

Muskrat Falls Project Oversight Committee

Committee Report – March 2015





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Introduction

The Muskrat Falls Oversight Committee was established by the Government of Newfoundland and Labrador in March 2014 to strengthen the existing oversight of the Muskrat Falls Project (the Project). The Committee's mandate focuses on cost, schedule and risk management for the construction phase of the Project. Reports of the Committee can be located at www.gov.nl.ca/mfoversight.

The capital construction cost estimates for the Project are \$6.99 billion¹. At the end of March 2015 the incurred costs² to date were \$2.43 billion (exclusive of interest and other financing costs) and the committed costs³ totaled \$5.54 billion.

This report details the Committee's observations and summarizes the progress reported for the Project to the end of March 2015.

- 1 Total Project costs include construction costs of \$6.99 billion plus interest and other financing costs of \$1.3 billion that will be incurred during construction, for an estimated total of \$8.29 billion.
- 2 Incurred Costs: Represents the total estimated cumulative value of all goods and services provided to the Project up to the point in time regardless of whether it was paid during the current period or will be paid at some future point in time.
- 3 Committed Costs: The estimated value of an obligation made by the Project for the provision of goods or services; represented by a Financial Commitment. Committed costs are captured when a Financial Commitment is made and its value is based upon the original estimate for that Financial Commitment. A Financial Commitment is a legal agreement between Nalcor Energy – Lower Churchill Project (NE-LCP) and a third party which authorizes NE-LCP to proceed with the award/instruction to the third party to provide goods and/or services for an agreed price or in accordance with an agreed pricing structure. The value of the Financial Commitment is represented by the cumulative value of the original amount and any approved variation orders to the contracts or change orders to the purchase order (which may or may not be a Project scope change).



Labrador Transmission Assets – Stringing Operations – March 2015

Project Performance

The Committee reports quarterly on the Muskrat Falls Project performance on both an overall Project basis and for each of the following three sub-projects:

- Muskrat Falls Generating Facility;
- Labrador-Island Transmission Link; and,
- Labrador Transmission Assets.

The Project cost and schedule performance is reported in two ways:

1. Long-term costs and schedule (to Project completion)
 - a. Project budget is compared to Project forecast cost
 - b. Project milestone schedule is monitored for change
2. Current costs and schedule (cumulative to date)
 - a. Incurred costs to date are compared to planned costs
 - b. Actual schedule progress is compared to planned schedule progress

These two time horizons provide the reader with both the projected long-term performance and the current performance for the overall Project and for each of the sub-projects based on the Project plans and schedule.

Long-term Cost and Schedule

Committee Observations at March 2015

- Project capital budget of \$6.99 billion remains unchanged
- No significant variances between Project Budget and Project Forecast Cost
- Project Forecast Contingency budget at March 2015 is \$213.2 million
- Two major contracts have not been awarded. Risk to Project Contingency budget remains until awarded and impact on budget known.
- Schedule pressures are being experienced which may impact Project cost and schedule:
 - Critical path to first power remains for December 2017; however, risk levels for some key activities have increased
 - No changes to the forecast Milestone Dates or planned Milestone Schedule in the current quarter; however, further schedule slippage has been experienced on the Powerhouse & Intake
 - Production improvements will be required and sustained thereafter at the Muskrat Falls Generating Facility in order to maintain the Milestone Schedule for the Powerhouse & Intake. In particular, the contractor’s actual performance and concrete placement rates over the summer months will determine if Project Milestones will be impacted.
 - Mitigation actions continue to be implemented to address the schedule issues at the Generating Facility. Nalcor reports improvements in concrete placement rates for the months of May and June 2015.

Long Term Costs

The total Project construction budget of \$6.99 billion is allocated among the three sub-projects as illustrated in Table 1 below. Total incurred costs to the end of March 2015 are \$2.427 billion or 34.7 per cent of the total budget.

Table 1
Budget and Incurred Costs by Sub-Project (in \$ thousands)

Muskrat Falls Project: Sub-Project	Percentage of Total Project Budget	Project Capital Budget at June 2014	Incurred Costs as of March 2015	Percentage of Budget Incurred
Muskrat Falls Generating Facility	48.2%	\$3,371,988	\$1,376,989	40.8%
Labrador-Island Transmission Link	39.9%	\$2,786,481	\$692,360	24.8%
Labrador Transmission Assets	11.9%	\$831,945	\$358,026	43.0%
Total	100.0%	\$6,990,414	\$2,427,375	34.7%

Table 2 shows the Project incurred costs to the end of March 2015 by expenditure category for each of the sub-projects. This table also includes the Project Capital Budget, as approved by the Nalcor Energy Board of Directors in June 2014, compared to the Project Forecast Cost, which is the Project cost based on current incurred costs and schedule performance. The overall Project Forecast Cost at March 2015 remains at \$6.99 billion, consistent with the Project Capital Budget approved in June 2014.

