New Clear Free Solutions

NBEUB MATTER 336

NB Power 2017-2018 General Rate Application

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1.0 INTRODUCTION

This evidence is submitted by Chris Rouse on behalf of New Clear Free Solutions. The mandate of New Clear Free Solutions is to provide energy oversight to the public and official decision makers using scientifically objective regulatory and financial information. The objective of New Clear Free Solutions is to help ensure safe, affordable, and sustainable energy solutions for the Canadian public and environment.

New Clear Free Solutions opposes the proposed 2% rate hike. It is our opinion that NB Power is not well managed and that the current 10 year plan and IRP are woefully inadequate, lack ambition and are not in the public's best interest. We argue that NB Power is not compliant with its operational financial risk management policies and that the current IRP and 10 year plan do not adhere to section 68 (b) and section 100 (2) of the electricity act.

We fundamentally oppose NB Powers business plan to have rate increases to pay down debt to create equity. We do support building equity by investing rate increases into renewables and argue that this in the publics best interest to build equity this way. We would like to point out that the legislation only asks for an equity target and does not specify an absolute debt level reduction, or give direction on how to achieve this target. Functionally these are two very different things to consider. We support having a much higher equity target, however we strongly disagree with how to achieve it.

As well we do not think NB Power has adequately responded to the board's request to examine what an appropriate long term capital structure might look like. Such a request should include looking to the past to understand the current capital structure are and how NB Power got into its currently unhealthy financial position. It should include what an appropriate structure and debt levels should look like in the future, and what time it should take to achieve those goals. Most importantly though it should examine the different options to achieve the appropriate structure, and specifically by investing into renewable energy. NB Power investments can last up to 50 years and as such an examination of appropriate capital structure should be done in the context of the long-term IRP.

Building equity by investing into renewables will create much needed jobs in New Brunswick. One of the reasons the New Brunswick economy has been lagging is because NB Power has been paying down debt instead of investing into capital projects since completion of the refurbishment of Point Lepreau. NB Power should be one of the large economic drivers for the province, and there is a lot of work to be done to tackle our commitments to reducing the effects of climate change, yet NB Power is doing next to nothing. The billion dollars of equity that NB Powers 10 year plan has been trying to achieve by debt level reductions could just have easily been created by investing into capital projects that will reduce fuel and purchased power costs.

NB Powers current business plan is denying New Brunswickers much needed jobs and the government of New Brunswick the benefits of this economic development. This could be done without any additional rate increase other than what have already been planned for. Paying down debt instead of creating jobs is not in line with the mandate letter supplied to NB Power and we also argue that the current IRP is not consistent with section 100(2) of the act.

Building equity by investing into renewables has another very significant effect on the financial situation of NB Power. It appears that NB Power has not recognized that investing into renewables that have zero fuel cost will not only build equity while creating jobs and economic development in the province, but it will also displace Fuel and Purchased Power cost and replace it with a corresponding depreciation and amortization expense plus a return on that investment. Depreciation and amortization expense as well as net earnings contribute to operating cash flow that can again be reinvested to create equity significantly faster than by just paying down debt levels through rate increases. From a cash flow perspective money that used to be spent on fuel and purchased power is shifted to operating cash flow to be able to be reinvested again to create more equity. This is tantamount to changing your power bill expense to an investment into a RRSP while keeping your power on.

For the investment into renewables to be able to shift fuel and purchased power cost to amortization and depreciation cost and net earnings NB Power must make the investment. Private investments into renewable energy via power purchase agreements will only shift fuel cost to other possibly higher fuel cost, and should be avoided.

It is unreasonable, and not in the public's interest for NB Power to NOT engage in partnership for the LORESS community energy supply. We argue that NB Power is not compliant with section 68 (b) of the act because NB Power is not applying the lowest cost option and have admitted to as much in the IR process.

