

# **Submission to the NB Power Commission on the Future of Mactaquac Dam**

## **Woodstock Sustainable Energy Group**

**May 29, 2016**

### **Introduction**

From the time NB Power made the announcement in 2013 that the Mactaquac generating station will become unusable by 2030, the Woodstock Sustainable Energy Group (SEG) has been following the research and the decision making process on the future of the dam. In addition, Transition Town Woodstock (TTW), of which SEG is a project, has taken a lead role in hosting information forums on the future of the dam in our home community.

Between May of 2014 and March of 2016, TTW hosted three Public Forums at the Woodstock campus of New Brunswick Community College, one with Gordon Yamazaki concerning the biophysical research on the river system above the dam, and two with George Porter and Deborah Nobes on the overall nature of the problem with the dam and on the process of decision making on the dam's future. These Forums have been well attended with significant audience participation during question and discussion times.

We have published information commentaries in the Woodstock Bugle-Observer and we have encouraged citizens to access the Mactaquac Project website for more information and to complete the public participation survey.

### **SEG's Orientation on Energy Planning**

SEG's role in facilitating public engagement with the NB Power's Mactaquac Project stems from its commitment to advancing the transition to renewable energy. Representatives of SEG have held discussions with senior staff of the Power Commission on several occasions with regard to integrating the whole menu of renewable energy technologies now available into an energy transition plan for New Brunswick. SEG was invited by the Power Commission to participate in a stakeholder engagement session on long-term energy planning.

In 2011, SEG prepared a sixteen-page submission for the Energy Policy Commission that was appointed by government to develop a 10-year energy-planning scenario. SEG's submission proposed that a 30-year planning timeline be established in

order to adequately take into account the full impact of the innovations in renewable energy that are rapidly developing. Our submission laid out a planning scenario for New Brunswick's transition to a highly secure, distributed generation and smart grid electrical power system based on renewable energy technology. Our submission included elements of a financing strategy that has been proven to work well in other jurisdictions.

In the five years since we made this submission, the speed with which renewable energy technology has penetrated the field, and the rate at which its comparative costs are falling, has confirmed SEG's view of energy planning for New Brunswick.

### **Public Engagement on the Future of Mactaquac Dam**

SEG has been studying the problem of Mactaquac dam within this context for the last three years. Considering that the dam is a source of renewable energy, rebuilding the generating station seems like a logical decision. We have heard people in our region describe this decision as a "no-brainer." Some people think it should be viewed as simply an engineering and energy supply problem and a decision should be made accordingly.

We are grateful that leadership within the NB Power understands there is a wider and more complex context of factors involved, and that they have allowed time for citizen consideration and engagement in the decision making process.

Some people in our region think the public engagement process is a sham, and the Power Commission is just setting the stage for a decision already made. We have argued against this view. We accept the public engagement process as a genuine effort to make a decision that takes all pertinent factors into account – energy planning, ecological integrity, economics and finance, and social and cultural values. Otherwise, the millions of dollars spent on biophysical and sociocultural research and on alternative option engineering studies makes no sense.

Members of SEG have attempted to consider all the factors involved with a decision on the future of the dam. However, we have been somewhat hampered in our deliberations by not having up-to-date cost estimates for each of the three options being proposed by the Power Commission. We have asked as recently as March 29<sup>th</sup> of this year for at least "ballpark" estimates on comparative costs, but were told this information was not available for release.

### **Cost Estimates on Decision Options**

We assume that by this time the Mactaquac Project has definite cost estimates on the three options proposed, but for some reason is unwilling to release them. We recall that at the beginning of this process the estimate for reconfiguring the dam and replacing the generating station was put in the range 3 to 5 billion dollars.

We think it fair to assume the estimate has now gone higher, and this, perhaps, is the reason the figures are being withheld. If so, this is unfortunate because it compromises public engagement and makes it difficult for a citizen's group like SEG to make a fully informed contribution to the deliberations. With all this in mind, however, members of SEG have come to a point where we can offer the following observations and considerations.

### **Three Primary Considerations**

**First, retaining the dam and building a new generating station** appears to be the most expensive option. By the time a new generating station would be up and running in 2030, other forms of renewable energy technology will have certainly made huge advances in application, efficiency, and cost reduction.

*Can an investment of billions of dollars be economically justified when by 2030 other renewable energy systems will be able to produce the equivalent power at a fraction of the cost?*

Another way to look at this is to ask: "Would it make economic sense to build Mactaquac dam today if we were starting fresh?" The answer is almost certainly "No."

From the rapidly mounting evidence, it is now increasingly clear that widespread, medium and small-scale renewable electricity generation hooked up through an interactive smart grid is the wave of the future. From our conversations with NB Power personnel, we know the Commission understands the implications of this trajectory, and what its impact will be on the business models for generating and distributing electricity.

Given these circumstances and the rate of innovation in the field, it is hard to see how retaining the dam and building a new generating station makes sense from a financial investment point of view.

**Second, if the generating station is not replaced**, should NB Power spend billions refurbishing and then maintaining the dam in perpetuity for the recreational benefit of keeping the headpond in place? Those who have homes and boats on the headpond, those with real estate holdings on the headpond on which they hope to capitalize, and a small group of bass fishermen would like to see it retained. But should

the citizens of NB, either as ratepayers or as taxpayers, foot the bill for refurbishing the dam and maintaining this amenity for their benefit? How could such an inequitable arrangement be justified?