Table 2

Summary of Project Budget vs. Project Forecast Cost (\$ thousands)

Muskrat Falls Generating Facility	Project Budget at June 2014	Incurred Costs at March 2015	Project Forecast Cost March 2015	Variance PFC from Budget
Expenditure Category	A	B	C	D=A-C
NE-LCP Owners Team, Admin and EPCM Services	\$382,811	\$261,723	\$387,723	(\$4,912)
Feasibility Engineering	\$17,949	\$17,949	\$17,949	\$0
Environmental & Regulatory Compliance	\$24,312	\$18,092	\$24,742	(\$430)
Aboriginal Affairs	\$13,314	\$6,241	\$13,314	\$0
Procurement & Construction	\$2,786,766	\$1,058,288	\$2,799,242	(\$12,476)
Commercial & Legal	\$25,989	\$14,696	\$25,239	\$750
Contingency	\$120,847	\$0	\$103,780	\$17,067
Total for Sub-project	\$3,371,988	\$1,376,989	\$3,371,988	\$0
Labrador-Island Transmission Link	Project Budget at June 2014	Incurred Costs at March 2015	Project Forecast Cost March 2015	Variance PFC from Budget
Expenditure Category	A	B	C	D=A-C
NE-LCP Owners Team, Admin and EPCM Services	\$225,814	\$118,491	\$221,239	\$4,575
Feasibility Engineering	\$21,252	\$21,252	\$21,252	\$0
Environmental & Regulatory Compliance	\$22,306	\$8,925	\$18,306	\$4,000
Aboriginal Affairs	\$2,244	\$451	\$2,244	\$0
Procurement & Construction	\$2,426,095	\$530,477	\$2,428,352	(\$2,257)
Commercial & Legal	\$16,490	\$12,764	\$16,490	\$0
Contingency	\$72,280	\$0	\$78,597	(\$6,317)
Total for Sub-project	\$2,786,481	\$692,360	\$2,786,481	\$0
Labrador Transmission Assets	Project Budget at June 2014	Incurred Costs at March 2015	Project Forecast Cost March 2015	Variance PFC from Budget
Expenditure Category	A	B	C	D=A-C
NE-LCP Owners Team, Admin and EPCM Services	\$99,973	\$75,560	\$99,951	\$22
Feasibility Engineering	\$220	\$220	\$220	\$0
Environmental & Regulatory Compliance	\$710	\$977	\$1,019	(\$309)
Aboriginal Affairs	\$188	\$0	\$188	\$0
Procurement & Construction	\$696,322	\$279,058	\$696,601	(\$279)
Commercial & Legal	\$3,141	\$2,211	\$3,141	\$0
Contingency	\$31,391	\$0	\$30,824	\$567
Total for Sub-project	\$831,945	\$358,026	\$831,945	\$0
Total Project	\$6,990,414	\$2,427,375	\$6,990,414	\$0

While the overall Project Budget remains unchanged, variances between the Project Budget and the Project Forecast Costs have occurred within and among the expenditure categories (refer to Appendix A for a description of these categories). Most variances reported by Nalcor at the end of March 2015 related to the transfer of budget allocations from the Contingency budget to the Procurement & Construction budget. The reasons for these variances for the current quarter are discussed below.

The Project Forecast Contingency budget for the Muskrat Falls Project at March 2015 is \$213.2 million, an increase of \$13.3 million from the \$199.9 million reported at the quarter ended December 2014. Table 3 below outlines the changes in Contingency by sub-project.

Table 3

Summary of Change in Project Forecast Contingency (in \$ thousands)

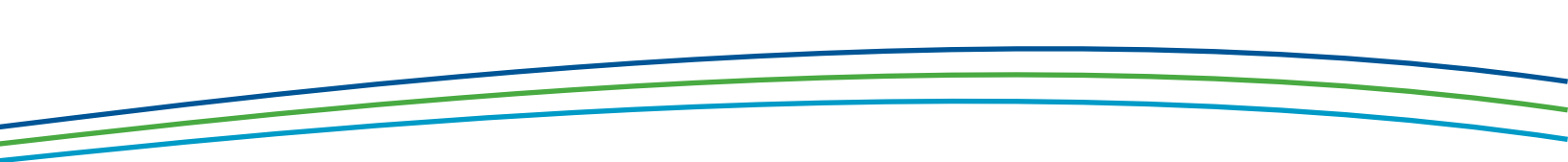
Sub-Project	Contingency Project Forecast at Dec 2014	Contingency Project Forecast at March 2015	Variance
	A	B	B-A
Muskrat Falls Generating Facility	\$101,176	\$103,780	\$2,604
Labrador-Island Transmission Link	\$65,332	\$78,597	\$13,265
Labrador Transmission Asset	\$33,421	\$30,824	(\$2,597)
Total	\$199,929	\$213,201	\$13,272

Contingency Changes:

The primary reasons for the changes to the Project Forecast Contingency budget and the net increase of \$13.3 million for the current quarter were reported as follows:

Muskrat Falls Generating Facility

1. Actual costs for surveys included under “Environmental and Regulatory Compliance” were less than originally budgeted; and,
2. There was a net reduction in costs included under the category “Procurement and Construction” due to:
 - a reduction in air transportation services to exclude Astaldi Canada personnel who were captured under contract CH0007;
 - an increase in costs for security and medical services in relation to construction of the North Spur;
 - an increase in costs for site office supplies and geotechnical field investigation work for the North Spur; and,
 - an increase in costs relating to the supply and installation of the Turbine and Generators.



The net effect was an increase of \$2.6 million in the Project Forecast Contingency within the Muskrat Falls Generating Facility sub-project.

Labrador-Island Transmission Link

1. An increase in forecast costs budgeted under “Procurement and Construction” due to:
 - a reduction in forecast costs for the Alternating Current substations;
 - a decrease in the final quantities of overall length required for the horizontal directional drilling program for the Strait of Belle Isle;
 - a decrease in the costs for the supply and install of the Electrode Sites due to substantive design optimization;
 - an increase due to changes in foundation types and additional material required for the Labrador-Island Transmission Link; and,
 - reallocation adjustments from the Labrador-Island Transmission Link to the Labrador Transmission Assets in relation to the power transformers and AC substations.

The net effect was an increase of \$13.3 million in the Project Forecast Contingency within the Labrador-Island Transmission Link sub-project.

