeyask relied on opportunity sales projections that assumed a new carbon price – and Bipole III was justified (at least in part) based on

transmitting economic power from Keeyask – this factor should have been identified and assessed as a risk with respect to both projects. It was not.

Recommendation #4.2: The evaluation of risks of executing a project should include the risks associated with any other new project or new facility upon which it is dependent. For example, Keeyask was dependent on the construction of Bipole III. The assessment of Keeyask and of any other new generating station should include the risks associated with any new transmission project that is needed to transmit the power that it produces.

Finding #4.3: The fact that Manitoba Hydro lowered its probability weightings for “high” capital costs for Keeyask, based on what it viewed as increased cost certainty resulting from the GCC, raises serious concerns as to whether Manitoba Hydro fully understood the significant risks inherent in this type of cost reimbursable contract.

Finding #4.4: Manitoba Hydro consistently underestimated the costs of Keeyask. Further, its updated cost estimates did not fully account for changes in variables, including for escalation.

Recommendation #4.3: As a public utility whose performance affects the electricity rates paid by Manitobans and can have fiscal implications for the Province, Manitoba Hydro should design its cost estimates in a way that is more conservative to minimize the potential for cost overruns (as has occurred on Keeyask and, to a lesser extent, on Bipole III). These estimates should be as accurate as possible based on the project development stage and include a project contingency that is proportionate to the risks identified through a detailed risk evaluation for the project. At the time that the project is formally sanctioned, a P80 cost estimate should be developed by Manitoba Hydro, if possible, to better understand the risk of cost overruns.

Recommendation #4.4: Manitoba Hydro should use the industry standard “stage gate” approach for internal approvals of major projects like Keeyask and Bipole III. As part of this approach, there should be a “gate” at each major decision point during the project development process, whether that consists of a required internal approval from the MHEB, a decision that will result in significantly higher sunk costs, or a decision from which Manitoba Hydro will otherwise have difficulty returning (e.g., executing the GCC). This process should be designed with particular attention to the consideration and implementation of defined off-ramps so that the project can be stopped (e.g., once a certain amount of money has been spent on a project, before sunk costs are unreasonably high).

At each stage gate, Manitoba Hydro ought to re-evaluate the business case for the project to determine if such a case still exists, including an examination of whether the assumptions underlying that business case are still valid (e.g., domestic load and export market forecasts).

Finding #4.5: Similar to Keeyask, for Bipole III, Manitoba Hydro relied on cost estimates that were lower probability and higher risk than what were recommended by independent expert consultants. This finding is addressed by Recommendation #4.3.

Finding #4.6: Manitoba Hydro undertook unreasonable risk when it included no contingency in its Bipole III cost estimates in CEF06 to CEF10. Manitoba Hydro should have also accounted for

a higher contingency amount in its subsequent CEF11 cost estimate to account for the fact that the project proposed to use new, unproven technology. The failure to do so is particularly concerning given that it was not addressed for three years (until a new estimate was prepared in 2014). For almost a decade, Manitoba Hydro repeatedly and consistently included contingency amounts in its Bipole III cost estimates that were unreasonably low. This finding is addressed by Recommendation #4.3.

Finding #4.7: The PUB noted the “significant cost risk” and “vulnerab[ility] to cost escalations” because of the Keeyask GCC during the NFAT, yet recommended the project for approval, nonetheless. It may not have understood the scope of this risk and/or, as the Commission heard repeatedly in interviews, its recommendation may have been influenced significantly by the reality and quantum of already sunk costs for the project (\$1.2 billion).

Finding #4.8: Despite the risks stemming from the GCC that were identified during the NFAT, there is no evidence that Manitoba Hydro subsequently attempted to mitigate those risks (e.g., by renegotiating the GCC) until 2016 when those risks had already begun to materialize. This suggests that either Manitoba Hydro did not understand the risks, despite their clear articulation in the NFAT Report, or it did not know how or have the capacity to manage them.

