Dagdick, Elise (CON)

From: James Beddome [jbeddome@yahoo.com]
Sent: March-21-12 9:17 AM
To: Dagdick, Elise (CON)
Cc: Ouimet, Darrell (CON)
Subject: Re: Comments Bipole III EIS (Public Registry 5433.00)
Attachments: GPM submission on BP3 EIS -FINAL.pdf

Dear Ms. Dagdick,

Please forgive the delay in sending this to you. Please put these comments in Public Registry file #5433.00.

In short without a more thorough needs for and alternatives to analysis this project should not be approved.

It may seem that much of my submission is focused more on economic issues over ecological issues, but to this end I would highlight the first principle in Schedule A of the Sustainable Development Act.

"Integration of Environmental and Economic Decisions
1(1) Economic decisions should adequately reflect environmental, human health and social effects.
1(2) Environmental and health initiatives should adequately take into account economic, human health and social consequences."

Best Regards,

James Beddome
Leader, Green Party of Manitoba
leader@greenparty.mb.ca or jbeddome@yahoo.com

From: "Ouimet, Darrell (CON)" <Darrell.Ouimet@gov.mb.ca>
To: 'James Beddome' <jbeddome@yahoo.com>
Cc: "Dagdick, Elise (CON)" <Elise.Dagdick@gov.mb.ca>
Sent: Monday, March 19, 2012 7:43:57 AM
Subject: RE: Comments Bipole III EIS (Public Registry 5433.00)

Hi James,

Your comments were not attached. Also, Elise Dagdick is the lead contact person on this file.

Thank you,
Darrell

From: James Beddome [mailto:jbeddome@yahoo.com]
Sent: March-16-12 11:50 PM
To: Ouimet, Darrell (CON)
Subject: Comments Bipole III EIS (Public Registry 5433.00)

Please find my comments attached.

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Elise Dagdick, Manitoba Environment Officer
Manitoba Environmental Assessments and Licensing Branch
160-123 Main Street, Winnipeg, MB R3C 1A5

Dear Ms. Dagdick

Please find enclosed the Green Party of Manitoba comments on the proposed Bipole III Environmental Impact Statement[1] (Public Registry file #5433.00)[2]. Our primary concerns are as follows: i) a review under the *Canadian Environmental Assessment Act* (CEAA) should be required as was indicated in the Scoping Document and EIS guidelines; ii) a proper "Needs For And Alternative To" (NFAAT) analysis needs to be performed, which considers Bipole III not as a stand-alone project but as but one component of a much larger plan to develop hydroelectric resources in northern Manitoba, before Bipole III is approved; iii) we are concerned how Bipole III may impact ecosystems, including wetlands, peatlands, bogs, woodland caribou, moose, and other ecosystem impacts.

Given the large amount of public interest in the Bipole III transmission project, the massive amount of debt being financed on the credit of Manitoba, the potential impacts to ecosystems, First Nations, and private landowners, we feel that the Bipole III project should not move forward until an independent (non-Manitoba Hydro, non-Government of Manitoba) citizen driven review of Manitoba's non-existent energy plan, and a thorough analysis of the NFAAT Bipole III, including demand-side management, point-source micro-generation, and expanded wind generating capacity.

Is Bipole III a stand-alone project, or simply a component of a much larger project?

It is fundamentally flawed to consider Bipole III as a stand-alone project. It must be considered in connection to the projects that are planned to be developed alongside with Bipole III, most imminently the construction of the Keeyask and Conawapa hydro-electric generating stations (G.S.) projects, the Riel Reliability Improvement Project, and new planned transmission connections with the United States.

Bipole III is in fact but one component of a larger plan to develop hydro-electric power on the Nelson River system.

Development of the Nelson River for hydro-electric purposes started with the construction of the Kelsey dam from 1957-61 to facilitate nickel mining operations near the present city of Thompson, Manitoba. This was followed by a joint Canada and Manitoba study in 1963, and 1966 formal agreement, to further develop the Nelson River system for hydro-electric purposes. To facilitate this development: i) the water levels of Lake Winnipeg were regulated to facilitate time water outflows into

1 Manitoba Hydro (November 2011) "Bipole III Environmental Impact Statement." Online: <http://www.hydro.mb.ca/projects/bipoleIII/eis.shtml>.
2 Government of Manitoba: Environmental Licensing and Assessments Branch "*Environment Act* Public Registry file #5433.00: Bipole III Transmission Project." Online: <http://www.gov.mb.ca/conservation/eal/registries/5433bipole/index.html>.

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the Nelson with hydro-electric needs; ii) the waters of the Churchill River were diverted via the Burntwood and Rat River systems into the Nelson River system, as this was seen as the most "economical" way to ensure adequate water flows on the Nelson River for Hydro-electric purposes.

The figure on the preceding page is taken from the 1975 Lake Winnipeg, Churchill and Nelson Rivers Study Board Summary Report.[3] It shows that in addition to the G.S. and control projects that were built or under construction in 1975 (Kelsey, Jenpeg, Notigi, Long Spruce), many of the projects that we have built (Limestone, Wuskwatim), or intend to build next (Gull/Keeyask, Conawapa) were clearly all

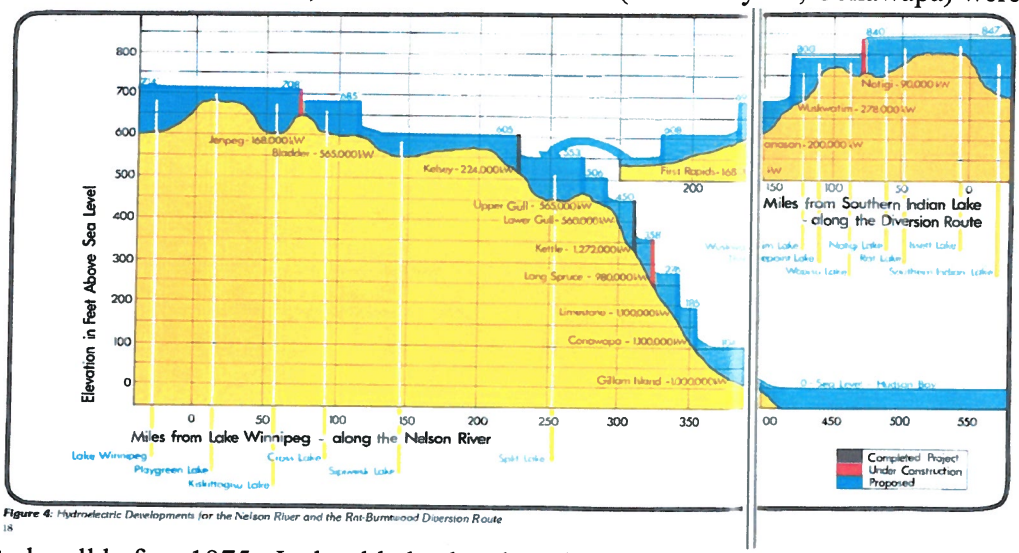

Figure 4: Hydroelectric Developments for the Nelson River and the Rat-Burntwood Diversion Route
18

contemplated well before 1975. It should also be clear that although the potential to build more hydro-electric capacity on the Nelson River exists, this potential is also somewhat finite. In other words there is a limit to the number of potential dams sites, and the hydro-electric capacity from the Nelson River system. Thus we need to analyze any new connected developments, including related transmission, from the broader perspective of development of the Nelson-Burntwood River systems as a whole.