Labrador Transmission Assets

1. Actual costs for avifauna (birds of a particular region) management under “Environmental and Regulatory Compliance” were higher than originally planned because work was re-sequenced to months of higher exposure to migratory birds – hence the need for added monitoring and protection; and,
2. A net increase in forecast costs budgeted under “Procurement and Construction” due to:
 - additional foundations and mechanical rock anchors for the Labrador Transmission Assets and additional material cost associated with the 735 kv line;
 - the requirement for additional personnel for Camp Services at Churchill Falls; and,
 - reallocation adjustments from the Labrador-Island Transmission Link to the Labrador Transmission Assets in relation to the power transformers and AC substations.

The net effect was a decrease of \$2.6 million in the Project Forecast Contingency within the Labrador Transmission Asset sub-project.



Long-term Schedule

There have been no changes reported for the planned Milestone Schedule or the forecast Milestone Dates since the December 2014 Committee Report. Table 4 summarizes these Milestone Dates, with first power from Muskrat Falls still forecast for December 2017 and full power from Muskrat Falls forecast for May 2018.

The Committee has observed that the schedule performance measures for the Muskrat Falls Generating Facility continue to show schedule slippage for the facility, primarily with respect to progress on the Powerhouse & Intake. Nalcor has advised that Spillway progress, while behind the original contract schedule, is on target to achieve River Diversion in 2016.

The Committee notes that the slippage is primarily attributable to issues with volume of concrete placement at the Muskrat Falls site. The Independent Engineer indicates that concrete placement is tracking behind plan and has observed a considerable growth in the gap between actual concrete placement and planned concrete placement during the period from January to March 2015.

The Committee has also noted that Nalcor has increased the risk level for River Diversion and Powerhouse Concrete placement during the quarter. Nalcor advised that there is increased management attention being placed by Nalcor on the contractor's performance in this area.

Nalcor and the civil contractor for the Muskrat Falls Generating Facility continue to actively undertake mitigation measures to implement production improvements to address this schedule progress slippage at the Muskrat Falls site. In the Draw Certificate dated April 28, 2015, the Independent Engineer noted that Nalcor has advised that the civil contractor for the Muskrat Falls Generating Facility has prepared a 120 day plan to ramp up labour and production and get back on track. The primary focus of the plan is to double the number of concrete pours month over month for the period March to May 2015. The Independent Engineer noted that this target was achieved during the month of March but was not met during April; actual concrete pours were 35 per cent more than in March, but not double. Nalcor continues to monitor the concrete placement rates reported by the contractor and has most recently advised the Committee that concrete pours have substantively increased, exceeding the planned targets of the 120 day plan. Information reviewed by the Committee indicates that significant schedule productivity improvements are projected by the contractor for the May through July 2015 period.

The Committee notes that achieving these schedule productivity improvements and maintaining those productivity levels will be critical to maintaining the Critical Path and forecasted dates in the Milestone Schedule, especially for the Powerhouse & Intake.

Table 4

Milestone Schedule

Muskrat Falls Generating Facility	Planned Date December 2014	Actual/Forecast March 2015	Status
Project Sanction	December 2012	December 2012	Complete
North Spur Works Ready for Diversion	September 2016	September 2016	No change
River Diversion Complete	November 2016	November 2016	No change
Reservoir Impoundment Complete	November 2017	November 2017	No change
Powerhouse Unit 1 Commissioned - Ready for Operation	December 2017	December 2017	No change
First Power from Muskrat Falls	December 2017	December 2017	No change
Powerhouse Unit 2 Commissioned - Ready for Operation	February 2018	February 2018	No change
Powerhouse Unit 3 Commissioned - Ready for Operation	April 2018	April 2018	No change
Powerhouse Unit 4 Commissioned - Ready for Operation	May 2018	May 2018	No change
Full Power from Muskrat Falls	May 2018	May 2018	No change
Commissioning Complete - Commissioning Certificate Issued	June 2018	June 2018	No change
Labrador Island Transmission Link	Planned Date December 2014	Actual/Forecast March 2015	Status
Project Sanction	December 2012	December 2012	Complete
Strait of Belle Isle Cable Systems Ready	October 2016	October 2016	No change
MF Switchyard and Converter Station Ready for Operation	February 2017	February 2017	No change
HVdc Transmission Line Construction Complete and Connected	June 2017	June 2017	No change
Soldier's Pond Switchyard & Converter Station Ready for Operation	October 2017	October 2017	No change
Ready for Power Transmission	October 2017	October 2017	No change
Soldier's Pond Synchronous Condenser Ready for Operation	November 2017	November 2017	No change
Commissioning Complete - Commissioning Certificate Issued	June 2018	June 2018	No change
Labrador Transmission Assets	Planned Date December 2014	Actual/Forecast March 2015	Status
Project Sanction	December 2012	December 2012	Complete
Hvac Transmission Line Construction Complete	June 2016	June 2016	No change
Churchill Falls Switchyard Ready to Energize	May 2017	May 2017	No change
Muskrat Falls Switchyard Ready to Energize	May 2017	May 2017	No change
Ready for Power Transmission	May 2017	May 2017	No change
Commissioning Complete - Commissioning Certificate Issued	June 2018	June 2018	No change

Current Cost and Schedule to March 2015

Committee Observations

- Incurred costs: \$2.427 billion. Planned costs: \$2.584 billion. Variance of \$156.7 million, or 6.1 per cent
- Actual construction progress 25.2 per cent. Planned progress 31.4 per cent. Variance of 6.2 per cent
 - Progress on the Muskrat Falls Generating Facility continues to track slower than planned. Schedule slippage, particularly relating to the Powerhouse & Intake, has been recognized as a concern. Mitigation actions continue to be implemented to address this slippage
 - Progress on the Labrador-Island Transmission Link is tracking slightly behind plan
 - Progress on the Labrador Transmission Assets is tracking slightly behind plan
- Actual progress for the supply and installation of the Turbine Generators and the Powerhouse Hydro-Mechanical Equipment track behind original contract schedule but remain on track to meet the planned delivery date

Muskrat Falls Project

This section provides an overview of the current costs and schedule, first on an overall Project basis, and then by each of the sub-projects.