Finding #4.9: Based on MGF’s report submitted during the 2017/18 GRA, the decision of Manitoba Hydro to award the GCC to BBE appears to have been motivated, at least in part, by selection bias resulting from the results of the Limestone project (on which Bechtel was engaged) 22 years earlier, which had little or no relevance to the Keeyask tender.

Finding #4.10: Manitoba Hydro’s recommendation to the MHEB to approve the GCC indicates a potential lack of understanding or omission as to the full risk implications of the recommended GCC.

Recommendation #4.5: The MHEB and Minister Responsible for Manitoba Hydro must have a complete understanding of the kind of contract being recommended by Manitoba Hydro management as to cost overrun risk exposure. This understanding could come from enhanced reporting to the MHEB and the Minister and from a formal management structure to oversee any future major capital project (similar to what was put in place for Conawapa in the 1990s), which is addressed in Recommendation #2.10.

Finding #4.11: Manitoba Hydro did not broadly market-test the GCC in the usual sense of the term. Meeting with several contractors and asking their preference as to the type of contract, as Manitoba Hydro did with the Keeyask GCC, is not a normal practice. Manitoba Hydro should have taken a harder look at the marketplace and more carefully considered whether a cost reimbursable-target price contract structure was appropriate and brought in external expertise for a contract of this size.

Finding #4.12: While it is understandable that Manitoba Hydro proceeded with a cost reimbursable payment structure for below-ground work, given the lack of ability to perform a full geotechnical study, it should have used a fixed or unit price structure for above-ground work in order to allocate some of the risk to the contractor. The Commissioner understands that this

sort of hybrid structure is regularly used for major hydro-generation stations, whereas a full cost reimbursable contract (like the GCC) is not.

Recommendation #4.6: Manitoba Hydro should use the services of an external consultant for any future major capital projects to help with market-testing high value contracts such as the GCC and to help determine and design the appropriate contract structure, in order to minimize the risks allocated to Manitoba Hydro (and, by extension, its ratepayers) under those contracts.

Finding #4.13: The primary causes of cost overruns on Keeyask were below-target labour productivity and geotechnical issues with the riverbed. The GCC allocated these and other risks (and the costs of their materialization) to Manitoba Hydro while allocating few to the general civil contractor, which introduced significant unpredictability to the outcome of the GCC. Further, the design of the GCC, combined with the fact that Manitoba Hydro accepted a bid with unrealistic productivity levels, resulted in the prime contractor having less incentive to advance the project expediently or cost-effectively. While Manitoba Hydro appears to have identified the productivity levels in the contractor's bid as a concern, it nevertheless accepted the bid and did not adequately protect against the risk of these productivity levels being unachievable (including through the labour reserve).

Recommendation #4.7: Manitoba Hydro should structure its construction contracts for major projects in a manner that incentivizes the contractor to complete the project on time and on budget. Such incentives may be achieved through a fixed or unit price contract. If Manitoba Hydro elects to proceed with a cost reimbursable-target price contract, Manitoba Hydro should ensure that it carefully reviews all bids to ensure that the contract is designed to provide meaningful and effective incentives to the selected contractor.

Recommendation #4.8: The contract type for a high-value contract such as the GCC should be part of the mandatory public review process in respect of a major capital project that is contemplated in Bill 35, given that it is an important part of the risk management process. As part of that process, Manitoba Hydro should be required to justify a choice of contract type (which should be chosen with the advice of an external consultant, as discussed in Recommendation #4.6). If Manitoba Hydro decides to use a contract type for a major capital project that is not industry standard, such as the GCC, it should be required to justify that decision during public review and seek direction before executing the contract.

Finding #4.14: Manitoba Hydro's allocation of risks with respect to Bipole III appears to have been reasonable. This can be explained, at least in part, by the internal capacity and expertise in transmission that was available for the project.

