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29 October 2015

Review of Muskrat Falls Project Cost and Schedule Management Processes and Controls

Dear Ms. Mullaley,

EY has completed its engagement to review of Nalcor's cost and schedule management processes and controls as related to the Muskrat Falls Project (the "Project"). The engagement was performed in accordance with the statement of work dated 9 March 2015 between EY and Her Majesty in Right of Newfoundland and Labrador, and our procedures were limited to those described in that statement of work.

The field work for the engagement was completed in April and May 2015, and consisted of reviewing Project data and documentation, as well as structured interviews with Nalcor personnel. The Project reporting period under review spanned December 2014 to February 2015. The report resulting from our engagement is titled "Review of Muskrat Falls Cost and Schedule Management Processes and Controls" and is provided under this transmittal letter.

The services provided by EY as summarized in this report are advisory in nature. They are intended to provide insight into Nalcor's cost and schedule management processes and controls, and related reporting. EY is not rendering an audit, review, examination, or other form of attestation as those terms are defined by the American Institute of Certified Public Accountants or Chartered Professional Accountants Canada.

Restrictions on the use of our work product

This report is prepared solely for use of the Government of Newfoundland and Labrador for the purpose of assessing cost and schedule management processes and controls for the Project. Ernst & Young LLP specifically disclaims any responsibility to any other party, and disclaims any responsibility for loss incurred through use of the report for any other purpose.

We appreciate the cooperation and assistance provided to us during the course of our work.

Yours very truly,

Ernst & Young LLP

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Review of Muskrat Falls Project Cost and Schedule Management Processes and Controls

Summary Report

29 October 2015



Building a better
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Background

The Government of Newfoundland and Labrador (“Government”) has initiated oversight protocols for the Muskrat Falls Project (“Project”), a significant component of the Lower Churchill Project. This included establishing the Muskrat Falls Oversight Committee (“Oversight Committee”), which provides regular Project oversight reports to Cabinet.

The Oversight Committee is accountable to Cabinet for providing reliable and transparent oversight on the cost and schedule performance of the Project. The Oversight Committee is relying on the summary cost and schedule information produced by Nalcor as a key element in performing its mandate.

EY’s Major Capital Projects practice was engaged to bring additional experience to assist the Oversight Committee in meeting its mandate. This report presents a summary of the results of EY’s review of Nalcor’s cost and schedule management processes and controls.

Review scope

The scope of the review included an assessment of the:

- Adequacy of Nalcor’s cost and schedule management processes and controls as it manages and reports on the execution of the Project;
- Consistency of Nalcor’s use of those processes and controls in key areas of the Project; and
- Extent of reliance the Oversight Committee could place on Nalcor’s management reporting for cost and schedule forecasts.

The field work for the review was completed in April and May 2015, and consisted of reviewing Project data and documentation, as well as structured interviews with Nalcor personnel. The Project reporting period under review spanned December 2014 to February 2015.

A sample of five key contracts (the “Sample”) was selected in conducting procedures for this review, whose aggregate value exceeds \$2.3 billion.

This report does not include a management response from Nalcor, as EY has not been engaged by Nalcor. This serves to preserve EY’s independent reporting relationship to the Oversight Committee. The intention is that Nalcor will provide their management response directly to the Oversight Committee.

Review limitations

The following areas were excluded from the scope of the review:

- The estimating processes and cost baseline process were not assessed. The Oversight Committee indicated it intended to rely on the results of the DG approval processes (DG2 having been reviewed by MHI Consulting and DG3 having been reviewed by the Independent Engineer) and the approval of the narrow scope cost adjustments in the 30 June 2014 update.
- The accuracy of the forecasted costs or schedule dates for the contractors or Project as a whole.
- Change Management and Risk Management processes. The Oversight Committee indicated Nalcor’s Internal Audit Department are assessing these areas and intends to assess Nalcor’s Internal Audit reports for reliance purposes.