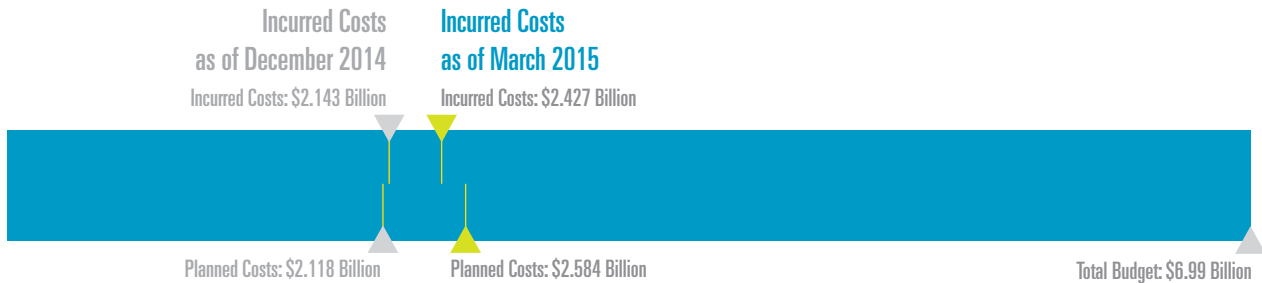
Current Cost

Cumulative to the end of March 2015, the incurred costs for the Muskrat Falls Project totaled \$2.427 billion as compared to the planned costs of \$2.584 billion, a variance of \$156.7 million or 6.1 per cent lower than planned [December 2014 Report was 1.2 per cent higher than planned].

Figure 1

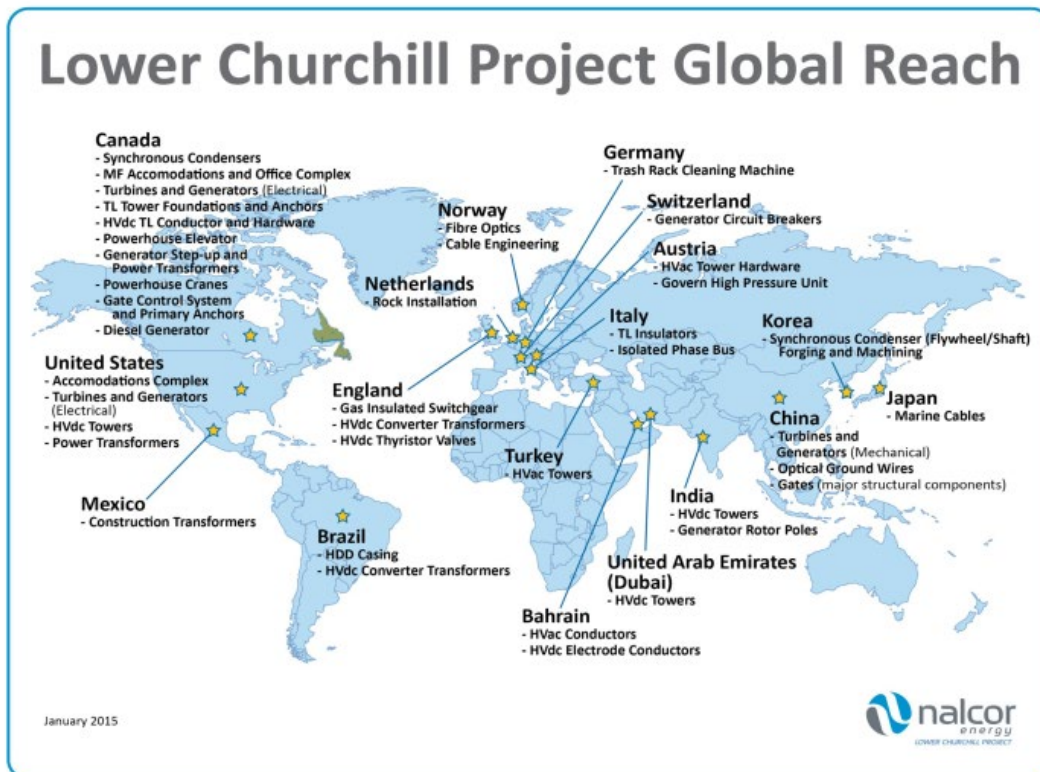
Muskrat Falls Project - Incurred Costs at March 2015

(including December 2014 comparison)



Current Schedule

Nalcor monitors and reports schedule progress on all activities, both construction and manufacturing. Construction activities include all those activities occurring at site locations in the province. Manufacturing activities include those supply/install contracts that take place outside the province (e.g. the generators are being manufactured in China). The following graphic outlines the various locations where components are being manufactured for the Project.



Construction activities are mainly monitored and reported on an ongoing installation/ construction progress basis, while manufacturing activities are generally monitored and reported based on a Milestone and/or delivery date basis.