Finding #4.15: There appears to have been little oversight on the part of the shareholder (the former Government) as to the commercial risk associated with Keeyask and Bipole III. There is no evidence that the Minister, Cabinet or Premier played an active or even passive role in the evaluation of risk associated with these projects or its allocation. For example, there is no evidence that any information related to the risk management reports prepared by Manitoba Hydro was provided to, or requested by, the Minister or Cabinet. Nor was there any evidence of

consideration of these matters in Treasury Board Secretariat minutes, apart from funding for the UNESCO World Heritage Site designation and benefits for Indigenous groups.

Finding #4.16: There was no structured regular reporting by Manitoba Hydro's CEO and/or the Chair of the MHEB to the Minister. Indeed, the Commissioner was told emphatically by a former minister that this level of regular engagement was not the role of a minister with respect to a Crown corporation. Given the massive scale and the inherent risk of Keeyask and Bipole III to Manitoba Hydro's customers and to Manitoba residents that must live with the implications thereof, it would seem important for the elected officials of the day to meet regularly with the CEO/Chair. They did not. This suggests a failure in responsible stewardship and political oversight in the interests of Manitobans.

Recommendation #4.9: Government should play an active role in evaluating commercial risk associated with major capital projects undertaken by Manitoba Hydro. This is necessary in respect of a utility which, by virtue of being government-owned, has no other shareholders to whom it is responsible and by whom it is held accountable for its performance.

Crown corporations are very much like line departments when it comes to the principle of responsible government in a parliamentary democracy. **Ministers and premiers must be held accountable for Crown corporation decisions.** Accordingly, there must be regular reporting and communication from the Crown corporation to the Minister, as discussed further in Recommendation #5.8. This does not necessarily imply inappropriate interference as the Crown corporation seeks to pursue its legislated mandate on commercial terms. Rather, the accountability of the Crown corporation that comes from a regular reporting relationship can act as a safeguard for the shareholder from the kinds of things that occurred with respect to Manitoba Hydro in the matters of Keeyask and Bipole III. The Crown corporation must be accountable to the Minister who, along with rest of Cabinet is, in turn, accountable to the Legislature and the public.

Finding #4.17: Based on the materials that the Commission received from the Government (including Cabinet documents), there is no evidence of the former Government having formal internal processes for reviewing the financial implications of either Bipole III or Keeyask.

Finding #4.18: In the Commissioner's view, there is a need for clarification as to the respective functions, roles, and responsibilities of Manitoba Hydro and the Government as they relate to reviewing fiscal implications for major projects like Keeyask or Bipole III. **The Commissioner was troubled to hear that the Treasury Board Secretariat at the time had very limited involvement in major projects at Manitoba Hydro or Crown corporations generally, especially given the Secretariat's concern about summary net debt.** The Commissioner was also troubled to hear that the former Government's Cabinet subcommittees did not review Manitoba Hydro's capital expenditures and were merely provided updates. The Commissioner is encouraged to hear that Cabinet and the Treasury Board Secretariat appear to have become more involved in Manitoba Hydro's financial affairs under the current Government. This finding is addressed by Recommendation #1.2.

Recommendation #4.10: As discussed in Chapters 2 and 3 of this report, the Government should revise Manitoba Hydro’s statutory mandate as set out in The Manitoba Hydro Act to make it clear that Manitoba Hydro’s mandate is to meet Manitoba’s peak domestic load in the most cost-effective manner possible and not to maximize jobs in the north or carry out the Province’s environmental policy, unless otherwise directed by the Government through a transparent process. It should not preclude Manitoba Hydro from exporting power provided it is done in accordance with provincial energy policy which, as recommended in this report, should provide guidance regarding exports including commercial targets for projects built for exports (regardless of whether they eventually are used to serve domestic demand).