> "The Green Party of Manitoba advocates for an independent, citizen-driven commission/task force to be set up to do a complete ecological assessment on both the total cumulative effects of past hydroelectric dams in Northern Manitoba and the potential future ecological impact that the construction of more dams and their future decommissioning would have on the entire watershed. Traditional ecological knowledge of the area's inhabitants would be solicited and integrated into the assessment."[4]

It should be noted that taking a moment to step back and plan, does not preclude future hydro-development, it simply ensure that we step back and ask ourselves the broader questions. What is the true ecological impact of hydro development? Is further development of hydro-electric resources in

3 Canad/Manitoba (April 1975) "Lake Winnipeg, Churchill and Nelson Rivers, Study Board: Summary Report." Online: <http://www.gov.mb.ca/waterstewardship/licensing/pdf/summary_report.pdf>.

4 Green Party of Manitoba Policy #6 - 2006 - "Current/Future Hydroelectric Development in Manitoba" online: <http://greenparty.mb.ca/policies/policies#2006-6>.

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our best interest at this time, or are there advantages to waiting? Does an expanded reliance on Nelson-Burntwood River generated electricity truly enhance energy reliability? Or do other more effective methods exist to improve reliability?

Quite truthfully there is a lack of information available. There are many more questions than there are answers. This is only compounded by the refusal of Manitoba Hydro, a publicly owned utility, to release the details of its cost of production, export agreement prices and conditions, etc. This only serves to further underscore the need for a independent citizen-driven review.

A rather lengthy quote from the Executive Summary of the Manitoba Pubic Utilities Board's (PUB's) January 12th, 2012 Order #5/12 sums up the situation rather effectively:

> While [Manitoba Hydro] MH has yet to file the detailed pending export agreements (the Board's request is being contested by MH in the Courts), from the record it is apparent that the export prices will not recover 100% of the costs incurred by MH to export that electricity. Therefore, it would fall to Manitoba's domestic ratepayers to subsidize the export sales commitments made by MH.
> ...
> The Board is unable to approve the higher rate increases requested by MH because the Utility's business plan is incomplete, lacks required detail and has not been tested through what has been promised as a "Needs For And Alternatives To" (NFAAT) review by an independent tribunal that will have full access to the economic and financial assumptions which underpin MH's business plan.
> ...
> In addition to providing a detailed review of the economic and financial assumptions of MH's preferred development plan, an NFAAT for MH's proposed investment would also test a number of viable alternative development plans, which is necessary to ensure that electricity rates for Manitobans remain just and reasonable and in the public interest.
>
> The Chairman and Vice Chair differ in their opinion as to whether such an NFAAT should include the planned Bipole III transmission line. ...service costs of Bipole III are likely to add approximately 3 ¢ /kWh to every kWh transmitted from Northern Manitoba. MH seeks to assign 100% of the currently forecast (by MH) $3.2 Billion cost of Bipole III to Manitoba's domestic customers despite the fact that Bipole III will be used to meet export demand if new generation capacity is built.
> ...
> It greatly concerns the Board that without having had its capital plans reviewed through an NFAAT proceeding, and without the US transmission lines required to transmit MH's electricity exports south of the border having been constructed or even been committed to, and without MH having obtained the required regulatory approvals in Canada, MH continues to spend $1-$2 Million per day on its currently favoured development plan."

Although the Green Party of Manitoba does not concur with all the findings of the PUB, we feel they raise some valid points in raising concerns over the economic viability of building new hydro-electric dams largely for export purposes, and the need for an independent NFAAT analysis. As the PUB notes this needs to be independent of both Manitoba Hydro, and the Manitoba Government.

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Specifically the current NFAAT analysis in the Bipole III Environmental Impact Statement (EIS) is deficient because: i) it does not consider the NFAAT in the context of Manitoba's overall energy plan, or lack thereof; ii) it does not consider Demand-Side-Management (DSM) (i.e. reducing energy consumption rather than increasing energy supply), including emergency DSM; iii) and aside from natural gas powered thermal generating stations, it does not consider alternative means of power generation in southern Manitoba beyond hydro-electric (eg. wind power).

> "In the [PUB] Chairman's view, there are identified alternatives that should be thoroughly vetted before spending more funds and committing Manitoba consumers to meet any shortage of revenue that may arise with respect to meeting the projected costs of Bipole III. To that extent, MH's contention that Bipole III is being built for domestic reliability needs would best be supported by a review that includes the development of a clear definition of the various seasonal situations that could trigger the failure of Bipole I and/or Bipole II. If lower domestic rates could be expected to develop without Bipole III (or without Keeyask and/or Conawapa) within the long-term planning horizon of twenty years without any additional reliability risk, then the plans that would support such an outcome should be seriously entertained, certainly before further commitments are made to the planned capital projects."[5]

It is clear that if Bipole III is approved and built, we will be more or less compelled to build Keeyask and Conawapa. We will have already sunk the capital costs into expanded transmission, and it will therefore only make sense to ensure that the transmission capacity is utilized to justify the initial costs. Approval of Bipole III therefore is nearly tantamount to approval of the Keeyask and Conawapa generating stations as well.

The Government of Manitoba and Manitoba Hydro have already signed numerous export agreements with American utilities. As admitted by the Government and Crown Utility these agreements:

> "...will require the construction of new hydroelectric generating capacity in Manitoba. ... Bipole III will also be utilized to transmit power from Keeyask and the 1,485-MW Conawapa Generating Station, supporting expanded electricity export sales outside of Manitoba's borders."[6]

It is therefore clear that the construction of Bipole III is as much about advancing further exports, as it is about improving system reliability in Manitoba.

> "if these prospective [export] agreements were not consummated, MH might be able to defer new generation until 2025/26 by serving domestic load only from existing domestic hydraulic/ thermal/ wind generation and present import arrangements."[7]

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5 Manitoba Public Utilities Board Order #5/12 (January 17, 2012), "A Final Order With Respect To Manitoba Hydro's Application For Increased 2010/11 And 2011/12 Rates And Other Related Matters" p. 129. Online: <http://www.pub.gov.mb.ca/pdf/12hydro/5-12.pdf>.

6 Government of Manitoba News Release (May 25, 2011) "$4 Billion in Power Aales to U.S. for Manitoba Hydro: Selinger" online: <http://news.gov.mb.ca/news/index.html?archive=&item=11570>.

7 Manitoba Public Utilities Board Order #5/12 (January 17, 2012), "A Final Order With Respect To Manitoba Hydro's Application For Increased 2010/11 And 2011/12 Rates And Other Related Matters" p. 52. Online: <http://www.pub.gov.mb.ca/pdf/12hydro/5-12.pdf>.

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Moreover Bipole III, Keeyask, and Conawapa have still not receive provincial and federal regulatory approvals including environmental licenses and authorizations (these comments are of course being submitted in response to Manitoba Hydro's request for an *Environment Act* license for the Bipole III Transmission Project).

Ultimately what is needed is an independent, citizen-driven commission/task force to consider all options and arrive at an energy plan for Manitoba. Until this independent, citizen-driven NFAAT review is conducted none of the projects should be allowed to move forward.

Reliability

More than 80% of Manitoba's Hydro generating capacity is produced via five generating stations (G.S.) along the Nelson River.[8] Bipoles I & II, which run parallel to each other, account for approximately 70% of Manitoba's transmission capacity.

In many respects it is this concentration of reliance on northern hydro-electric generation to supply the more populous parts of southern Manitoba with electricity that contributes to Manitoba's energy insecurity. There are inherent risks in transmitting electricity nearly a thousand kilometres, and more.

