

**Response to GT RFI #Q10.21**

*Question: We understand that Westney Consulting performed a quantitative risk analysis in support of DG3 in 2012. Subsequent to this we understand that Westney Consulting updated the QRA in 2016. Please confirm our understanding that an external quantitative risk assessment was not completed between DG3 and 2016? If this is correct, did Nalcor quantify the risk exposure internally during this time frame? If Nalcor completed this process internally, please provide copies of the quantitative analysis.*

**Response:**

As noted above, Westney Consulting performed a quantitative risk analysis in support of DG3 in 2012 and subsequently performed Quantitative Risk Assessments (QRAs) in 2016. As noted in the Project Risk Management Plan (LCP-PT-MD-0000-RI-PL-0001-01) in Section 10.3 – Risk Assessments (Tactical-Risk, Strategic-Risk and Time-Risk Analyses), “Post LCP Gate 3 – Project Execution, the Risk Advisor (Westney) will be engaged in an “as needed” basis.”

Early in 2016, given that LCP was in mid-execution and given the level of schedule uncertainty, it was decided to complete a full QRA with Westney. More specifically the purpose of these QRAs is provided below.

Referencing Section 6 - Scope of Analysis of the Muskrat Falls Generation (MFG) QRA Report from 2016 (MFA-PT-MD-0000-RI-RP-0001-01):

“The Lower Churchill Project (“LCP” or the “Project”) is presently in a mid-execution phase (Gateway Phase 4 as illustrated in Figure 1) with the Muskrat Falls Generation (“MFG”) targeted for First Power in December 2017. In light of the existing schedule uncertainty surrounding First Power largely due to the performance of main civil works contractor Astaldi Canada under Package CH0007, a decision was made to complete a QRA having the following objectives:

1. Forecast with a significant degree of confidence the schedule of First Power and Full Power (Unit 4) for MFG;
2. Confirm, with a significant degree of certainty, the final forecast cost which would be required to support a supplemental Authorization for Expenditure (“AFE”); and
3. Provide supplemental information to support ongoing commercial discussions with Astaldi Canada surrounding Agreement CH0007.”

Referencing Section 6 – Scope of Analysis of the LITL/LTA QRA Report from 2016 (LCP-PT-MD-0000-RI-RP-0001-01):

The Lower Churchill Project (“LCP” or the “Project”) is presently in a mid-execution phase (Gateway Phase 4 as illustrated in Figure 1) with the LTA and LITL transmission system targeted for energization in Q4-2017. In light of the existing schedule uncertainty surrounding First Power from Muskrat Falls Generation (“MFG”) and the residual risk profile for LTA and LITL, a decision was made to complete a QRA having the following objectives:

1. Quantify the likelihood of LTA-LITL transmission system being available before Winter 2017;
2. Confirm, with a significant degree of certainty, the final forecast cost which would be required to support a supplemental Authorization for Expenditure (“AFE”).

During the time between the 2012 and 2016 there were no external quantitative risk analyses performed by Westney. During that time frame LCP did not complete any quantitative modelling of risk (like that completed by Westney); however, as per the Project Risk Management Plan LCP identified, quantified and monitored tactical and strategic risks on an on-going basis. This is documented in the LCP Monthly Progress Reports through the section on Risk Management and the Attachment of the current Risk Register each month. Any risk mitigations that required additional funding are documented through Project Change Notices (PCNs). Additional funding required for any risks that materialized, despite mitigations completed, was also approved through PCNs, including those approved to increase the overall budget (AFEs increases).

In addition to the above, and as per the Project Controls Management Plan (LCP-PT-MD-0000-PC-PL-0001-01), each month there is a Cost and Schedule Stewardship Meeting with Senior Management. The objectives of this meeting include:

- Discuss the cost and schedule status as presented in the meeting package
- Identify and quantify cost and schedule drivers
- Identify opportunities and vulnerabilities
- List and assign action items
- Foster an environment to make the best general interest decisions
- Execute the Project in an active, cost conscious environment
- Eliminate cost and schedule surprises
- Review risks and determine if cost risk profile is a cause for concern when compared to available funds in the AFE
- Review contingency drawdown and raise any alerts on trends

Between 2012 and 2016, the outcomes of these meetings were the basis of the cost and schedule updates to Nalcor Executive, as well as the Authorization for Expenditure (AFE) requests in June 2014 and September 2015.

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