Finding #4.19: The Commission heard conflicting statements about the availability of information from Manitoba Hydro to the former Government regarding the comparative costs of Bipole III East and Bipole III West. The Commission also reviewed conflicting information about the comparative costs of these routes, including those resulting from delays. However, based on the information reviewed and outlined above, it appears that, at the time the former Government mandated a route other than Bipole III East, Bipole III East would have been at least \$400 million to \$500 million less expensive to build than Bipole III West, largely based on its shorter distance. Any costs associated with delay likely cannot be quantified in hindsight, given the passage of time (among other reasons).

Finding #4.20: The evidence available to the Commission suggests that the former Government gave little consideration to the cost differences between Bipole III West and Bipole III East. As discussed in Chapter 1 of this report, Bipole III East was rejected by the former Government because of its concerns with U.S.-based opposition to the route, a UNESCO World Heritage Site designation, opposition by some east side First Nations, and effects on export opportunities (which could not be substantiated), after which time the only option that was seriously considered by Manitoba Hydro was Bipole III West. This concern is addressed by Recommendation #1.2.

Finding #4.21: As found in Chapter 3 of this report, Manitoba Hydro’s (and the former Government’s) export forecasts were overly optimistic given the inherent risks and uncertainties underlying Manitoba Hydro’s assumptions about carbon “premiums” and demand for hydro-electric power in the U.S. export market, and the competition that Manitoba Hydro will face in the export market. At the start of the NFAT, Manitoba Hydro estimated export revenues from firm contracts of \$9 billion, which fell to \$6.9 billion during the NFAT and even lower afterwards with the cancellation of its largest contract, the WPS 308 MW sale (as discussed in Chapter 3 of this report).

Finding #4.22: As BCG’s review made clear and the MHEB accepted, the decision to build Keeyask was imprudent due to a failure to fully assess the risks, including its fiscal implications and the level of debt that both Manitoba Hydro and the Province would ultimately be exposed to, especially given the concurrent build of Bipole III. The degree of risk was attendant on export market forecasts (which, as discussed in Chapter 3, were overly optimistic) and executing Keeyask and Bipole III on budget, which did not happen.

Recommendation #4.11: The decision to build a project of the scale and cost of Keeyask should not be made until after the risks have been fully assessed, including the project’s immediate and long-term fiscal implications for Manitoba Hydro (and its ratepayers) and the Province (and its taxpayers). As recommended in Chapter 1 of this report, the need for a project should be justified through comprehensive IRP completed by Manitoba Hydro and then reviewed by an independent regulator such as the PUB in a public proceeding.

Under Bill 35, the required NFAT of a major new facility should also include a full assessment of risk and fiscal implications.

Finding #4.23: Based on the decision to proceed with Keeyask despite the concerns of Hydro’s finance staff, it appears that Manitoba Hydro’s internal processes and decision-making structures placed a greater emphasis on the input of the engineers over other disciplines such as finance.

Recommendation #4.12: As discussed in Chapter 5, the Commissioner views Manitoba Hydro’s establishment of the MPEC as a good decision and a positive development in terms of project oversight, coordination, and accountability within Manitoba Hydro. The MPEC or a structure with similar, direct executive involvement (including the President and CEO) should be in place at the beginning of any future large-scale capital project at Manitoba Hydro. Such a structure helps provide clear lines of responsibility and executive oversight within the company.

Finding #4.24: The Commissioner notes that other government-owned power utilities in Canada continue to use debt/equity targets which are not materially different from Manitoba Hydro’s current 75/25 target. In the Commissioner’s view, a long-term debt/equity target has value by helping prevent negative impacts on the Province’s credit rating, particularly during adverse developments like the COVID-19 pandemic. However, achievement of a debt/equity target should not be the singular focus and an interest coverage ratio target should also be used. The Commissioner recognizes that in the short-term, aggressive debt/equity targets can have a negative impact on rate stability and predictability and, therefore, cash flow stability and predictability. The Commissioner further recognizes that financial targets must take into account changing variables and context and be adjustable based on real drivers of rate-making policy, including risks.