The current HVDC transmission corridor contains both Bipoles I & II, which run parallel to each other. Additionally a 230kv alternating current (AC) transmission line parallels along much of the route. Having a third high-voltage direct-current (HVDC) transmission line separated from the current corridor, will help to mitigate against the risk of transmission failure, but it will not completely remove this risk. It is still possible, albeit at a diminished level of risk, for a wide-spread forest fire, ice storm, or other calamity to interrupt all three HVDC transmission lines, as well as the the numerous 2030kv AC lines located in the vicinity.

Another alternative might be to considering both reducing domestic demand and adding additional generating capacity in Southern Manitoba through other means such as wind generation.

The Single Southern Converter Station Argument

One of the arguments advanced in the EIS is that Bipole III adds to system reliability because not only is Manitoba's electrical grid 70% reliant on the Bipoles I & II, but it is also equally reliant on a single southern converter station, the Dorsey Station. In the event that this converter station fails, it would leave Manitoba without access to 70% of power supply for approximately the three years it would take to replace, the argument follows.

The problem with this argument is that an additional Converter Station for southern Manitoba is already moving forward as part of the Riel Reliability Improvement project, which has already received

8 See Manitoba Hydro's 58th (2008-09), 59th (2009-10), and 60th (2010-11) Annual Reports, online: <www.hydro.mb.ca>.

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Environment Act license 2873.[9]

What is not clear is, if when the Riel Seectionalization project is completed in 2014-15, would it be possible to somehow connect Bipoles I & II to the Riel Converter station in the event of a Dorsey Station failure? This would likely require additional HVDC transmission line from the current Dorsey converter station to the future site of the Riel Converter Station. This additional stretch of HVDC transmission is likely to remain largely unused, but would help to serve as a back-up in the event of Converter Station failure. I am not an electrical engineer, so I admit I am unsure if this would be technically and/or economically feasible, but it is something that I would like to see investigated. Can the proponent or Manitoba Conservation provide any comment on whether such a back-up connection route between the Dorsey and future Riel converter stations would be possible?

Demand-Side-Management (DSM)

The Green Party of Manitoba (GPM) believes that that demand-side management (DSM) should be explored first. DSM entails changing consumer demand for energy through various methods such as financial incentives and education. The goal is to encourage the consumer to use less energy during peak hours, or move the time of energy use to off-peak times. By promoting energy consumption, and changes in patterns of energy use the need for investments in transmission networks and/or power plants can be reduced.

Looking at the Manitoba Hydro's May 2009 *Electric Load Forecast 2009/10 to 2029/30*[10] it can be seen that while there may be some reductions in the rate of growth, the amount of energy used by all types of electricity consumers in Manitoba continues to increase:

- Residential consumption continues to grow at a rate of 95 GW.h per year, 13% lower than the ten year annual growth rate of 109 GW.h;
- General Service consumption continues to grow at a rate of 240 GW.h per year, 9% lower than the ten year annual growth rate of 264 GW.h;
- General Top Service customer consumption continues to grow at a rate of 117 GW.h per year, 19% less than the ten year annual growth rate of 143 GW.h per year.
- All combined electricity consumption continues to grow at an average 334 GW.h per year, 11% lower than the ten year annual growth rate of 374 GW.h.

What would be more encouraging would be an actual decline in electrical energy consumption, rather than simply a slowing in the rate of growth. When one looks at average per customer demand over the past decade significant and steady reductions have not been achieved, rather while there has been some volatility, but the overall trend has been largely flat.[11] Our measure of success in regards to DSM

9 Government of Manitoba: Environmental Assessment and Licensing Branch, "License 2873: Riel Reliability Improvement Project." Online: <http://www.gov.mb.ca/conservation/eal/archive/2009/licences/2873.pdf>.

10 Manitoba Hydro (May 2009) "Public Utilities Board Filings - Appendix 7.1: Electric Load Forecast 2009/10 to 2029/30" <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_7_1.pdf>.

11 Manitoba Wildlands (June 18, 2001) "Reality Check: Is Manitoba Energy Efficient?" Online: <http://manitobawildlands.org/gov_rc15.htm>.

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should be if we can reduce overall Net Firm Energy demand and overall Net Total Peak demand. If we can achieve this, then we can improve energy reliability, delay the capital costs of new generation, and free up more electricity for export.

Pre-arranging DSM Guarantees for Emergent Situations

Given that a relatively small number of so-called "top consumer" general service customers account for around 43% of domestic energy consumption in Manitoba, it would seem logical to prearrange agreements with these industrial and institutional customers to drastically curtail energy consumption in the event of emergent situation (such as a converter station or HVDC transmission failure). Given that Manitoba has among the lowest electricity rates in the world, and these industrial and institutional customers benefit immensely from this fact, it would not seem unreasonable for them to help out in such exigent circumstances. In consideration for this business interruption Manitoba Hydro could either cover the cost of purchasing business interruption insurance, or agree to a predetermined schedule of payments in the event of a catastrophic system failure.

Obviously this is something that would have to be investigated further, and ultimately negotiated with the top-consumer customers. However, if we are to believe Bipole III is being built solely for reliability, then certainly we should be given some cost comparisons between the $3.28 billion dollar cost of building Bipole III and the cost of preemptively negotiating agreements with the largest power users in Manitoba to turn off the power switch as soon as possible in the event of unforeseen disaster that compromises the power system. Since 1991 Manitoba Hydro has offered some customers with the option of interruptible sales, this would really just be an extension of this concept.

The Other Alternatives: Wind and Beyond!

Secondly, provided there is community support and an independent citizens review both of our overall energy plan and any individual projects, the Green Party of Manitoba would explore other low-impact and renewable energy sources beyond large-scale hydro-electric (such as wind, solar, biogas from landfills, small hydro-power, etc.) to help diversify Manitoba's energy supply to help mitigate against risks like drought[12], etc.

This would add to reliability in at least two respects: i) it lessens dependence on northern generation, helping to mitigate any risks from interruption by improving southern energy autarky; ii) it also serves as a hedge against low-water flows when the hydro production capacity we almost exclusively rely upon is diminished. The wind is likely to continue to blow, and the sun will generally shine in drought years. The strategic risk of low water levels, according to Manitoba's own annual report is estimated at $2.0 billion. 2004 provides the most recent example of when low water levels required Manitoba Hydro to import substantial amounts of fossil fuel based electricity from the United States.

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12 Robert F. McCullough Jr. (December 2, 2009) "Review of the ICF Report on Manitoba Hydro Export Sales." Online: <http://www.cbc.ca/manitoba/includes/pdfs/mccullough_hydro_report.pdf>.

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We also may want to consider smaller hydro-power projects in southern Manitoba. Many small rural communities already have dams in existence. In 1901 the Little Saskatchewan river became the first Manitoba river to produce hydroelectric power in 1901. Being the the river valley where I was raised, I can think of two dams already in existence in Rapid City[13] and Minnedosa.[14] It would seem to be conceivable that the many dams already in existence along the numerous rivers inside Manitoba which could be modified, with minimal new ecological damage, to have a turbine installed so that they may produce electricity. Certainly this would need to be studied further, but additional small-scale southern hydro generation could help to "back-stop" other forms of renewable energy like wind, and solar. Unlike large scale hydro-electric, small scale hydro-electric projects, those with less than 100MW, would likely qualify for Minnesota's green energy standard. So wind, small-scale-hydro and solar energy would therefore likely receive a price premium on the export market, because they help Minnesota to achieve it's green energy standard, while also helping to make other more intermittent renewable energy (wind, solar, etc.) in southern Manitoba more reliable.

In many regards Manitoba is in the most superb position to consider newer forms of renewable energy, such as wind, solar, and land-fill biogas.[15] We already have a large and dependable hydroelectric source from northern Manitoba. Yet the over-dependence of southern Manitoba (along with export markets further south) on power electric generating sources located nearly a thousand-kilometres or more away is itself a risk.

