

**From:** pharrington@nalcoreenergy.com  
**Sent:** Wednesday, April 4, 2012 8:18 AM  
**To:** brian crawley@nalcoreenergy.com; gbennett@nalcoreenergy.com;  
 phumphries@nalcoreenergy.com  
**Cc:** jasonkean@nalcoreenergy.com  
**Subject:** Re: Fw: Scope of Services  
**Attachments:** SCOPE OF SERVICES - Government of Newfoundland - Muskrat Falls  
 DG3 review PH.docx

Please find my comments to the MHI proposal - In order for this to be performed in the time available it has to be focussed on what is needed, we do not want to have MHI tell us about reliability and NERC adn return periods, the Basis of Design is fixed and we should not invite commentary on that - MHI should focus on the updated CPW analysis using updated numbers. This has to be an apples to apples comparison so the expansion plan used in this review has also to exclude the Maritime Link as per the DG2 review. This will make this review more straightforward and achievable in the timeframe-

The DG3 review will be later when the expansion plan is complete and all other DG3 inputs available.

We must get MHI here in St John's to do the work and not have IR's flying back and forth - these will only go public. MHI should work directly with us thereby avoiding a lot of papaerwork and we should compress the schedule to a couple of weeks when we have the data. Unless this scope is controlled we will have a repeat performance with the same "experts" with the same opinions.

Regards Paul



Government of Newfoundland - Muskrat Falls DG3 review PH.docx

SCOPE OF SERVICES -

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|--|---|
|  <p><b>nalcor</b><br/>energy<br/>LOWER CHURCHILL PROJECT</p> | <p> <b>Paul Harrington</b><br/> <b>Project Director</b><br/> <b>LC Mgmt &amp; Support</b><br/> <b>Nalcor Energy - Lower Churchill Project</b><br/> <b>t. 709 737-1907 c. 709 682-1460 f. 709 737-1985</b><br/> <b>e. <a href="mailto:PHarrington@nalcoreenergy.com">PHarrington@nalcoreenergy.com</a></b><br/> <b>w. <a href="http://nalcoreenergy.com">nalcoreenergy.com</a></b><br/> <b>1.888.576.5454</b> </p> |
|--|---|

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Brian Crawley---04/03/2012 02:30:45 PM---This Email was sent from a Blackberry wireless handheld. The Email, including attachments, is confid

From: Brian Crawley/NLHydro

To: "Paul Harrington" <PHarrington@nalcorenergy.com>

Date: 04/03/2012 02:30 PM

Subject: Fw: Scope of Services

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**From:** "Bown, Charles W." [cbown@gov.nl.ca]

**Sent:** 04/03/2012 02:29 PM NDT

**To:** Gilbert Bennett; Brian Crawley

**Subject:** Scope of Services

For review and comment. Need to hear back from you by noon tomorrow, please.

Charles

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## Scope of Services (Draft)

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Date: April 3, 2012

### 1. Government of Newfoundland and Labrador's Objective

MHI (the Consultant) shall base their review on the review carried out at DG2 using the updated data and inputs~~review all work~~ completed by the Proponent (Nalcor) since November 2010 in preparation for~~for a Decision-Gate 3 decision.~~ The review shall consider the Isolated Island option as compared to the Intercinected Island option and shall not consider the Maritime Link in the CPW analysis or the generation expansion plan. The review shall include an assessment of the Cumulative Present Worth Analysis of the Projects including a reasonableness assessment of all inputs into that analysis. The test of reasonableness for this assessment is generally defined as following Good Utility Practices of the majority of electrical utilities in Canada however it shall also consider the unique electrical system and previous practices in Newfoundland and Labrador For greater clarity the review shall not repeat the work carried out by MHI during the DG2 review regarding Nalcor's processes but shall base the review on Nalcor's latest project Basis of Design and the updated cost and schedule information associated with that Basis of Design. ~~The Consultant is not asked to review or pass an opinion on the Basis of Design~~

The Consultant will also provide such advice and other services as may be required from time to time by the Government of Newfoundland and Labrador (Client).

### 2. Services

The Consultant is an independent contractor and not an agent or employee of the Client.

The consultant's work shall be performed exclusively in Newfoundland and Labrador, working closely with Nalcor to review the available documentation and interview the key Nalcor personnel, no new documentation is to be developed for this review it is to be based on the data and documentation currently available in Nalcor.

The Consultant acknowledges that the Client is relying on the skill and knowledge of the Consultant in performing the Services. The Consultant shall exercise the degree of skill, care and diligence required by customarily accepted practices and procedures normally provided in performance of services similar to the Services required under the Contract.

The Consultant shall only use key personnel to perform the Services who have been named by the Consultant in the Proposal and who have been accepted by the Client. The Consultant may only substitute or replace the accepted key personnel with the prior written agreement of the Client.

The Services which the Consultant shall perform or cause to be performed with diligence, skill and care include the following:

- a) A review of all updated work performed by Nalcor and their consultants and others related to the Muskrat Falls and Labrador Island HVdc Link (LIL) and the Isolated Island Option since the DG2 review, which are necessary for the Consultant to perform the Services. The level of review shall be sufficient for the Consultant to report on whether the work was performed with the degree of skill, care and diligence required by customarily accepted professional practices and procedures normally completed in the performance of similar work.

The Technical Assessment used as inputs into the CPW and Financial Analysis models will included:

- i. Load Forecast Update review including
  - a. Review of Load Forecast Accuracy
  - b. Assessment of risk associated with Large Industrial Loads

Information required:

- Updated 2012 Load Forecast
- Large Industrial Load Assessments, Corner Brook, Rio Tinto in Labrador, Vale
- load requirements, any other new loads.

