

Date : 7/23/2012 11:40:40 AM

From : "Scott, Paul G."

To : "Bown, Charles W." , "Parsons, Walter" , "Snook, Corey" , "Parsons, Paul O"

Subject : NFL3 Proposal for Wind Capacity Assessment (scope of work) rev 1.docx

Attachment : NFL3 Proposal for Wind Capacity Assessment (scope of work) rev 1.docx;
All,

Please note the updated proposal from Paul Wilson. The major change is that he has added a third study area. I think it is good, but to me it sounds like there might be some overlap with the second. That said I don't think it is a big concern.

Thoughts?

Paul

A number of non-government organizations and private citizens have questioned the need to build the Muskrat Falls Generating Station and the associated HVdc transmission system as the next option for the Isolated Island of Newfoundland. These groups have promoted a wind power solution as replacement for 824 MW Muskrat Falls Generating Station and ultimately the 500 MW Holyrood Thermal Generating Station as a viable alternative.

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The basic question is "Can sufficient wind generation be installed on the Island to replace the Holyrood Thermal Generating Station and provide a firm supply of electricity to Island customers over the long term?" The Island of Newfoundland is large with varying wind resources available across the Island. At this time, the probability of the entire island becoming calm is unknown. The transmission system has limited power transfer capability west-east to the Avalon Peninsula and would likely require upgrades. Cost is an important consideration to customers.

Nalcor has engaged Hatch to complete a study entitled, "Wind Integration Study – Isolated Island Newfoundland." The Hatch study will, among other things, conclude the amount of wind generation that can be economically and reliably integrated in to the Isolated Island ~~System~~system, including Holyrood, over the study period. Hatch will also provide an independent review of Nalcor's stability and voltage regulation analysis to determine if it is appropriate and reasonably assess the technical limits of the system to reliably accept this variable generation resource.

The purpose of the MHI study is to provide a learned opinion and commentary on the reasonableness of ~~this question considering~~ the report recently completed by Hatch and the information provided by Nalcor in support of the Hatch Study.

~~The assessment should determine:~~

- ~~a) — If the wind power solution can work for the isolated island power system to replace planned new sources of electricity composed of traditional base load and peaking thermal plants.~~
- ~~b) — What is the capacity credit of wind power on the Island of Newfoundland? Can there be sufficient wind power investment to provide a reliable firm supply for island customers with overbuild.~~

Study Goals:

1. Complete a due diligence review of both the Hatch ~~Study~~study and the information provided by Nalcor to determine ~~if~~ef the study goals set out for Hatch have been met.
2. Utilizing the Hatch Study, and other literature as appropriate, provide a narrative that addresses the following question: In an isolated Island Scenario, can sufficient wind be developed to replace the Holyrood thermal generating station and meet future demand? Is this a technically feasible and economic alternative to Muskrat Falls?

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a) —

3. Provide a qualitative assessment of the limits of wind generation on the isolated island. Is the wind power solution a viable option for the Isolated Island power system to replace planned new sources of electricity composed of traditional base load and peaking thermal plants. If possible, determine the capacity credit of wind power on the Island of Newfoundland. Can there be sufficient wind power investment to provide a reliable firm supply for island customers with overbuild.

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Utilizing the Hatch Study, and other literature as appropriate, provide a narrative that addresses the following question: In an isolated Island Scenario, can sufficient wind be developed to replace the HTGS and meet future demand? Is this a technical and economic alternative to MF?

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This assessment could be structured as follows:

1. Wind as replacement for thermal generation (Introduction);
2. Overview of reliability standards and firm capacity;
3. Limitations of energy storage on the Island of Newfoundland;
4. Capacity value of wind;
5. Wind installation base required to provide adequate capacity on the Island;
6. Costs of over-building wind;
7. Technical issues associated with over-building wind;
8. Summary of findings.

The Consultant will also provide such advice and other services as may be required from time to time by the Client.