The question therefore we need to be asking ourselves is do we want to be spending $3-17 billion on expanding electrical transmission and generating capacity in northern Manitoba? Or do we want to ask ourselves what renewable options could be explored near the sources of demand.

Below we provide an overview of the energy, economic and social implications of developing new wind generation over hydro-electric generation. It is unfortunate that a comparison of using the $3.28 billion to build Bipole III vs. using the $3.28 billion to expand wind generating capacity in southern was not performed.

The Green Party of Manitoba argues that an independent (non-Manitoba Hydro, non Manitoba Government) citizen-driven review of wind energy and other alternative energy sources needs to be done before the Bipole III transmission corridor is approved. The fact remains that if we choose to build Bipole III, then we are in fact also choosing to build new hydro-electric dams in Manitoba's north.

Manitoba Hydro classifies energy supply on the basis of: average energy available and dependable

13 The Rapid City dam was also the first dam in North America to install a fish ladder.

14 The Minnedosa dam, also on the Little Saskatchewan River, was the second dam to produce electricity in Manitoba. It closed following a dam failure in 1948. The dam was repaired and is still used to create "Minnedosa Lake" for recreational purposes, but is no longer used to produce electricity. It is hoped that modern advances in engineering may, pending further study, be able to concomitantly minimize the risk of dam failure and ecological damage.

15 The Methane from the Brady Landfill south of Winnipeg is presently simply flaring methane gas captured. This could be used to produce both heat and electric energy.

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energy available. The average energy available is the average of the annual generation historically produced. Dependable hydro energy is defined on the basis of the energy available.

According to Manitoba Hydro the 100 MW St. Leon wind energy project produces average energy of 375 GWh and dependable energy of 320 GWh, per annum.[16] The 138 MW St. Joseph Wind Energy project will produce 544 GWh of average energy and 463 GWh of dependable energy, per annum. The 200MW Wuskwatim hydroelectric project will produce 1520 GWh of average energy and 1250 GWh of dependable energy, per annum.[17]

The last time Manitoba Hydro performed a social net-benefits comparison between wind and hydroelectric energy production was in 2004.[18] At the time it compared the social costs and benefits of building the 200MW Wuskwatim generating station, with providing a similar level of energy through construction of 450MW of wind generation. Foresight, however, has shown that many of the assumptions used in the original comparison did not hold. Particularly noteworthy was the fact that the cost of the Wuskwatim Transmission and Generation project increased and astounding 246 percent, from $651 million to $1.6 billion. The previously commissioned comparison of Wuskwatim vs. Wind therefore is no longer relevant, and a new comparison is needed.

The two statistical comparison below contrast the two most two most recent energy projects built in Manitoba: Wuskwatim hydroelectric project and St. Joseph wind energy project.

The comparison shows that wind projects can be brought online more quickly for a lower capital cost, although this is somewhat offset by the longer life of a hydroelectric facilities. Still the lifespan costs of wind, on a dependable energy basis, range from $25,000 - $50,000 per annual gigawatt-hour (GWh) of energy delivered. Hydroelectric energy ranges from $35,000 - $70,000 per annual GWh delivery of dependable energy.

Wind projects also create more construction jobs per year, and more long-term jobs. 4.6 St. Joseph Wind farms could have been built for the price of the Wuskwatim project. This translates into wind energy creating more than twice the construction jobs of hydroelectric (1610 for wind vs. 800 for hydro) and five times the permanent positions (60 for wind vs. 12 for hydro).

Now clearly more jobs is a double edged sword. On the one hand it creates local employment and spending which helps to increase the provincial tax base; on the other hand more labour, particularly full-time permanent positions, likely means higher operating costs. This is clearly something that needs to be studied further.

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16 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table 1 p. 7. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

17 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table 2 p. 10. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

18 Marvin Shaffer & Associates Ltd. (February 27, 2004) "Social Net Benefits of Wuskatim vs. Wind Development". Online: <http://www.sfu.ca/mpp-old/pdf_news/811-04-Wuskwatim%20vs%20Wind%20BCA.pdf>.

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Northern hydro development creates jobs in northern Manitoba where the marginal need is greatest, but there have been numerous complaints about the proportion out of province workers on the Wuskwatim dam.[19] Another factor that deserves further study is determining if hydroelectric energy projects could use higher proportion of local labour for construction. Many of the people who worked on Wuskwatim came from out-of province. Only 39% of the tradespeople who worked on Wuskwatim were Manitoba residents, and it is unclear how many of them were ordinary residents of southern Manitoba vs. local residents of northern Manitoba. In contrast three-quarters of the construction workforce on the St. Joseph wind energy project were from Manitoba.

Overview #1: Wuskwatim Generating Station[20]

Actual Capital Cost (for 200MW) = $1.2 billion (generation) + $400 million (transmission) = **$1.6 billion**

Original Capital estimate (for 200MW) = $525 million (generation) + $126 million (transmission) = $651 million[21] = ***246% over-budget cost increase***.

Capital Cost per MW of Operating Capacity = $1.6 billion/(200MW at 85% avg operating capacity) = **$9.41 million/MW avg capacity**
Assuming **50 year lifespan**[22] = $9.41 million/MW ÷ 50 = ***$188.2 thousand/MW capacity per year***
Assuming **100 year lifespan**[23] = $9.41 million/MW ÷ 100 = ***$94.1 thousand/MW capacity per year***

Avg/Dependable Delivery: Average = 544 GWh/yr Dependable = 463 GWh/yr = (lowest water year recorded)[24]
Cost per Annual GWh of Dependable Energy = Cost/Dep. GWh/years of operation
50 year lifespan = $70,000 per dependable GWh per annum
100 year lifespan = $35,000 per dependable GWh per annum

Construction Jobs = 800
Completion Time = 6 years
Construction Jobs/Year = 133 jobs/year
Permanent Positions = 12 full-time positions[25]

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19 See: Richard Gilbert (August 2, 2011) "Lack of local workers on Wuskwatim Dam project riles Manitoba union " Journal of Commerce. Online: <http://www.journalofcommerce.com/article/id39924>; and Larry Kusch (December 8, 2009) "Wuskwatim jobs going to outsiders, Tories say" Winnipeg Free Press. Online: <http://www.winnipegfreepress.com/local/wuskwatim-jobs-going-to-outsiders-tories-say-78751932.html>.

20 Manitoba Hydro website: "Wuskwatim Project Overview" online: <http://www.hydro.mb.ca/projects/wuskwatim/employment.shtml>; & "Wuskwatim Employment" online: <http://www.hydro.mb.ca/projects/wuskwatim/employment.shtml>.

21 Marvin Shaffer & Associates Ltd. (February 27, 2004) "Social Net Benefits of Wuskatim vs. Wind Development" p. 2. Online: <http://www.sfu.ca/mpp-old/pdf_news/811-04-Wuskwatim%20vs%20Wind%20BCA.pdf>.

22 Typically transmission facilities have a life span of about 50 years, but hydro dams typically last beyond 50 years.

23 Hydroelectric dams such as the Pointe Du Boise generating station have operated for nearly a hundred years before requiring upgrades.

24 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table 2 p. 10. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

25 Nisichawayasihk Cree Nation (NCN) (April 2011) "Member Update Newsletter." Online: <http://www.ncncree.com/ncn/documents/NCNEmploymentNews.pdf>.