Finding #4.25: The evidence from the NFAT and 2017/18 GRA about transfers from Manitoba Hydro to the Government – particularly their quantum relative to most other provinces and how they are protected if projects do not turn out well financially (and may increase) – is important for the purposes of Recommendations #1.6 and #2.6 regarding how Government should bear the risk of export projects underperforming, rather than ratepayers.

Chapter 5 - Post-Approval Oversight

In accordance with section 5 of the Terms of Reference, the Commission inquired into the extent to which the oversight process that was followed after Keeyask and Bipole III were approved:

- (i) reflected best practices then applicable for such projects; and
- (ii) mitigated the associated commercial risk and accommodated changing circumstances as they

occurred.

Finding #5.1: Manitoba Hydro did not appear to learn lessons from Wuskwatim, or at least it did not incorporate those lessons learned as it claimed. As discussed in Chapter 4 of this report, the contract model (cost reimbursable target price) did not fit the circumstances for the Keeyask project and should not have been used and there were inadequate incentives for the general contractor to perform efficiently – both contrary to the lessons that Manitoba Hydro said it learned from Wuskwatim. Furthermore, as discussed in this chapter, greater third-party review was needed, and Manitoba Hydro should have exercised more rigorous oversight and been more active in managing the work – all in accordance with the lessons that Manitoba Hydro said it learned from Wuskwatim. The reality that Keeyask experienced significant cost overruns just like Wuskwatim undermines the claim that lessons were learned and applied.

Finding #5.2: The Commissioner agrees with the PUB that the results for Keeyask in 2016 and 2017 indicate that there was not effective oversight under the cost reimbursable GCC by Manitoba Hydro. If more effective oversight of BBE had been exercised by Manitoba Hydro, project cost overruns may have been mitigated.

Finding #5.3: Manitoba Hydro did not have the necessary internal expertise to manage the GCC to avoid cost and schedule overruns. Manitoba Hydro itself stated that the decision to manage the project using an internal team brought risks and that to reduce those risks it retained external expertise. However, it did not retain any independent experts to reduce those risks until 2016 and they did not report to Manitoba Hydro until those risks had already begun to materialize. Manitoba Hydro also failed to heed the advice from Stantec in 2012 regarding cost control.

Recommendation #5.1: The Commissioner concurs with the recommendation that Manitoba Hydro use the services of an external construction management expert for future high-value capital projects and those with cost reimbursable payment structures, who could help Manitoba Hydro with effective cost controls and risk management.

The Commissioner also concurs that Manitoba Hydro should continue implementing recommendations made by MGF and KCB. Manitoba Hydro should also report on its implementation of recommendations in the Keeyask health check that KPMG prepared in 2016 regarding cost control, forecasting, and risk management, and it should report its progress on implementing MGF, KCB, and these KPMG recommendations, both to the PUB at the next GRA and to the Government.

Recommendation #5.2: For any future major capital project that Manitoba Hydro proposes to construct, it should be required to demonstrate available capacity for project management through internal and/or external resources. This is a matter of execution risk that must be dealt with and considered during the mandatory public review of the project. This review should focus on the specific individuals and processes proposed to be used for the project in question, not Manitoba Hydro's institutional expertise that the project team may or may not benefit from. For areas where Manitoba Hydro lacks internal expertise, it should retain the services of external parties through a model that shares risks for that aspect of project execution with the third party (such as a P3 model, as discussed in Recommendation #2.2).

Finding #5.4: Manitoba Hydro placed too much weight on the Limestone project from decades past rather than the more recent Wuskwatim project, which was much less successful. This unjustified selectiveness reflects a bias at Manitoba Hydro towards it building new projects, regardless of the outcomes that can realistically be expected.