- ~~ii. Review of Reliability Assessment of both options (Relative Probabilistic Assessment) if available. Assessment of the reliability impact of the import supply options of the Emera link.~~

~~Information required:~~

- ~~— Relative Probabilistic Reliability study~~
- ~~— Emera Link Reliability Study for the Island Power System~~

- ~~iii. Review of AC Integration Studies completed for the Muskrat Falls and LIL HVdc configuration options.~~

~~Information required: AC integration study report~~

- ~~iv. Review the Muskrat Falls GS post DG2 design reports, cost estimates, and construction schedules. Identify any technical weaknesses, review DG3 cost estimate inputs, and application of any EIS requirements for environmental compliance.~~

Information required:

- Muskrat Falls GS design definition
- Muskrat Falls updated design reports including AC switchyards, and transmission lines to Churchill Falls
- Muskrat Falls updated master cost estimate

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- Muskrat Falls updated master project schedule

~~v-ii.~~ Review the HVdc Converter Stations and Associated ac switchyards. This will include review of the DG3 engineering to date, design specifications, revised cost estimates, construction schedules, construction contractor requirements, DC project definition, Single Line Diagrams, specified performance data, DC computer models and performance benchmarks.

Information required:

- Information is listed above
- HVdc updated master cost estimate
- HVdc updated master project schedule
- ~~HVdc risk analysis report~~

~~vi-iii.~~ Review of the HVdc transmission line including ~~reliability design criteria~~, route selection and final metrology review, engineering review of tower and line designs, review of cost estimates, ~~cost estimate sensitivity to various reliability design criteria~~, and construction schedules.

Information required:

- Information is listed above
- Transmission Line updates to master cost estimate
- Transmission Line updates to master project schedule
- ~~Transmission Line risk analysis report~~

~~vii-iv.~~ Strait of Belle Isle (SOBI) marine crossing review will include ~~a review of the technical and economic offers in order to assess their reasonableness to meet the design specification proposed in RFP No. LC-SB-003, Strait of Belle Isle Submarine Cable Design, Supply, and Install~~. The cost estimates and construction schedule will be reviewed. Results of the Horizontal Directional Drilling test program will be reviewed. ~~The SOBI risk analysis project update will be reviewed.~~

Information required:

- Information is listed above
- SOBI updates to master cost estimate
- SOBI updates to master project schedule
- ~~SOBI risk analysis report~~

~~viii-v.~~ Any new material related to Small Hydro plants will be reviewed.

Information required:

- Small hydro updates to master cost estimate (if available)

~~ix. Any new material related to wind farms will be reviewed. Nalcor's reassessment of maximum wind penetration study will be reviewed if available.~~

~~Information required:~~

- ~~— Wind farm updates to master cost estimate~~
- ~~— NLH wind farm maximum penetration study~~

~~x. vi.~~ The Holyrood Thermal Generating Station plans, cost estimates, and schedules will be reviewed if there are any evident departures from the original DG2 plan.

~~xi. Risk Analysis review. Review Nalcor most recent risk analysis assessment for gaps, suitability to task, and appropriateness of reserve margins for costs estimate contingency.~~

~~Information required:~~

- ~~— Strategic Risk Assessment Updated Report, and Westney update if available~~

~~xii. vii.~~ The Cumulative Present Worth study will be reassessed with DG3 inputs in both capex and opex, fuel price, and escalation, for the two options as originally presented in DG2. Departures from these plans will be identified and the impact on CPW assessed. Sensitivities performed in the DG2 review will also be reassessed with DG3 inputs.

Information required:

- Disclosure of all input capex and opex input costs
- Disclosure of all escalators used
- Disclosure of Input fuel prices used, and 2012 PIRA fuel price forecasts

~~xiii. (Optional). In order to assess the necessity of both the Emera export deal and the Federal Loan Guarantee prior the DG3 project sanction decision, a review of the Integrated Financial Forecast (10 and 20 year periods) for Nalcor is recommended. This would be a full revenue/expense model and process review, together with a minimum rate base study. A sensitivity analysis would also be carried out to gauge the impacts of capital cost overruns, fuel price variability, fiscal performance with and without the Emera export revenues and supply, and impact of the Federal Loan Guarantee. Note: this may be very labour intensive review and may not be possible with in the time frame available.~~

~~Information required:~~

- ~~— Under discussion internally~~

- b) Preparation of a draft report which will be reviewed by the Client for accuracy followed by a final report which will include, as a minimum the following:
- an executive summary;
  - a description of the Consultant's review team;
  - a description of the methodology used to complete the Services;
  - a summary of the results of the review, ~~including significant data gaps and issues~~, if any.
- c) Provision of ongoing support to the Client.

| Schedule                       | Scheduled Completion Date     |
|--------------------------------|-------------------------------|
| Kick off Meeting:              | April 11 <sup>th</sup> , 2012 |
| First Draft Report             | May 15 <sup>th</sup> , 2012   |
| 2 <sup>nd</sup> Draft Report   | May 29 <sup>th</sup> , 2012   |
| Submission of final report     | June 5 <sup>th</sup> , 2012   |
| Presentation to the Government | TBD                           |
| Completion of Services         | June 30 <sup>th</sup> , 2012  |

**Commented [PH1]:** It is not possible for MHI to review the data in this timeframe –April to May 15 , we are still working on the estimate, risk analysis etc – this is setting us up to fail and we cannot do that

Note: This is a very aggressive schedule and completion on these milestones is dependent on the availability of information from Nalcor, and availability of the expert resources from MHI.