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Workforce Proportion = 32% aboriginal workforce overall.[26]
39% Manitoba apprentice hiring & 11% aboriginal apprentice hiring.[27]

Estimated Tax Payable to Manitoba= $31.8 mil (Water Rent), $27.2 mil (Cap. Tax)[28]
Additional Considerations: Nisichawayasihk Cree Nation (NCN) given opportunity for a 2-33% ownership stake in the project. Project helps to create northern employment, but there have been complaints of many jobs going to out of province residents.

Overview #2: St. Joseph Wind Energy Project[29]

Actual Capital Cost (for 138MW) = **$345 million**

Original Capital estimate (for 300MW) = $800 million
Under budget, 94% of cost on per MW basis
345/138=$2.5 million/MW (actual) vs. 800/300=$2.67 million/MW (estimate)

Capital Cost per MW deliverable = $345 million/(138MW at 40% avg capacity for wind[30]) =
$6.25 million/MW avg capacity
Assuming **20 year lifespan**[31] = $6.25 million/MW ÷ 20 years
= ***$312.5 thousand/MW capacity per year***
Assuming **40 year lifespan**[32] = $6.25 million/MW ÷ 40 years
= ***$156.3 thousand/MW capacity per year***

Avg/Dependable Delivery: Average = 375 GWh/yr Dependable = 320 GWh/yr[33]
Cost per Annual GWh of Dependable Energy = Cost/Dep. GWh/years of operation =
20 year lifespan = $50,000 per dependable GWh/yr
40 year lifespan = $25,000 per dependable GWh/yr

Construction Jobs = 350
Completion Time = >1 year (April 2010-March 2011)
Construction Jobs/Year = 350 jobs/year
Permanent Positions = 15 full-time positions
Workforce Proportions= 93% Cdn, 75% MB

Estimated Tax Payable to Manitoba = $14.7 million (municipal tax) + 29.3 million (education tax)[34] + $22.8 million

26 Wuskwatim Power Limited Partnership (January 2012) "Employment Statistics." Online: <http://www.wuskwatim.ca/empstats.html>.
27 Progressive Conservative Party of Manitoba (September 2011) "PC Platform 2011: Growing Communities." Online: <http://www.pcmanitoba.com/assets/downloads/growing_communities.pdf>.
28 Marvin Shaffer & Associates Ltd. (February 27, 2004) "Social Net Benefits of Wuskatim vs. Wind Development" p. 6. Online: <http://www.sfu.ca/mpp-old/pdf_news/811-04-Wuskwatim%20vs%20Wind%20BCA.pdf>.
29 Pattern Energy "St. Joseph Wind." Online: <http://www.patternenergy.com/business/projects/st_joseph>.
30 Government of Manitoba: Department of Industry Energy and Mines(2007) "Manitoba Wind Farms: Overview". Online: <www.manitoba.ca/iem/energy/wind/files/mb_wind_farm_qa.doc>.
31 St. Joseph wind energy project EIS called for a 20 year lifespan, but the subsequent power purchase agreement was made for 27 years.
32 St. Joseph wind energy project EIS mentioned that with upgrades the project life could be extended to 40 years.
33 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table 2 p. 10. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.
34 Pattern Energy "St. Joseph Wind." Online: <http://www.patternenergy.com/business/projects/st_joseph>.

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(capital taxes)[35] = **$66.8 million total annual tax**
Direct Impact = **$38 million landowner payments.**

Additional considerations: Wind energy qualifies for Minnesota green portfolio energy standards, garnering it a price premium. 13 projects already licensed in Manitoba and are therefore "shovel-ready." Current NDP Government of Manitoba promised 1000MW of wind capacity by 2015,[36] but has failed to deliver so far.

What the discussion and statistical overviews above demonstrates, is that wind energy has become increasingly commercially viable. The cost of wind-generation dropping more than 80% in the last 20 years, with further declines expected.[37]

According to the November 17, 2009 testimony of Bob Brennan, former President and CEO of Manitoba Hydro, at the Legislative Assembly of Manitoba, Standing Committee on Crown: "Six cents [per kilowatt] is in the ball park [for cost estimates to produce wind energy]."[38] This is comparable to the costs of producing electricity from new hydro-developments, which is 5 to 10 cents per KW.

Now often the argument is made that wind is not reliable, but as the Canadian Wind Energy Association (CanWEA) notes:

> Wind-generated power is a reliable source of electricity. Wind turbines have one of the highest availability factors – a term that refers to the reliability of the turbines and the percentage of time that a plant is ready to generate energy... much higher than conventional forms of energy production.
>
> Maintenance issues are also much smaller on a wind farm. At some conventional power plants, the entire plant may have to be shut down for repairs whereas at a wind farm maintenance takes place one turbine at a time.

It is true that wind does not operate at 100% capacity, but neither does any other power generation sources. Any power plant can fail or need to be shut-down for maintenance (eg. the shut-down of the 30 year old Jenpeg dam in July 2010).[39]

According to a Government of Manitoba "Question and Answer Fact Sheet" the St. Leon wind farm operates at a capacity of 40%, whereas hydroelectric generating stations operate at a capacity from 65-

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35 Marvin Shaffer & Associates Ltd. (February 27, 2004) "Social Net Benefits of Wuskatim vs. Wind Development" p. 6. Online: <http://www.sfu.ca/mpp-old/pdf_news/811-04-Wuskwatim%20vs%20Wind%20BCA.pdf>.

36 Government of Manitoba News Release (November 21, 2005) "Energy Minister Announces Next Step in Plan to Further Harvest Manitoba's Wind-Power Potential ". Online: <http://www.gov.mb.ca/chc/press/top/2005/11/2005-11-21-01.html>.

37 Canadian Wind Energy Association "Fact Sheet #2: Wind Technology - Change is in the air." Online: <http://www.canwea.ca/images/uploads/File/NRCan_-_Fact_Sheets/2_technology.pdf>.

38 Legislative Assembly of Manitoba, Standing Committee on Crown Corporations Nov. 17, 2009. Online: <http://www.gov.mb.ca/legislature/hansard/3rd-39th/cc_06/cc_06.html>.

39 Mary Agnes Welch (July 2, 2010) "Hydro shuts down Jenpeg: Engineer fears cracks in turbines, inspection due" Winnipeg Free Press. Online: <http://www.winnipegfreepress.com/local/hydro-shuts-down-jenpeg-97651009.html>.

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75%.[40]

Although countries like Denmark produce 20% of their electricity from wind energy, there are some costs to integrating wind energy into an existing system given the inherent variability. The 2004 Marvin Shaffer & Associates report, commissioned by Hydro in 2004, estimates the wind integration costs $15/MWh.[41]

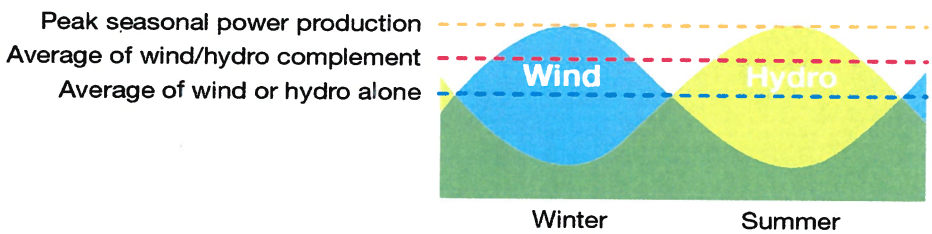
"The fact is, the wind will never stop blowing everywhere at once – even within a single wind farm, it's unlikely that all the turbines stop spinning at one time," states the Canadian Wind Energy Association.[42]

According to a Government of Manitoba brochure on the St. Joseph Wind energy project: "On average, the turbines generate electricity about 90 percent of the time.[43]

Therefore if we built more wind energy projects in various geographic locations across Manitoba it is likely that we would expect to have some wind-produced well over 90% of the time.