Recommendation #5.3: Given the PUB's jurisdiction to consider Manitoba Hydro's capital expenditures as a factor in setting rates and to ensure that rates reflect prudent expenditures, the PUB should carefully scrutinize the costs incurred by Manitoba Hydro with respect to capital projects like Keeyask. Any costs incurred by Manitoba Hydro that are not prudent should be excluded in the PUB's calculation of rates and thus borne by Manitoba Hydro and its shareholder (the Government of Manitoba), rather than ratepayers. This would provide an incentive to Manitoba Hydro and the Government of Manitoba to provide greater oversight of any future major capital projects and implement processes to mitigate cost overruns and avoid incurring imprudent costs.

Finding #5.5: The results for Keeyask in 2018 indicate improved oversight by Manitoba Hydro that has mitigated further project cost overruns and delays.

Finding #5.6: Capacity was stretched within Manitoba Hydro because it was managing multiple large projects. Although capacity appears to have existed for Bipole III (which was well managed, as found below in this chapter and elsewhere in the Report), internal capacity appears to have been lacking with respect to the management of Keeyask, particularly given the poor results in 2016 and 2017. This was likely due, at least in part, to the amount of time that had passed since Manitoba Hydro's last major generation project, given that Wuskwatim was a relatively small station with 210 MW of capacity and much smaller than Keeyask. Manitoba Hydro did not seem to recognize this lack of internal expertise or, if it did, it failed to address it soon enough through the use of external consultants.

Recommendation #5.4: To supplement Recommendations #5.1 and #5.2 for Manitoba to use external expertise for any future high-value capital projects (including potential P3 arrangements), Manitoba Hydro should plan its capital development program where possible so that multiple "mega" projects are not constructed simultaneously. This would help avoid capacity issues and improve project execution, which would, in turn, improve the financial health of Manitoba Hydro (and the Province). To the extent that any major projects are carried out by Manitoba Hydro in the future, dedicated senior management should be assigned to provide clear lines of responsibility and executive oversight, as noted in Recommendation #4.12.

Finding #5.7: The Commissioner views the establishment of the MPEC as a good decision and a positive development in terms of project oversight, coordination, and accountability within Manitoba Hydro. This structure appears to have been effective in terms of recovery on Keeyask and avoiding further delays and cost overruns. The Commissioner would expect a similar structure to be in place for any future large-scale capital projects at Manitoba Hydro. The Commissioner's recommendations for Manitoba Hydro's reporting structure are further addressed in Recommendations #2.10 and #4.5.

Finding #5.8: The Commissioner views Manitoba Hydro’s new capital approval policy as a positive development, particularly given evidence that critical project-related information (at least related to performance) was not previously reflected in reports to senior management and the MHEB.

Recommendation #5.5: The MHEB must be provided with accurate, timely, and complete information on all material aspects of project development – including regarding project management risks and cost overruns – so that it can properly discharge its duties and make good decisions. It is the MHEB that is ultimately accountable (to the Government and, by extension, to Manitobans) for Manitoba Hydro’s capital program and the consequences of any cost overruns or other failures. The Government relies on the MHEB for its analysis.

Finding #5.9: During the Commission’s review of documents received from Manitoba Hydro and the Government, it encountered very few written briefings from Manitoba Hydro or the MHEB to the Minister Responsible for Manitoba Hydro. The written briefings reviewed appeared to have been provided on an ad hoc basis. This raises the question of what the Government knew and when it knew it. Written briefings regarding the escalating costs for Keyask and Bipole III in particular ought to have been provided to the Government, yet the Commission did not encounter such a document among either the Cabinet documents or briefing notes to government that were reviewed.

Recommendation #5.6: The Commissioner believes that the relationship between the Government and Manitoba Hydro should be between the Chair of the MHEB, the CEO of Manitoba Hydro and the Minister Responsible for Manitoba Hydro. There should be regular briefings from the Chair of the MHEB and the CEO of Manitoba Hydro to the Minister Responsible for Manitoba Hydro, in addition to any project-specific briefing recommended in this report. The Minister Responsible for Manitoba Hydro should, in turn, be accountable for decisions by Manitoba Hydro, including to the Legislature through plenary proceedings and standing committees.