Not only do private investments into renewable energy lead to 30% higher costs, they do not shift fuel and purchased power cost to depreciation and amortization cost. Private investments often contain contractual obligations that may obscure the efficient operation of the electrical grid, such as a must take contract or paying to curtail a privately financed wind farm. NB Power should be striving to reintegrate, and exploring options to buy back private generators in the province like Bayside power, instead of signing additional PPA's that may affect the efficient operation of the electrical grid.

It appears to us that NB Power is resisting the switch to renewables and we argue that this poses a significant financial risk. Utilities all over the world have already begun the transition to renewable energy. The utilities that are resisting the investment into renewable energy are not doing well and do not have equitable futures. Renewable energy is now similar or even lower cost than fossil fuel and nuclear generation and trending down while the long term look at fossil fuels is costs going up as seen in Attachment D Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2016. We question the management decisions not to be investing into renewable energy.

Do NB Power Executives think they are smarter than pretty much everyone else in the Utility world that is investing in renewables? Does NB Power executives think they are better investors than Warren Buffet who is investing heavily into renewable energy and recently purchased Alberta's electrical grid? Or is NB Power just being lazy, and stuck in their old ways? We do not know the answers to those questions, but given NB Powers past performance and current fiscal situation and lack of equitable long term plan we feel it is within our rights to question the very fundamentals of NB Powers business plans.

It is our feeling that most people in New Brunswick do not think NB Power is well managed. Several years ago, there was essentially a referendum on the sale of the NB Power. The people of New Brunswick spoke loud and clear that they wanted keep NB Power, but we do however expect it to be well managed.

In addition to opposing the 2% rate increase, New Clear Free Solutions objects to any salary raises for NB Power executives with the exclusion of the VP of Nuclear. We do not think that the current 10 year plan and IRP warrant salary raises for the individuals responsible for these plans. The fiscal situation of NB Power is not well, and we believe NB Powers long term plans are not adequate and NB Power is fundamentally not understanding how the transition to renewables will affect their business. We will object to any salary raises for NB Power executives until we are satisfied they have come up with an adequate long term plan.

2.0 INTEGRATED RESOURCE PLAN (IRP)

New Clear Free Solutions would like to urge the board to order NB Power to address our concerns and requested information contained in our evidence in the next iteration of the IRP, as per section 100 (4) (b) of the electricity Act:

> ***"100****(3) The Board may, on its own motion, order the Corporation to include additional information in any subsequent integrated resource plans submitted under subsection (1) for the approval of the Executive Council."*

New Clear Free Solutions believes this to be a very important part of the electricity act, which has not been utilized by the board yet. We think it is important for the board to consider the intent of this clause in the legislation. While the board does not approve the IRP like in many jurisdictions, but as the economic regulator of NB Power the board is the government organization that is most familiar with the economics of NB Power. As such we believe that the intent of this clause is for the board to ensure that the Executive Council is aware of any significant information that may be missing from the IPR or to challenge any of the NB Powers assumptions in a transparent manner and to ensure the IRP is in the publics best interest.

This request is similar in nature to the request that we originally made as an intervener in matter 272. In our final argument for that matter, we withdrew the request in hopes of working with NB Power to have them address our concerns. We have met with NB Power on several occasions and have asked them to model the Carbon Tax and Investment Plan (CTIP) using their sophisticated grid, and economics simulation software. We originally called the CTIP the Sustainability Investment Plan (SIP) in matter 272. This investment plan was originally developed in response to an IR from board staff how we thought a carbon tax might be implemented in matter 272.

In hopes of a better relationship with NB Power we did not intervene in matter 307. However, after several meetings with NB Power it became apparent that they were not going to make our modeling request. Thus, we asked the board to order NB Power to model our proposed Carbon Tax and Investment plan at the public comment meeting for matter 307. At the public meeting,

it was indicated by the chair that maybe it would be more appropriate to handle such a request at this hearing. Because of that we have intervened in this matter.

When it became apparent that NB Power was not going to proceed with our requests we began modeling the CTIP ourselves and have updated the modeling several times to be more sophisticated each time and providing more and more sensitivity cases. We have spent a considerable amount of time refining the modeling to a point where it is impractical to refine any further without the expensive sophisticated software already owned by NB Power. We have gone well beyond proving the general concept of the plan and consider it to be reasonably accurate modeling. Our IRP is significantly better than that the current one performed by NB Power.