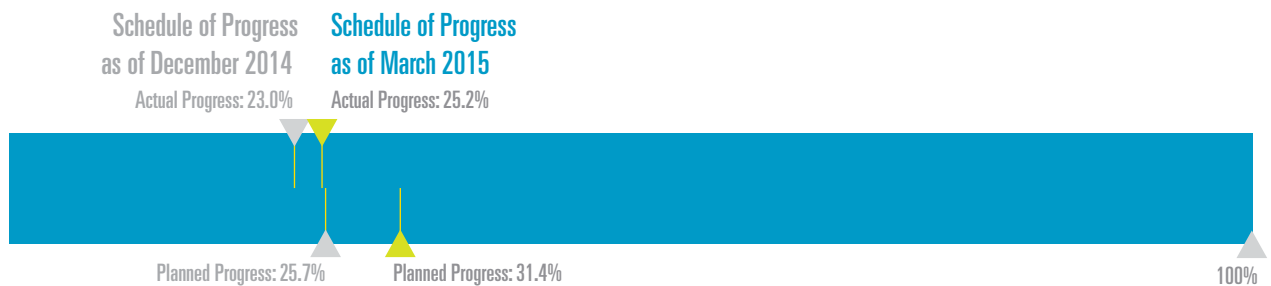
1. Construction Activities

Construction has continued to advance on the Muskrat Falls Project during this past quarter. As outlined in Figure 2 and detailed in Table 5, overall Project schedule progress is 25.2 per cent as compared to a planned schedule progress of 31.4 per cent, a variance of 6.2 per cent lower than planned [December 2014 Report variance was 2.7 per cent lower than planned].

Figure 2

Muskrat Falls Project – Schedule of Progress at March 2015

(including December 2014 comparison)



Schedule progress is distributed among the three sub-projects as outlined below. Progress variance continues to relate primarily to the Muskrat Falls Generating Facility which continues to track behind schedule. Mitigation actions continue to be implemented to address this schedule slippage.

Table 5

Planned Construction Schedule Progress vs. Actual Schedule Progress – March 2015

Muskrat Falls Project: Sub-Project	Planned Schedule Progress – March 2015	Actual Schedule Progress – March 2015	Variance – March 2015	Variance - December 2014
Muskrat Falls Generating Facility	38.0%	26.3%	-11.7%	-5.7%
Labrador-Island Transmission Link	21.9%	20.5%	-1.4%	-0.2%
Labrador Transmission Assets	39.4%	38.4%	-1.0%	1.0%
Total	31.4%	25.2%	-6.2%	-2.7%

2. Manufacturing Activities

The six material manufacturing supply and install contracts awarded to March 2015 are as follows:

- Turbines and Generators;
- Powerhouse Hydro-Mechanical Equipment;
- HVdc Convertors and Transition Compounds;
- Submarine Cable for the Strait of Belle Isle crossing;
- AC substations; and,
- Synchronous Condensers for the Soldiers Pond Switchyard


A summary of progress on these manufacturing activities is outlined as follows:

The **Turbine and Generators** contract continues to track behind the original contract schedule based on the contractor report – 30.68 per cent complete as compared to a planned progress of 40.97 per cent. Nalcor advises that this is within the contract schedule variance tolerances and the equipment remains on track to meet the planned delivery dates. The Independent Engineer continues to note in its Draw Certificate dated April 28, 2015 for the period ending March 2015:

That there is considerable float between the site need date in the Integrated Project Schedule and the CH0030 contract schedule, which was put in place long before the CH0007 Contract schedule and there is currently no cause for concern, however the Project team are monitoring manufacturing delivery dates to ensure that the site need dates are not compromised.

The contractor's report for the **Powerhouse Hydro-Mechanical Equipment** for the month of March 2015 indicates the project progress is at 13.38 per cent complete as compared to a planned progress of 22.71 per cent. Nalcor advises that this is within the contract schedule variance tolerances and the equipment remains on track to meet the planned delivery.

The contractor's report for the **HVdc Convertors and Transition Compounds** for the month of March 2015 indicates that the cumulative progress is 10.1 per cent complete as compared to a planned progress of 13.8 per cent. Nalcor advises that this is within the contract schedule variance tolerances and the equipment remains on track to meet the planned delivery.



For the quarter ended March 2015, the **Submarine Cable for the Strait of Belle Isle** crossing continues to track on schedule with a cumulative progress of 43.09 per cent complete as compared to a planned progress of 43.23 per cent.

The contractor is currently working with Nalcor to finalize baselines for the **AC Substations** and the **Synchronous Condensers** contracts (awarded in the previous quarter). Once the contractor baselines are approved, the contractors will begin reporting progress against these baselines. Nalcor advises that the work under these contracts is currently progressing as planned.

Sub-Project: Muskrat Falls Generating Facility

Current Cost and Schedule



Figure showing the Muskrat Falls Generating Facility

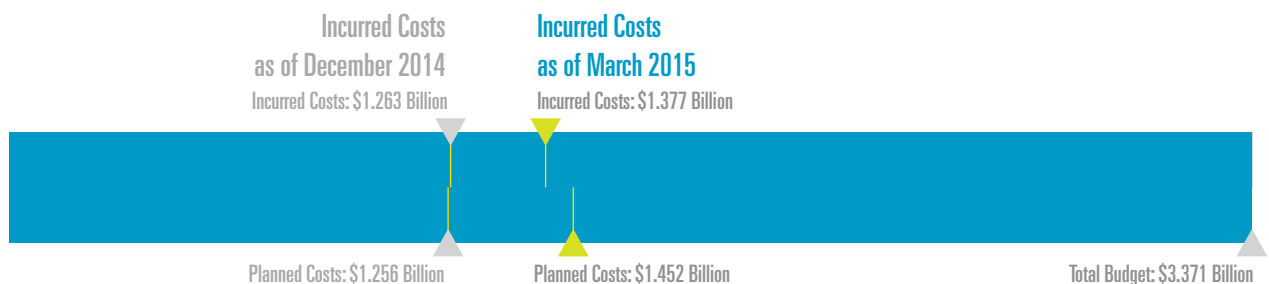
Current Cost

The Muskrat Falls Generating Facility comprises 48.2 per cent of the total Project budget. As of the end of March 2015, the incurred costs for the generating facility totaled \$1.377 billion as compared to the planned costs of \$1.452 billion, which was \$75.1 million or 5.2 per cent lower than planned [December 2014 Report variance was 0.6 per cent higher than planned].