As the Canadian Wind Energy Association points out, wind and hydro pair quite well together.

> In Canada, we would never rely on wind turbines alone to meet the entire country's electricity needs. Instead, we use wind in conjunction with other forms of compatible energy production.
>
> One example is wind and hydro-electric. These two sources of energy are a natural fit. In the winter, wind is at its peak, allowing hydro to store energy for use when wind productivity is lower. Hydro dams can be closed relatively quickly allowing water reserves to build when peak wind is in full swing.
>
> In the spring and fall, hydro is at its peak production and wind energy serves as its supplement [see graphic below from Canadian Wind Energy Association].[44]



40 Government of Manitoba: Department of Industry Energy and Mines(2007) "Manitoba Wind Farms: Overview". Online: <www.manitoba.ca/iem/energy/wind/files/mb_wind_farm_qa.doc>.
41 Marvin Shaffer & Associates Ltd. (February 27, 2004) "Social Net Benefits of Wuskatim vs. Wind Development" p. 6. Online: <http://www.sfu.ca/mpp-old/pdf_news/811-04-Wuskwatim%20vs%20Wind%20BCA.pdf>.
42 Canadian Wind Energy Association "Fact Sheet #3: Wind Power is Reliable - Wind Power is Here" Online: <http://www.canwea.ca/images/uploads/File/NRCan_-_Fact_Sheets/3_reliability.pdf>.
43 Government of Manitoba: Department of Industry Energy and Mines "St Leon Factsheet." Online: <http://www.manitoba.ca/iem/energy/wind/files/stleons_wind_brochure.en.pdf>.
44 Canadian Wind Energy Association "Fact Sheet #3: Wind Power is Reliable - Wind Power is Here" Online: <http://www.canwea.ca/images/uploads/File/NRCan_-_Fact_Sheets/3_reliability.pdf>.

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The overall capacity of an electrical system is therefore enhanced by combining hydro energy with wind energy.

Wind also serves as a hedge against the risk of drought/low water level years, as acknowledged by former Manitoba Hydro President and CEO Bob Brennan:

> "Manitoba Hydro's been trying to make wind work and it just depends on the air. **If you did it in the middle of a drought, it would be a good time. You know, like, you need the power then.** (*Emphasis added.*)"[45]

At a cost of $345 million for 138MW of wind energy, nine-and-a-half similar projects could be built for the same $3.28 billion being used to construct Bipole III. The combined estimated costs of $17 billion for Bipole III, Keeyask, and Conawapa could be used to build build nearly 50 similar projects (6,800 MW of capcity; 15,768 GWh/yr dependable energy).

However, because current projections indicate that Manitoba will have enough power for it's own needs until 2020/21,[46] and because Bipole III is being built "primarily for reliability" reasons, we contemplate how a ~$3 billion dollar investment in wind energy would contribute to energy reliability in Southern Manitoba.

The first point to highlight is that hydraulic resources produce the lion's share of Manitoba's electricity: accounting for 4,900 MW of 5,70 MW in total production capacity, and 21,090 GWh/yr of 28,235 GWh/yr of dependable electricity.[47]

The EIS assumes a scenario 70% electrical supply loss from a disruption to Bipoles I & II and/or a failure of the Dorsey Converter Station. It seems to assume that the existing 230 KV-AC network transmission network would stay in operation. Subject to transmission availability, this would allow other northern dams like Grand Rapids, Jenpeg, Kelsey, Kettle and Wuskwatim to theoretically feed energy into the grid (see Hydro Manitoba map on the next page).[48] It also assumes that the 230 KV network would not be damaged in an ice-storm, tornado, forest fire, etc. As already indicated it may be less likely but the potential for an interruption the geographically separated transmission facilities exists.

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45 Legislative Assembly of Manitoba, Standing Committee on Crown Corporations Nov. 17, 2009. Online: <http://www.gov.mb.ca/legislature/hansard/3rd-39th/cc_06/cc_06.html>.

46 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" p. 2. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

47 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table 1 p. 7. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

48 Manitoba Hydro (2011) "Major Electrical and Gas Facilities." Online: <http://www.hydro.mb.ca/corporate/facilities/facilities_map_2011.pdf>.

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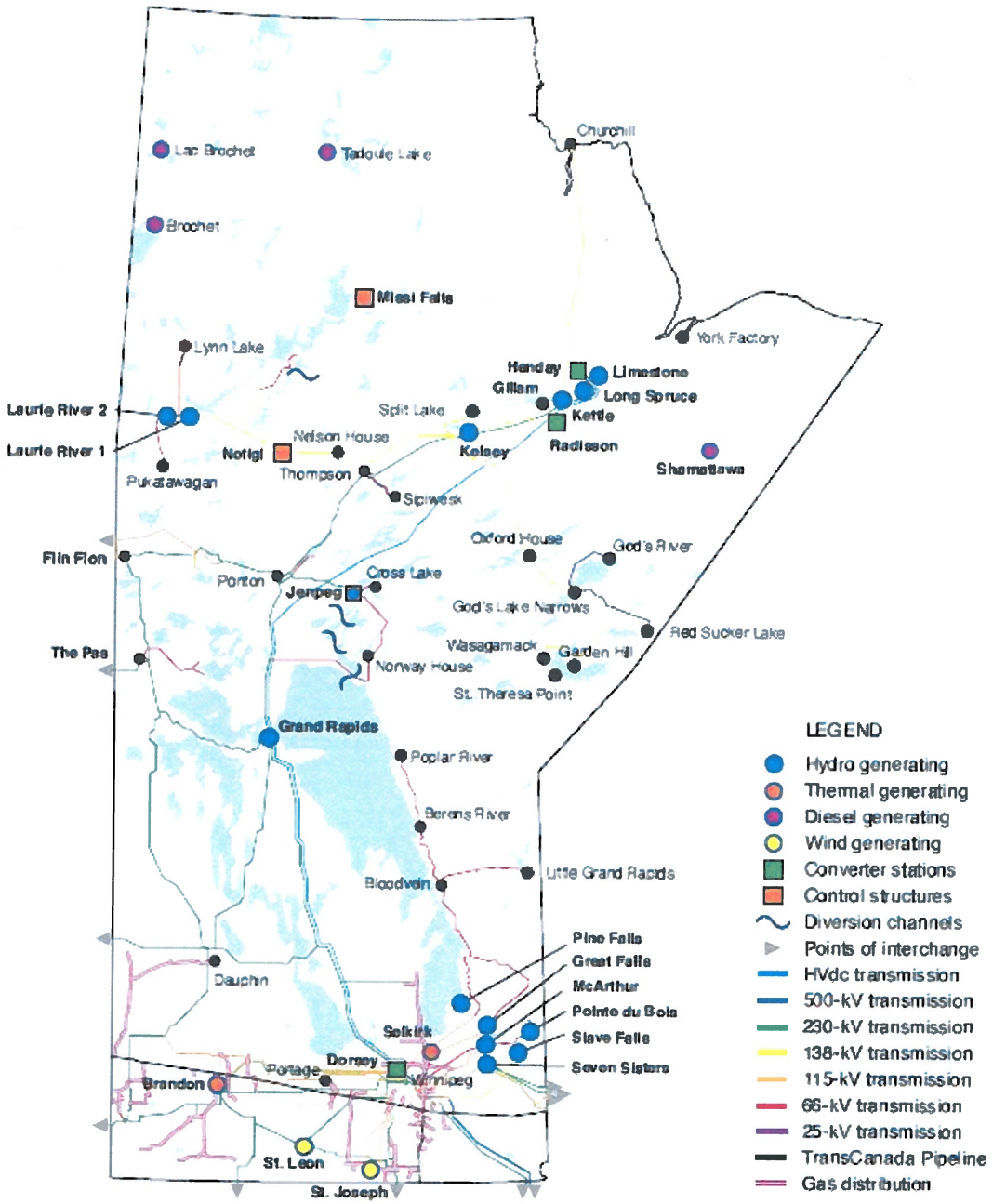
Major electrical and gas facilities

Manitoba Hydro



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Therefore we assume that all northern hydroelectric operations in northern Manitoba are disrupted, and the only energy available on the grid is the older hydro-electric generating stations located on the Winnipeg River.