We have developed to the extent practicable an Integrated Resource Plan that utilizes the CTIP. This is the baseline for the modeling we want NB Power to do, so they can provide additional information in the next IRP. We submit as part of this evidence Attachment A Carbon Tax and Investment Plan 2016 Annual Energy Outlook Update. This is our latest and most sophisticated update of the plan using the US Energy Information Administration Cost and Performance Characteristics of New Generating Technologies, Annual Energy Outlook 2016 Table 8-2 which we have included as Attachment B.

The core principle of the CTIP which creates an investment fund and invests the Carbon Tax into renewables and then keeps reinvesting the return on investments also into renewable energy. This creates an extremely powerful compounding effect over the timeframe of an IRP. This compounding effect is large enough that a relatively small carbon tax can grow large enough to totally fund the transition to low carbon economy while keeping rates very low and stable. This policy is literally about public interest and making sure the public earns interest instead of paying interest on the transition to a low carbon economy.

We had this compounding concept reviewed by Dr Rob Moir a professor of economics at UNBSJ. He stated to us:

> *"The concept of reinvesting in environmentally-friendlier energy production and energy efficiency to create a compound interest effect is founded economic theory. As such this policy should be considered by all provinces and not only New Brunswick"*

In addition to presenting the CTIP to the board, and NB Power we have also presented one of the preliminary versions of the CTIP to the Department of energy and mines, who referred to it as a "made in New Brunswick" solution. We have also presented the CTIP to the Select Committee on Climate Change with a very good response from them. During the select committee process many of those who participated agreed that the revenue from the carbon tax should be used for the solutions ie conservation, efficiency and renewable energy. We have included with this evidence Attachment C New Clear Free Solutions Presentation to the Select Committee on Climate Change on Sept 7 2016. This attachment has an older version of the modeling but provides more context and details on the CTIP.

We would like to express our dissatisfaction with NB Powers involvement with the select committee. NB Power provided very little direction for the select committee except to give improper information about the cost of replacing Belledune power. NB Power should have been

presenting option to the committee instead of bellyaching about how much it may cost. NB Power should have been modeling different options for the committee as part of their operational risk management policies but failed to do so.

We would like to bring to the boards attention several key recommendations from the select committee on climate change report, and key points from Transitioning to a Low-Carbon Economy, New Brunswick's Climate Change Action Plan.

Funding for climate change

Dedicated funding for climate change initiatives is essential to ensure sustained, ambitious and collaborative action to address climate change. Funding will be required to address adaptation and mitigation initiatives.

The provincial government will:

117 - ***Establish and administer a climate change fund that will:***

- a - ***ensure proceeds from carbon pricing are invested back to consumers and economic sectors to reduce emissions (energy conservation and efficiency, and renewables) and climate change adaptation; and***
- b - ***ensure expenditures are done in accordance with government's climate action priorities;***
- c - ***consider all existing provincial and federal funds and opportunities to further leverage the climate change fund.***

118 - ***Make provisions for multi-year funding for climate-related initiatives.***

The provincial government will:

32 - ***Implement a made-in-New Brunswick carbon pricing mechanism that addresses the requirements of the federal government for implementing a price on carbon emissions by 2018 and at the same time recognizes New Brunswick's unique economic and social circumstances. The provincial government will take into consideration impacts on low-income families, trade-exposed and energy-intensive industries, and consumers and businesses, when developing the specific mechanisms and implementation details, including how to reinvest proceeds. Any carbon pricing policy will strive to maintain competitiveness and minimize carbon leakage (i.e., investments moving to other jurisdictions). Proceeds from carbon emissions pricing will be directed to a dedicated climate change fund.***

- b - ***ensure expenditures are done in accordance with government's climate action priorities;***
- c - ***consider all existing provincial and federal funds and opportunities to further leverage the climate change fund.***

118 - ***Make provisions for multi-year funding for climate-related initiatives.***