We have heard the question raised as to whether controlling the river flow in flood times is a sufficient rationale for retaining the dam. Again, we have to ask whether building such a dam for this purpose would now be undertaken? From an investment point of view, the answer is almost certainly no. The history of Mactaquac dam as a flood control facility has not been a matter of preventing floods but a question of who gets flooded and to what extent. Rivers in this part of the world naturally flood with each spring breakup. Human settlements on floodplains have to prepare to deal with this.

We also understand that the sewage treatment facilities at Woodstock and Nackawic have been designed and built within the context of the current headpond water level, and that if the water level were lower they would have to be modified. Again, this seems an insufficient reason for retaining the headpond. Readapting sewage treatment facilities would be a onetime expense and, under the circumstances, municipalities should be provided with subsidies by NB Power and/or government to handle the changeover.

**Third, if the dam is taken out** and the St. John River returns to its original channel, will it once again become the beautiful and bountiful river it once was? Will the salmon return? There is some question about this. With climate change, NB rivers are becoming warmer and salmon need cold water.

But again, they might show up. Breaking news is encouraging; after habitat restoration, salmon have now returned to the Connecticut River system and are spawning for the first time in 200 years. The Connecticut is certainly warmer than the St. John. So there's a reasonable hope that the salmon would come back and an economic and cultural resource of the central valley region would begin to be restored.

The Mactaquac Project website shows that if the dam were taken out, 13,000 acres of land would again be available for human and wildlife use. Some of this land is the best agricultural land in the province and would again be available. Studies show that the river's islands and intervals under the headpond have not eroded away. They are pretty much intact.

Experience with dam removal elsewhere shows that the newly exposed land is rapidly reclaimed by vegetation. Within a year grass cover appears and the plant succession back to rich wetlands or woodlands steadily proceeds. This reclaimed land

would be a good set up for the careful management of highly productive agricultural and woodland environments with accompanying livelihood and job creation potential.

Taking out the dam would be an important biophysical and geographic experiment. It seems reasonable to expect that the long-term benefits of a restored river valley would steadily accrue over time and would become a major economic and cultural success story. It would certainly be a major transition of great scientific interest.

Taking out the dam will also be enormously expensive, but the investment would at least be offset by the long-term economic potential of a restored river valley. Dams have a life expectancy. If rebuilt, another generation will have to deal with this question all over again. Why not make the best long-term decision now?

### **A Fourth Option**

We understand that NB Power has subsequently added a fourth option to the original three for dealing with the problem of the generating station. This involves the possibility of replacing the existing facility section by section rather than building a new structure at a new location. We further understand from a recent communication that this option has now been deemed unfeasible, but that a possibility still exists of replacing the mechanical components of the generating units with technology that would extend the functional life of the current facility.

At stakeholders meeting organized by NB Power on May 17, we learned that recent research on the integrity of the dam's powerhouse indicates that structural reinforcement may also be possible, which together with mechanical component reconfiguration may extend the generating capacity of the facility longer than previously expected.

If this option is technically feasible, the question remains at what investment cost compared to other renewable energy alternatives. And if this option will only postpone the eventual shutting down of the facility, is it a smart option considering that the business case for large central generating facilities is rapidly disappearing?

### **A Fifth Option?**

In SEG's deliberations on energy planning and the future of the St. John River, we have discussed whether the dam and generating station might be reconstructed at a lower level and smaller scale? This option has several potentially attractive features:

1. the continued production of renewable energy;
2. a facility scaled to provide local and regional electricity service within a distributed generating system;
3. the ability to repower the grid in recovery from a system shut down;
4. the opportunity to install an effective fish passage;
5. the recovery and restoration of prime agricultural land in the upper half of the valley region now flooded;
6. reducing the length of the low-oxygen, warm water zone through which migratory fish must travel;
7. the retention of a headpond in the area where the associated home owner and recreational factors are most significant.

It may be that the economics of rebuilding Mactaquac dam and generating station at any scale makes no sense when plotted against the speed of renewable energy innovation and its falling costs, but we are interested in knowing if consideration may have been given to this option.

### **Summing Up**

Although the decommissioning and removal of Mactaquac dam may appear to be a premature loss, it can be seen in a broader perspective as the end of the era when central generation and long distance transmission of electricity was regarded as progressive. The rate of innovation in energy technology is bringing the era of big dams and central generation to an end. The removal of Mactaquac dam can be seen as a truly progressive step from the standpoint of long-term energy service planning.

In addition, the restoration of environments previously damaged by industrial usage is now also on the forefront of progressive civic and economic planning. It seems likely that the restoration of the St. John River Valley between Mactaquac and Woodstock could be promoted, and would be heralded, as a truly progressive development for New Brunswick.

With respect to its legislated mandate and with respect to increasing resilience and insuring security of service, the Woodstock Sustainable Energy Group urges NB Power to create a business model, as rapidly as it can, for promoting and facilitating the transition to a distributed generation electricity system for New Brunswick. We

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understand implementing this kind of planning may require the temporary sourcing of hydropower from Quebec or Labrador.

*Submitted by the Woodstock Sustainable Energy Group*

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