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Additional details of our observations are provided in a supplement to this Summary Report. The supplement may include certain commercially sensitive information that might adversely impact the project if this information was released.

Summary of key findings

The following observations were noted:

1. Key project control processes have been developed, including:
 - a. Core project management and control processes for cost and schedule, including the development of an Integrated Program Schedule (IPS) for the program, identification of baseline, committed and incurred costs as well as linkage of cost and schedule baselines to change management processes and controls;
 - b. A Project Execution Plan defining the basis of the schedule and the estimate, and key assumptions supporting Project baseline cost and schedule; and
 - c. Coordination procedures for administration, execution control and management of the contractors' cost and schedule.
2. Project reporting summarizes key information on construction cost and schedule, including:
 - a. Schedule forecast and progress leveraging the IPS, including critical path and float review; and
 - b. Cost forecasting, including Estimate To Complete, Estimate At Complete, variances and trends, as well as basic contingency forecasting.
3. Nalcor's continued efforts to work with contractors on maintaining a disciplined approach to project management, control and reporting.
4. Proactive measures were being taken to manage potential claims.
5. Cost and schedule issues and risks arising during the Project were subject to active and formalized management.
6. A matrix organizational structure had been established, responsible for managing the Project as a whole. Key roles in this organizational structure had been staffed with resources experienced in cost and schedule management.



The following observations summarize key aspects of management processes and controls not fully developed and deployed at the time of our review:

Key schedule management process and control risks and issues

1. Certain baseline documents defining contractor schedules as well as the documents defining the control of project schedules were not yet complete.
2. Contractors' schedule updates were not being systematically rolled up into the Nalcor Integrated Project Schedule (IPS) that forms the basis of reporting to the Oversight Committee.
3. A completion date had not been established for finalizing an integrated baseline of contractor and IPS schedules to correct the issues noted in #1 and #2 above.
4. The IPS development and maintenance process is not fully documented.

Key cost management process and control risks and issues

1. The conditions and processes for rebaselining cost and schedule are not defined in the Project's control processes and procedures. The Oversight Committee's understanding of such conditions and processes is an important foundation as it conducts its oversight activities.
2. Nalcor uses a relatively basic approach to its updating of forecasted contingency requirements which in our experience is not consistent with the expected practices for a project of this scale and complexity. Given this, it is not clear whether the cost contingency as forecasted in reports for the Project will be adequate.
3. The Project does not define thresholds for variance management, reporting, and escalation purposes. We would normally expect these to be in place as they assist in giving clear indications of the severity of issues and the need to escalate to key stakeholders, such as the Oversight Committee.
4. Fully quantified risks or trends have not been documented for certain significant challenges on the project. The scale of potential challenges is also not quantified in the summary reporting made available to the Oversight Committee.

We recognize that Nalcor is using many conventional management processes and controls for the Project. However, while certain contractor Earned Value data is being collected, Nalcor is not reporting using a full Earned Value Management System across the whole of the project. Reporting on Earned Value performance would however, provide additional useful data and information to the Oversight Committee on both individual contractor and overall Project performance where available.

Until such time as the management process and controls risks and issues identified in this report and the detailed supplementary report are addressed, the completeness and accuracy of Project cost and schedule status reporting to the Oversight Committee cannot be fully verified.



Key recommendations

We recommend that the Oversight Committee:

1. Work with Nalcor to obtain management response for each of the findings noted in this report and the detailed supplementary report with defined corrective action, responsibility and anticipated completion dates. Given the volume of Project activity, timeliness of action is critical. Therefore, the Oversight Committee should actively monitor status and verify completion of management response to its expectations.
2. Consider conducting detailed assessments of the cost and schedule status of the Project on an ongoing basis until Nalcor's corrective action addressing key risks and issues noted in this report is complete to the Oversight Committee's satisfaction. This ongoing assessment should include the basis and accuracy of the forecasts for completion at the contractor level, as well as the quantification of cost and schedule risk.

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