The Committee recommends that government:

81. Develop a made-in-New Brunswick carbon pricing mechanism, as opposed to having one imposed on New Brunswickers by the federal government, that is conditional on:

- **a.** Directing all revenue from carbon pricing to a dedicated climate change fund, not general revenue;
- **b.** Undertaking a detailed analysis of the social, financial, economic, and environmental impacts of the various carbon pricing mechanisms and revenue investment options. The analysis should be made public and consider the:
  - **i.** Potential impacts on consumers and businesses (including capacity to pay) and industry (including trade-exposed, energy-intensive New Brunswick industries);
  - **ii.** Cost of administering any carbon pricing mechanism; and
  - **iii.** Impact on GHG emissions reduction.
- **c.** Protecting low-income New Brunswickers;
- **d.** Including all economic sectors;
- **e.** Considering the approach taken by neighboring jurisdictions;
- **f.** Developing the mechanism with the engagement of all concerned interests; and
- **g.** Ensuring the carbon-pricing mechanism is outlined in legislation and receives public consultation through a committee of the Legislative Assembly.

The provinces climate action plan is to tax carbon and invest the proceeds into ghg reduction by investments in conservation, energy efficiency and Renewable energy. We would argue that investing the Carbon Tax into the solutions is the best climate policy of all of the Provinces and should be a model followed by them. Fundamentally this plan is what New Clear Free Solutions has been proposing as the Carbon Tax and Investment Plan. NB Power, our publicly owned electrical utility, is responsible for both renewable energy and energy efficiency. As the government organization, responsible for these two things it only makes sense for NB Power to model how these investments should be made. This modeling should be done in the context of the IRP and the benefits from this investment fund should be included in NB Powers financials.

It is not evident that NB Power understands the provinces new climate action plan. NB Power has assumed that the carbon tax would only be an additional cost as indicated in the latest version of the 10 year plan and the sensitivity analysis done in the 2014 IRP. The investment of the Carbon tax into renewable energy, and energy efficiency should be done through NB Power for the benefit of all ratepayers.

Currently the province is still deciding on how the revenue from the carbon mechanism will be generated. They have however already decided that the revenue will be invested into the solutions. We are unsure who NB Power thought would be investing the hundreds of millions of dollars per year from the Carbon Tax revenue into renewable energy and efficiency but the obvious choice is NB Power.

We understand that NB Power is already currently working on an IRP that is to be submitted to the Executive Council later this year. We do not have the confidence or reassurance from NB Power that they will model this investment option or an aggressive renewable energy supply plan. The current IPR and 10 year plan are woefully inadequate and requires significant work to be in line with New Brunswicks Climate Action Plan.

We request that the board order NB Power to include New Clear Free Solutions proposed Carbon Tax and Investment Plan in the next iteration of the IRP.

2.1 Time Frame of Next IRP

The most significant NB Power assets retire by 2040. This includes Point Lepreau, Belledune, and Colson Cove. There is also the risk that these assets will not last as expected. We consider the early retirement of Lepreau a real risk and NB Power should be prepared for this. We want the next iteration of the IRP to assume the retirement of these assets and the cost associated with them. This allows New Brunswick to choose what our energy mix of the future will look like. Approaching 2040 there is a significant cliff edge in terms of NB Power assets. Not including them is the plan poses significant financial risk and in not good practice for Integrated Resource Planning. We request that the board order NB Power to include the retirement of those three assets in the next iteration of the IRP.

2.2 Carbon Pricing

In attachment A we have assumed an economy wide carbon price starting off at $20/Ton which generated approximately $300 million per year to be invested into renewable energy. It this modeling the $300 million stays constant. It would be expected that as carbon is reduced that this amount would become smaller so that the Carbon Tax would have to increase. We think the portion of the carbon tax that NB Power rate payers pay should simply be a percentage of the revenue requirement so that that portion of the carbon tax stays relatively flat ensuring stable funding. We do not think that a carbon tax of $50/Ton is needed to make the transition. The price on carbon should be no higher than the investments needed for the supply plan to keep rates low and stable.