No individual numbers seem to be available for the average and dependable energy supply from each of the six hydro-electric dams located on the Winnipeg River, but according to Manitoba Hydro annual report they provide around 12% of Manitoba's electricity supply, which translates into around 4000 GWh of the 34,000 GWh total gross annual electrical supply.[49]

The 2010-11 Manitoba Hydro Resource Plan[50] shows:

- Another ~4,000 GWh of annual dependable energy would be available through existing thermal generation at Brandon and Selkirk, but this would also require burning natural gas and coal;
- Current installed wind energy capacity would supply another ~800 GWh of annual energy;
- Preexisting contractual import arrangements would also add another ~3,000 GWh

Still without access to generation stations in northern Manitoba, and a 28, 000 GWh annual energy demand and roughly 11,800 GWh, the southern portion of the province would experience a severe energy deficit.

We would need to of course plead for Manitobans to drastically reduce energy consumption. Even if we had the small group of top-consumers responsible for 43% of domestic consumption cease to use electricity period, we would still likely fall short of meeting energy demand. If this occurred in during the coldest part of our winter months when demand is highest it would be catastrophic.

We would obviously also be reliant on searching for additional imports from the Unites States (as we did in 1996 during the last Bipole failure). And even if this energy was available this would also likely be expensive and would rely on the firing up dirty coal energy in the United States.

It is in this context that we can see the advantage of having additional renewable energy (i.e, that is wind, solar, biogas, small-hydropower, etc.) in the southern portion of the province.

So if we built 9.5 wind energy project similar to St. Joseph, we would still have nearly produce ~3,000 GWh more per year.[51] This quite literally might be the break-even point that might ensure energy reliability in southern Manitoba.

The additional advantage of this strategy is that, as the Government of Manitoba admits:

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49 Manitoba Hydro (March 31, 2011) "60th Annual Financial Report" pp. 99 & 101 Online: <http://www.hydro.mb.ca/corporate/ar/2010/publish/index.html>.

50 Manitoba Hydro (September 24, 2010) "PUB filing Appendix 84: Manitoba Hydro 2010/11 Power Resource Plan" Table p. 30. Online: <http://www.hydro.mb.ca/regulatory_affairs/electric/gra_2010_2012/Appendix_84.pdf>.

51 $3.28bn/$345mill = 9.5 * 320GWh/yr = 3,040 GWh/yr

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> Wind is a very clean source of energy. Generating wind power doesn't produce emissions or hazardous waste. On the contrary, wind energy reduces greenhouse gas (GHG) emissions and contributes to Manitoba's reputation as a Canadian hub for clean, renewable energy.[52]

Therefore outside of when there is a catastrophic failure of Bipole I & II, this energy could be exported. It would likely be extra valuable in Minnesota because it would qualify for that state's renewable energy portfolio standard. In fact installing this much wind power in Manitoba would not only help to enhance energy reliability by solving the root cause of energy insecurity: an over reliance on northern hydro-generation; it would provide an amount of energy similar to the amount to be produced from Keeyask with only the expenditures required to build Bipole III. In other words it could deliver savings of $6 billion, and significantly delay the need to construct any new hydro-electric dams in northern Manitoba. It would seem that this option should be considered before we begin to build a costly and quite possibly revenue losing Bipole III transmission corridor. Unfortunately the EIS gives no consideration to this possibility.

To once again quote the PUB:

> p 129 - To date, the Board has not been provided with any cost/benefit and domestic rate analyses supportive of the level of capital expenditure now being contemplated. In the Chairman's view, there are identified alternatives that should be thoroughly vetted before spending more funds and committing Manitoba consumers to meet any shortage of revenue that may arise with respect to meeting the projected costs of Bipole III. To that extent, MH's contention that Bipole III is being built for domestic reliability needs would best be supported by a review that includes the development of a clear definition of the various seasonal situations that could trigger the failure of Bipole I and/or Bipole II. If lower domestic rates could be expected to develop without Bipole III (or without Keeyask and/or Conawapa) within the long-term planning horizon of twenty years without any additional reliability risk, then the plans that would support such an outcome should be seriously entertained, certainly before further commitments are made to the planned capital projects.

Individual Energy Autarky

The Manitoba 1996 downburst, and the Ontario-Quebec ice storm of 1998 demonstrate the risks posed by severe weather events. This is one of the reasons that the Green Party of Manitoba would change building codes so that all new residential buildings required the installation of a 15kWh micro-generation system. The manifest function of such a program is to ensure energy reliability, particularly in times of catastrophic outage. In the event of an outage such as those seen in Ontario and Quebec in '98, clearly people who had there own source of energy generation would be at a advantage.

The '98 Ice Storm also showed the good nature of people, and the power of community. Those who had generators, wood stoves/furnaces, or other energy means kindly opened up their homes to their local communities.

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52 Government of Manitoba: Department of Industry Energy and Mines "St Leon Factsheet." Online: <http://www.manitoba.ca/iem/energy/wind/files/stleons_wind_brochure.en.pdf>.

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At times catastrophic energy failures are hard to avoid, but if we started to require new homes to be outfitted with their own micro-generation system then this would give us some additional energy reliability in the event of a mass-power outage.

Exports

Despite the the fact that weak electrical export markets have made the domestic electrical market more lucrative as of late, Manitoba Hydro's seeks to achieve about 40% of foreseeable future total corporate revenues from the export market.[53] To achieve this it plans to undergo massive capital projects, which will be financed in part by money-losing long-term export agreements with American utility companies.

Financially the cumulative impact of approving Bipole III then, is more than the $3.28 billion in costs, because approval of this project is likely to result in the construction of new debt-financed hydro-electric facilities in Manitoba's north. The licensing process for the ~$5.6 billion Keeyask Generation project has already begun, and the ~$7.7 billion Conawapa Generation Project is also expected to proceed shortly. Manitoba has already signed new export contracts with Wisconsin and Minnesota that the Premier has admitted will require the construction of at least Keeyask. The project is equally as much about increasing exports, as it is about enhancing reliability. The true cumulative capital costs therefore that should be the costs of Bipole III, combined with at minimal the combined costs of of Keeyask, and likely the costs of Conawapa as well.

All told the bill could tally around $17 billion, and this is to say nothing of cost over-runs and interest payments. The revenue garnered from export sales is unlikely to exceed the operating and capital carrying costs of of the new hydroelectric projects for at least several decades. The electrical ratepayers of Manitobans therefore will essentially be required to subsidize American exports.

Manitoba's PUB finds that the average costs Manitoba is receiving for exporting energy is 3.5c/kWh - with some spot market prices as low as 0.5c/kWh, and firm export contracts ~5c/kWh.

Resource Conservation Manitoba (now Green Action Centre) and Time To Respect Earth's Ecosystems (TREE) have frequently participated Public Utility Board (PUB) hearings. In 2008 Manitoba Hydro provided the RCM/TREE with the levelized estimated costs for Wuskwatim, Keeyask, and Conawapa during PUB hearings.

