

Muskrat Falls and the PUB Review

The Public Utilities Board of this Province has been charged to conduct a review to determine if the Muskrat Falls Project (MFP) is the most cost effective means to address the energy requirements for the Province into the foreseeable future. Notwithstanding, the Provincial Government has chosen to constrain the ability of the PUB to accomplish this task by (1) limiting the terms of reference to a comparison of the MFP with the "Isolated Island" scenario as the only alternative, and, (2) denying the PUB an extension of a deadline which it, the Board, considers necessary in order to review all the relevant documentation.

The purpose here is to attempt to address the first of these deficiencies by suggesting a possible alternative to the MFP which includes a maritime link to the continental grid. As far as can be determined there is no published evidence that Nalcor has considered this particular option. The primary intent is consequently to determine whether the suggested alternative has in fact been considered, in which case details should be forthcoming, or, if it has not been considered, why not?

It will be assumed at the outset that the cost overruns for any energy development that is roughly equivalent to the MFP will be the same when expressed as a percentage of the initial capital cost. This obviates the need to be concerned about the actual dollar amounts of such overruns and permits a comparison of the relative costs of the various proposals by using only the initial capital cost estimates.

The reference point will be the estimated at source capital cost of the 824 megawatt MFP at \$B6.2 (\$6.2 billion) or \$M7.5 (\$7.5 million) per MW.

Maritime Link + Wind Energy Development

It has consistently been argued by Nalcor that large scale wind energy development on the Island is not feasible in the absence of a connection to the North American continental grid. Assuming this to be correct, an obvious response to the argument would be to consider the installation of a maritime transmission line in parallel with the wind energy developments thereby providing the required import/export buffer.

As a component of the MFP the cost of a 500 MW maritime link has been estimated at \$B1.2. The installed cost of a wind energy facility can be estimated by reference to the existing Fermeuse wind farm. Published data show that the installed cost of that 27 MW facility is \$M43, or \$M1.6 per MW. Consequently, the capital cost of an 824 MW wind energy project can be estimated at $824 \times \$M1.6 = \$B1.3$, for a total cost of \$B2.5. The resulting per-MW cost of \$M3.0 for the overall project is then 40% of the corresponding number for the MFP. Even if the average output from such a facility were to be lower by 50% than the installed capacity, which is highly unlikely, the per-MW cost would still be 60% of the MFP.

Additional points to note are:

- The wind farm could be centrally located on the Island in close proximity to the Island terminus of the maritime cable, thereby eliminating most of the transmission losses associated with the MFP.
- The probability of cost overruns (exclusive of the maritime seabed cable) is lower than for the MFP because wind turbine installation has become a well-established process which is not prone to the many difficulties that would be likely to plague the MFP.
- There is no requirement that the full 824 MW capacity be developed at the outset. It could, for example, be staged over a period of 8 years at about 100 MW per year, or even 16 years at 50 MW per year, and some of the cost could be absorbed on a pay-as-you-go basis.
- There is also the question of what the target output of such a wind project should be. The 824 MW number has been used here only as a basis for comparison. Perhaps it would be appropriate to reduce that number considerably, albeit at a higher per-MW cost. On the other hand, given that the Province of Quebec currently has 650 MW of grid-integrated wind power in place and has plans to install an additional 4000 MW by 2015, perhaps the target should be dramatically increased.

The most significant imponderable in this scenario is whether appropriate contractual arrangements can be made for the purchase and/or sale of electrical energy on a continuing basis via the maritime link. However, there is in this respect a commonality with the MFP and one can realistically expect that such negotiations will be more likely to succeed if the export price is substantially lower than that for the MFP. Also, as for the MFP, there may be opportunities to share the cost of the maritime link with other jurisdictions.

This suggested alternative to the MFP can perhaps be accused of being naïve and superficial because many details are missing. No apologies are offered for this because it should not be the role of this writer or any member of the general public to provide such analysis. Rather, it is clearly the responsibility of Nalcor and the Government of our Province to examine all possibilities and to reveal the details of their corresponding analyses, if indeed they have actually been performed.

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