We also assumed in our modeling for simplicity stake that the return on investment is in the form of a PPA that pays 7 cents a KWh which also pays for the O and M costs of the supply plan. We are unsure how this will affect the rest of NB Powers financials but the next IRP should address this. It is possible that the return on investment would only be the fuel and purchased power and displaced O and M savings. This option should also be investigated in the IRP.

Given that the province has decided that the carbon tax revenue will be invested, NB Power should not be modeling additional rate increases other than the Carbon Tax. Not only will NB Power get additional revenue from their portion of the Carbon Tax, NB power will also receive all the revenue from the carbon tax from all carbon fuels, which should eliminate NB Powers need for all of the additional rate increases they are planning for and should keep rates lower than currently planned.

NB Power should also be modeling the differences in Cap and Trade systems vs Carbon Tax, so that the government can make informed decisions. It is our opinion that a Carbon Tax is much better than a Cap and Trade system for New Brunswick.

2.3 Supply Energy Mix

We want NB Power to perform similar sensitivity analysis around different technology mixes as we have done in Attachment A. At a minimum, we want NB Power to model a similar mix we used for RPS 1 attachment A. This mix in Attachment A does not include HQ or other interconnects and does not account for any import export sales, which the IRP performed by NB Power should include. Given the past and current performance of Point Lepreau we request that nuclear free options be examined.

The IRP should also examine sensitivities around the cost associated with varying RPS like 85% 90% 95%. It is reasonable to expect that the closer you get to 100% renewable the more expensive a total system cost might be. It is important to look at these costs so that the government can make informed and doable policy decisions to mitigate operational risk.

The energy mix should be a smaller more distributed mix that can be implemented over time, which will also mean they will retire over time creating sustained renewal instead of the boom and bust of large riskier projects like nuclear. The mix should be located closer to loads to reduce transmission cost.

2.4 IRP Metrics

We disagree with NB Powers exclusive use of just the Net Present Value metric in the IRP. We request that the board order NB Power to present the IRP as an extension of the 10 year plan and have all of the same economic metrics just extended to the time frame of the IRP. This should also be done for all the sensitivity cases as to ensure the transparency of NB Powers decisions. Net present value only addresses the least cost portion of section **100**(2) of the Act, and does not address the economic and environmental sustainability and risk management metrics.

2.5 The Supply Plan

NB Power does not have a good three-year plan let alone a long-term IRP. We still have no details one the meager supply options to be in service by 2020 that are presented in the latest IRP. NB Powers should strive to have a fairly accurate plan looking out to 5 years, relatively set it stone agenda for the 10 year plan, and a general direction for the last half of the IRP.

The plan should be designed to be the most efficient and economical way to achieve the mix selected. As a guide NB Power should use a similar supply plan as we have presented in Attachment A. The plan should include continued progress each year to achieve the mix set out for the IRP. It has been 8 years since NB Power has added any renewable energy to our grid.

As with any Plan it should be subject to change based on the realities of how the plan is unfolding. NB Power should start by investing in a variety of different technologies at the beginning of the plan to test them out and get real data on actual cost and performance of the technologies. This real-life data can then be used to assess the long-term energy mix we are

striving for. If one technology is not performing well such as the performance of Point Lepreau adjustments can be made in the future to not include them in future mixes. This will significantly improve the accuracy of the LCOE data used for the long term planning. We think NB Power has a history of underestimating the cost of the things they want to do and overestimating the cost of the things they don't want to do. This poses a significant financial risk on NB Power and should not be tolerated. Implementing this testing phase of the plan helps prevent NB Power from using inappropriate assumptions in their models.

2.6 Hydro Quebec Power

New Clear Free Solutions thinks that in the short and medium term we should maximize the utilization of HQ power to displace fossil fuels and then in the longer term we can then displace HQ power purchased power cost with our own investments into renewable energy. By displacing carbon now we should be able to not have to have early closures of assets like Belledune that can be used as strategic capacity in the winter.