53 PUB, p. 40

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	ISD	In-Service Costs	Average Energy (GW.h/yr)	Capacity (MW)	Capacity Factor	Levelized Costs (¢/kWh)
Wuskwatim	2011	$1.6B	1520	200	85%	7.3
Keeyask	2018	$3.7B	4430	695	75%	5.8
Conawapa	2022	$5.0B	7000	1485	60%	5.0

These costs are based on in-service costs including O&M, water rentals and capital taxes, and are evaluated using a 6.1% real discount rate. They are expressed in dollars of the generating station in-service date, and will be subject to escalation after that date.

Source: Manitoba Public Utilities Board, 2008 Manitoba Hydro General Rate Application, RCM/TREE/MH I-1

These numbers date back to 2008, and capital cost estimates have risen so the estimates are themselves low. Unfortunately hydro no longer releases this information during PUB rate application hearings, claiming it is "commercially sensitive information."

Recently retired PUB Chairman Garry Lane estimates that due to increased capital costs, the cost of production for new hydroelectric dams is likely around 10 cents and KWh, and that it is unforeseeable for export revenues to exceed 6 to 7 cents per KWh in the near future. Clearly then constructing new dams for export will be a money losing proposition that the ratepayers of Manitoba subsidize. The devaluing of the US dollar is an additional risk which is not often fully considered.

CEAA REVIEW REQUIRED

On December 12, 2012 I sent an e-mail to acting Minister Dave Chomiak. I also copied officials from the Canadian Environmental Assessment Agency, and Manitoba Environment Officer Elise Dagdick, requesting that the comments contained in my e-mail be filed in the Manitoba *Environment Act* public registry. In the e-mail I questioned the fact that joint federal provincial EIS review was not being pursued.

> The June 2011 Scoping document for Bipole III states:
>
> "It is anticipated that Manitoba Conservation will coordinate a cooperative environmental assessment process with the Canadian Environmental Assessment Agency (CEAA) in accordance with the "Canada-Manitoba Agreement on Environmental Assessment Cooperation". The cooperative process will ensure provincial-federal coordination and compliance with respective legislated mandates under The Environment Act and the Canadian Environmental Assessment Act." (pg. 3)

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Yet the December 2011 EIS for Bipole III now states:

"In the case of Bipole III, Manitoba Hydro is of the opinion that an environmental assessment will not be required pursuant to federal legislation." (pg. 1-11)

Why has there seemingly been a change in opinion? Is the Government of Manitoba also of the opinion that no federal responsible authority will be triggered by Bipole III? Is your Government aware of whether this 'Mantioba Hydro opinion' is shared by the Canadian Environmental Assessment Agency and potential federal responsible authorities?

It would seem to be a rather strange finding that the construction of Bipole III would not have any significant impacts to fisheries, navigation, or species at risk. Can you provide any further clarification, as to whether a federal review under the Canadian Environmental Assessment Act will, or will not, be required?

I have since been informed that Transport Canada and the Canadian Department of Fisheries and Oceans (DFO) have determined that a federal CEAA review was not required. I remain incredulous to this claim for several reasons:

- The EIS admits that Bipole III will have an impact on Woodland Caribou. Caribou are protected under the *Species At Risk Act* (SARA) and this should be a federal trigger for a CEAA review.
- The Bipole III project has the potential to impact the First Nations and Métis rights, and this should also be a trigger for a CEAA review.
- How is it possible that at 1384 km long, 66m wide, corridor which is going to cut across land abound with lakes, wetlands, rivers bogs, marshes, etc not going to have any impact on fish species? My understanding from reviewing the EIS is that most of the tower locations have still not been sited exactly.

In Summary

Regardless of where we run Bipole III it is likely to have impacts. Bipole III may not in fact be required immediately. There are questions that need to be answered, and alternatives that need to investigated before this project is approved.

Although the government has attempted to frame the western route of Bipole III as the more environmentally conscious choice this claim deserves further scrutiny. Many of the concerns on the impact for an east-side route also ring true for a west-side route. Threatened Woodland Caribou will be impacted. In some cases the impacts, such as GHG emissions from land-use-change, are even greater given the additional ~500km in length. Although impacts from the longer west-side route are somewhat tempered by the fact that the ecosystems on the west-side of Lake Manitoba are generally more fragmented than ecosystems on the east side of Lake Winnipeg.

This is not say that the Green Party of Manitoba favours an east side route. We feel strongly that working with First Nations to preserve the east side in as pristine a condition as possible is a worthy

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endeavour.

That said, what needs to be understood is that regardless of where we run a third separated HVDC transmission corridor it is likely to have sincere ecological impacts, in addition to negatively impacting the rights of First Nations and private landowners.

The Green party of Manitoba questions the immediate need for a third HVDC transmission corridor. We feel that this project is being advanced as much, if not more, for the purposes export than for enhancing grid reliability. Increased electrical exports will not necessarily be profitable as it may seem *prima facie*. As highlighted by Manitoba's Public Utilities Board (PUB), *inter alia*, given low electrical export prices it is quite conceivable that any new dams constructed will lose money for the first few decades of operation.

Moreover, as will be shown alternative options exist to enhance energy reliability in Manitoba. Firstly, we should focus on reducing overall electrical consumption in Manitoba because this helps to both: enhance reliability, while also deferring the need to invest in new transmission. If the point of Bipole III is to enhance reliability in the event of a catastrophic failure of Bipole I & II and/or the Dorsey converter station it would seem to also be possible to make advance arrangements with Manitoba's heaviest electricity users to drastically reduce electrical consumption in the event of exigent circumstances.

The root cause of energy insecurity in Manitoba stems from the over-reliance on northern generation. Accordingly, enhancing energy production in southern portion of the province where the energy is largely consumed would help to enhance reliability. The Green Party of Manitoba feels that development of further southern generation should focus on the most ecologically benign methods possible (wind, solar, landfill biogas, etc.).

In these comments we have largely focused on wind because: i) wind generation has become cost competitive with other forms of electricity generation such and natural gas generation;[54] ii) Manitoba Hydro has already experimented with wind and therefore there was more information available to perform a comparison. This should not be construed as an endorsement of wind, or any other technology. Clearly the impacts of any electrical generation station need to be considered.

The Green Party of Manitoba feels that before we begin approving massive new hydro-electric projects. We need to consider the impacts of previous projects, particularly those projects which are still operating without environmental license and only interim water power licenses. The Green Party of Manitoba suggests:

1) Rename Manitoba Hydro, "Manitoba Energy";
2) Reduce energy consumption through various programs of incentives and disincentives;

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54 Martin Tampier, P.Eng. "Renewable Energy: Opportunities in Power Generation," National Energy Board, ENERGY FUTURES WORKSHOP, Ottawa, ON, January 22, 2008. Online <http://www.neb-one.gc.ca/clf-nsi/rnrgynfmtn/nrgyrprt/nrgyftr/cnslttnrnd3/prsnttn/martin_tampier.pdf>.

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3) Explore and implement renewable forms of energy beyond hydroelectric power (wind, solar, and other forms of micro-generation);
4) Develop micro-generation in all new residential homes;
5) Create an independent, citizen-driven commission/task force to assess the effects of past hydroelectric dams in Northern Manitoba and the potential future impact of more dams.[55]

Thank you very much for your time and consideration of these comments.

Sincerely,

James R. Beddome

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55 Green Party of Manitoba: 2011 Policy #4 - Energy & Housing; 2006 - Policy #5 - Manitoba Energy; 2006 - Policy #6 Current/Future Hydroelectric Development in Manitoba; 2006 - Policy # 7 Aboriginal Rights and Hydroelectric Development. http://greenparty.mb.ca/policies/policies