Figure 3

Muskrat Falls Generating Facility - Incurred Costs at March 2015

(including December 2014 comparison)



The Committee asked Nalcor what were the main drivers for this cost variance. Nalcor advised that following layoffs at the end of December 2014, the civil contractor only began recalling labour early in the first quarter of 2015. This slow recall was a deliberate and measured process to allow progress enhancement activities to be completed. With the slower ramp-up of workers early in the year, this contributed to the incurred costs associated with the Intake, Powerhouse, Spillway, and Transition Dams to be less than planned for the first quarter of 2015.

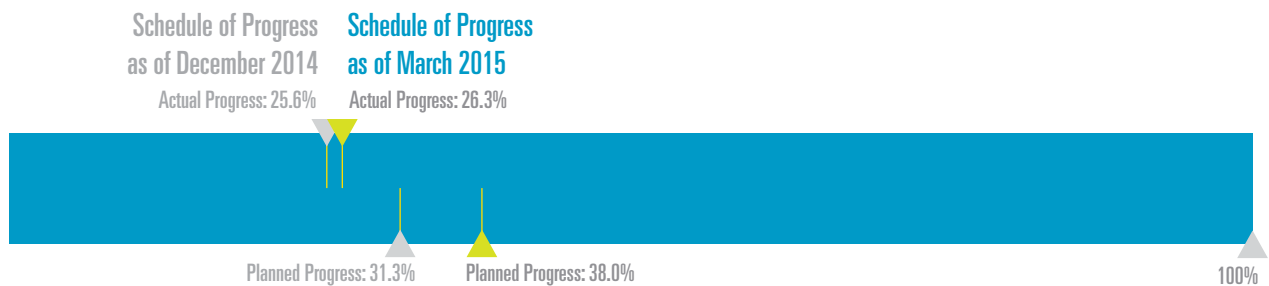
Current Schedule

As of the end of March 2015, the actual construction progress for the generating facility was 26.3 per cent complete compared to a planned progress of 38.0 per cent complete, a variance of 11.7 per cent behind the planned schedule [December 2014 Report variance 5.7 per cent behind the planned schedule].

Figure 4

Muskrat Falls Generating Facility – Schedule of Progress at March 2015

(including December 2014 comparison)



This schedule variance is mainly attributable to three activities within the generating facility sub-project:

- North Spur Stabilization;
- Spillway & Gates; and,
- Powerhouse & Intake.

The progress status of each of these activities is summarized in Table 6 below as follows:

Table 6

**Construction Activity for the Muskrat Falls Generating Facility
Planned Progress vs. Actual Progress**

Construction Activity	March 2015 Cumulative %			December 2014 Variance
	Planned	Actual	Variance	
Activity	A	B	B-A	C
North Spur Stabilization	21.4%	0.2%	-21.2%	-12.2%
Spillway & Gates	40.3%	31.3%	-9.0%	-3.6%
Powerhouse & Intake	28.2%	9.9%	-18.3%	-9.9%


The Committee posed the following questions to Nalcor:

- 1. Why has schedule progress continued to slip for these activities?**
- 2. Does this schedule slippage jeopardize the Critical Path and Milestone dates?**
- 3. What is the plan to address this schedule slippage?**

1. Why has schedule progress continued to slip for these activities?

With respect to the North Spur Stabilization Works, Nalcor advised that the slippage recorded in the current schedule is not reflective of the revised plan for this work activity. As reported in the September 2014 Oversight Committee report, the planned date for the North Spur Works Ready for Diversion Milestone has been revised from November 2015 to September 2016. Nalcor advises that the progress will continue to track behind current plan for this scope of work until a new baseline of the work schedule is set based on this revised execution strategy and that there is no change in the completion date for this scope.

With respect to the Spillway & Gates, Nalcor advised that the changes to the contractor’s construction management organization had not taken full effect for the reporting period. This, coupled with the contractor’s decision to demobilize the workforce prior to the Christmas break and slowly build up the workforce during this past quarter while the winter effect on production eased, has resulted in further schedule slippage against the original contractor’s schedule. Despite these circumstances the contractor is projecting that the Spillway concrete work will be significantly complete in 2015.



With respect to the Powerhouse & Intake, Nalcor advised that the Powerhouse & Intake are showing a continued progress slippage against the original contractor's schedule. Nalcor has noted that the changes to the contractor's construction management organization had not taken full effect for the reporting period. This, coupled with the contractor's decision to demobilize the workforce prior to the Christmas break and slowly build up the workforce as the winter effect on production eased, has resulted in further schedule slippage against the original contractor's schedule. The civil contractor is projecting a steady increase in concrete placement month over month as the weather improves.

2. Does this schedule slippage jeopardize the Critical Path and Milestone dates?

Nalcor advised that the Powerhouse & Spillway has the contractor's full attention and Nalcor is actively managing the contractor within the bounds of the contract and providing support to the contractor to improve production, overall productivity and organizational enhancements. It should be noted that while there is a variance between the planned and actual progress, the progress is following the current forecast curves. There are ways to mitigate these variances by adjusting the sequence of activities, increasing the workforce, increasing the number of work-fronts available and streamlining support functions such as procurement, planning and adding equipment such as cranes, facilities and heavy equipment. The contractor is responsible to take such actions as necessary to fulfill the obligations in the contract and is doing so. Nalcor is working with the contractor to take these mitigating steps in order to make the improvements in concrete placement. Nalcor requires these improvements to be substantive and sustainable, in order to determine the overall effect (if any) on subsequent Milestones. The contractor's actual performance and concrete placement rates over the summer months will be essential to determine if the current schedule slippage impacts Project Milestones.