Finding #5.10: Based on the Commissioner’s review of MHEB minutes, it unclear that the MHEB held Manitoba Hydro management to account as was their duty, particularly as risks materialized and costs rose.

Recommendation #5.7: The Chair of the MHEB must ensure that the MHEB has the capacity to evaluate management proposals and hold management to account, as is its duty. To the extent that the MHEB does not have this capacity through its members, the Chair of the MHEB should ensure that the MHEB retains external expertise (e.g., in the form of external reviews and technical advisors) to ensure that it is properly discharging its oversight function.

If a regular reporting relationship is in place between Manitoba Hydro and the Government, as discussed in Recommendation #5.8, there is no need to have any MLAs appointed to the MHEB.

Finding #5.11: Notwithstanding route change implications and cost estimation errors prior to 2014, Bipole III appears to have been well managed by Manitoba Hydro thereafter, and the results on the project (only marginally over the final pre-construction budget) indicate that there was effective oversight. MGF’s independent review of Manitoba Hydro’s major capital expenditures during the 2017/18 GRA confirmed as much.

Finding #5.12: There was a small, informal off-ramp in respect of Keeyask; however, there was no formal process associated with it and it was not a practical off-ramp, given the significant investment to date and government support for the project. If a hard off-ramp had been available in respect of Keeyask, it likely would have been identified in early 2016 and brought before the MHEB, although it likely would not have made any difference if the former Government would not consider the option.

Finding #5.13: The Commissioner acknowledges that the MHEB reacted promptly and properly took steps to mitigate schedule issues and productivity in 2016 and 2017, including through retaining BCG and other external consultants for recommendations.

Finding #5.14: After years of delays and cost overruns, Manitoba Hydro was ultimately able to work with BBE to achieve the revised productivity targets for Keeyask in 2018. This was due to a combination of increased oversight over BBE by Manitoba Hydro, Manitoba Hydro benefitting from its prior years of experience on the project (including its shortcomings), and significantly relaxed cost and schedule targets for Keeyask.

Finding #5.15: The results in 2018, while a positive development for the project, also highlight what could have been achieved previously had there been better stewardship and oversight by Manitoba Hydro.

Finding #5.16: Manitoba Hydro did an effective job managing Bipole III contractors to mitigate commercial risk and accommodate changing circumstances. This effective management, risk mitigation, and accommodation included terminating an underperforming contractor who was responsible for a significant section of work and taking legal action to recover additional costs from them. This contrasts with Keeyask – a more complicated project involving a major new generating station – in respect of which Manitoba Hydro was not effective in managing contractors.

Finding #5.17: The Commissioner saw no evidence of interest or proactive outreach on the part of the former elected Government of Manitoba to provide oversight, accountability, and overall leadership on the Keeyask and Bipole III projects. The former Government seems to have been largely focused on rate increase issues instead. As the costs of the projects grew and the potential impact on Manitoba Hydro became apparent, there is no evidence that the former Government engaged with the MHEB or provided any direction. While the construction of the projects was a priority and part of the former Government’s vision of “Manitoba’s oil,” oversight of them appeared not to be a priority.

Recommendation #5.8: Government has an important role to play in being aware of, and actively monitor, major capital projects like Keeyask and Bipole III. Government is responsible

to Manitobans and should fulfill that responsibility by expecting regular reports and asking questions about project progress and holding Crown corporations like Manitoba Hydro to account through the responsible Minister. The Minister should be held responsible for the level of knowledge of the Government and, in terms of project risk, the Minister should report on activities to do with project variance and risks to Cabinet. To do so, the Minister must be aware of emerging risks and question the project managers regarding details of their mitigation plan(s) and hold them to account for their performance against the approved plan(s).