3. What is the plan to address this schedule slippage?

Nalcor advised that the responsibility to deal with the performance rests solely with the contractor; however, Nalcor is working with the contractor and supporting them in all matters that can contribute to increased production, concrete placement, organizational effectiveness and productivity enhancements, acting within the bounds of the contract which exists with the contractor. The contractor has undertaken the following actions:

- Safety improvement initiatives to reduce near miss rates - including training on lifting and rigging activities to improve safety;
- Contractor project management organizational changes of personnel and effectiveness;
- Contractor construction management organizational changes and improvements;
- Additional tower cranes, equipment and facilities to support construction;
- Increased work fronts in the Powerhouse & Intake;

- Increased labour and increased trades;
- Improved indirect to direct labour ratios;
- Initiatives to improve overall site productivity; and,
- Improved sub-contractor management.

These actions, combined with the improving weather conditions, are designed to increase production rates and concrete placement rates, which the contractor is projecting for the coming months.



Progress on the Spillway at the Muskrat Falls Site – March 13, 2015



Progress on the Spillway, June 5, 2015

Sub-Project: Labrador-Island Transmission Link

Current Cost and Schedule



Figure showing the route for the Labrador-Island Transmission Link by Segment

Current Cost

The Labrador-Island Transmission Link comprises 39.9 per cent of the total Project budget. As of the end of March 2015, the incurred costs for the Labrador-Island Transmission Link totaled \$692.4 million as compared to the planned costs of \$751.1 million, which was \$58.7 million or 7.8 per cent lower than planned [December 2014 Report variance was 9.6 per cent higher than planned].

Figure 5

Labrador-Island Transmission Link - Incurred Costs at March 2015

(including December 2014 comparison)



Nalcor advises that this variance has been driven by the contractor’s decision to slowly ramp up production on the HVdc line, while adopting more aggressive advancement of the HVac transmission line between Muskrat Falls and Churchill Falls. This was undertaken because:

- the contractor determined that they could achieve better overall production by concentrating on one line at a time;
- material fabrication (tower steel from three factories around the world) has been slower than expected; and,
- there was a deliberate decision to allow the right-of-way clearing and access development to advance further along the HVdc route in the interior of Labrador to progress further than originally planned in advance of the installation process.

Combined, these have been largely responsible for lower incurred costs on the Labrador-Island Transmission Link.

Current Schedule

As of March 2015, the actual construction progress for the Labrador-Island Transmission Link was 20.5 per cent compared to a planned progress of 21.9 per cent complete, a variance of 1.4 per cent behind planned schedule [December 2014 Report variance was 0.2 per cent behind planned schedule].

Figure 6

Labrador-Island Transmission Link – Schedule of Progress at March 2015

(including December 2014 comparison)



Nalcor advised that there was some slippage in schedule performance mainly due to winter conditions being harsher than normal. Schedule performance is expected to improve once weather conditions improve.

Sub-Project: Labrador Transmission Assets

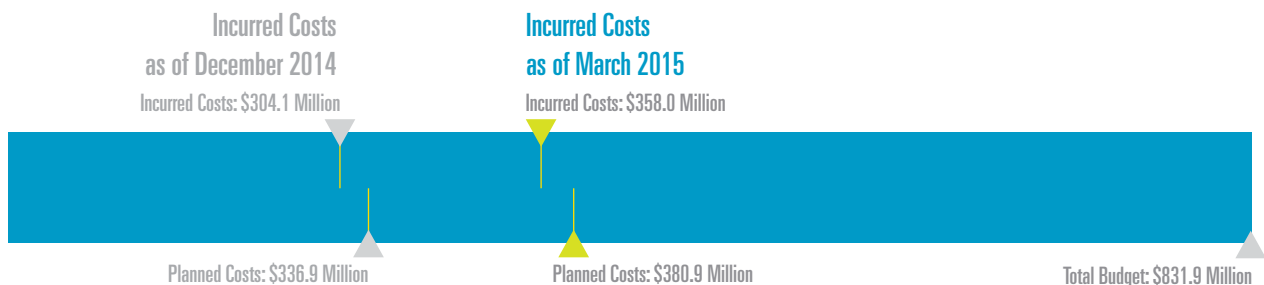
Current Cost and Schedule



Current Cost

The Labrador Transmission Assets comprise 11.9 per cent of the total Project budget. As of the end of March 2015, the incurred costs for the Labrador Transmission Assets totaled \$358.0 million as compared to the planned costs of \$380.9 million, which was \$22.9 million or 6.0 per cent lower than planned [December 2014 Report variance was 9.7 per cent lower than planned].

Figure 7
Labrador Transmission Assets - Incurred Costs at March 2015
 (including December 2014 comparison)



Nalcor advised that the main factor driving lower than planned costs is related to the harsh winter conditions, particularly in January and February. While progress has been ahead of plan in areas of anchor and foundation installations, as well as tower assembly (lower cost-intensive items), tower erection and conductor stringing (higher cost intensive items) have been impacted by the severe weather.

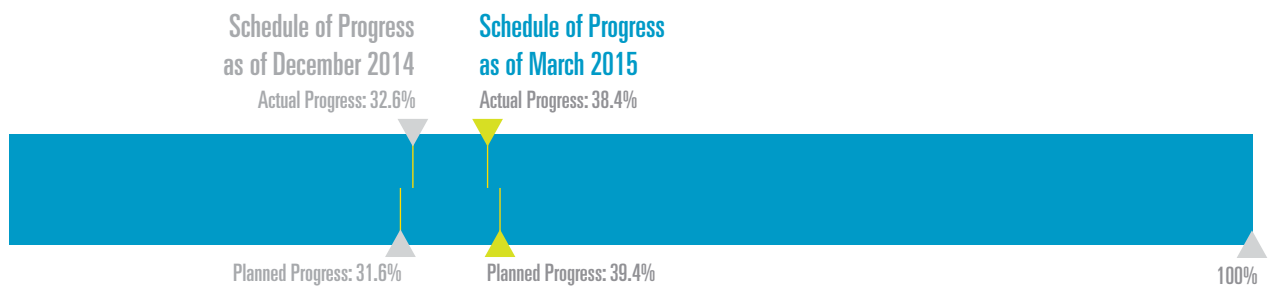
Current Schedule

As of the end of March 2015, the actual construction progress for the Labrador Transmission Assets was 38.4 per cent complete as compared to a planned progress of 39.4 per cent complete, a variance of 1.0 per cent lower than planned schedule [December 2014 Report variance was 1.0 per cent ahead of planned schedule].

Figure 8

Labrador Transmission Assets – Schedule of Progress at March 2015

(including December 2014 comparison)



Nalcor advised that there was some slippage in schedule performance, mainly due to winter conditions being harsher than normal. Schedule performance is expected to improve once weather conditions improve.



Labrador Transmission Assets Stringing Operations

Project Risks

Given the size and complexity of the Project, it is important that any risks are proactively identified and monitored and that mitigation measures are implemented as appropriate. The Committee continues to review Nalcor's monthly risk report and meets regularly with Nalcor officials to discuss major project risks and mitigation strategies.

Based on the Committee's review of the risk register for the period ending March 31, 2015, the Committee focused on providing updates with respect to the following risks:

- 1 Risk for Project schedule delays
- 2 Major contracts not yet awarded – update
- 3 Weather impact on Project schedule - update

1 Risk for Project schedule delays

With the continued slippage in schedule progress at the Muskrat Falls Generating Facility, specifically the Powerhouse & Intake, the Committee has observed an increase in risk levels during the quarter in the following key areas:

- Contractor performance causing schedule delays
- Powerhouse concrete placement
- River Diversion in 2016

The Committee questioned Nalcor regarding the primary driver(s) for the shifts in the Project risk levels. Nalcor advised the following:

- Contractor performance causing schedule delays

The risk level for the contractor performance and the related trend is associated with the Muskrat Falls Generating Facility and the civil contractor. Nalcor and the civil contractor are working together to improve construction organization and project management functions that support construction. Plans, including mitigation strategies, have been developed and implementation began late in the 1st quarter of 2015. The results of these efforts are not expected to be realized until late in the spring and into the summer of 2015.

- Powerhouse concrete placement

The civil contractor has re-sequenced its work efforts to concentrate on the Spillway, and therefore, concrete placement in the Powerhouse is occurring at a reduced rate. At the same time, the contractor is reviewing its execution plans, and work effort will resume at the Powerhouse in the second quarter. Re-assessment of the progress on these major activities will be performed once improved and sustained production and concrete placement rates are achieved.

- River Diversion in 2016

Being ready for river diversion in 2016 is directly related to the civil construction associated with the Muskrat Falls Generating Facility, more especially with the work on the Spillway. Until such time as improvement in concrete placement is consistent with pre-established targets, the risk to achieving river diversion in 2016 increases. To date, however, no change has been made to the target milestones.

The Committee notes that the increase in the risk levels appears consistent with the March 2015 schedule progress forecast. Significant productivity improvements in concrete placement and schedule performance over the upcoming spring and summer will be required, with those projected improvements consistently being maintained with the established targets in the future.

The Committee notes that if these productivity improvements are not achieved and maintained, it would likely impact the overall Project schedule. Nalcor is currently working with the civil contractor and monitoring the implementation of the mitigating actions previously outlined.

2 Major contracts not yet awarded – update

The December 2014 Committee Report noted two major contracts for the Muskrat Falls Generating Facility remaining to be awarded: the construction of the north and south dams; and, the supply and installation of the mechanical and electrical auxiliaries. The Committee asked Nalcor to provide an update on the status of these contracts. Nalcor advised that:

Contract CH0009 for the construction of the north and south dams continues to undergo clarifications and negotiations with award planned in 2015 and bids for Contract CH0031 for the supply and installation of the mechanical and electrical auxiliaries are currently being reviewed.

The Committee notes that until these contracts are awarded the associated costs and any impact on the contingency budget for the Project will remain uncertain.

3 Weather impact on Project schedule - update

The Committee requested an update from Nalcor as to what impacts the weather has had on the Project schedule during the quarter ended March 2015. Nalcor advised that:

Harsh winter conditions, particularly in January and February, including a great deal of snow fall, have had an impact on all work fronts (i.e., Muskrat Falls Generating Facility, the Labrador Island Transmission Link and the Labrador Transmission Assets), in particular all work efforts at the Powerhouse & Spillway, and the Right-of-Way access works. Snow fall in January and February, as represented by total precipitation, was about 85 per cent above normal in the Happy Valley-Goose Bay area (ref. Environment Canada). Temperatures were also colder with an average daily mean for January of -21.0°C vs. a norm of -17.6°C (3.4°C colder on average each day of the month) and for February of -22.0°C vs. a norm of -15.7°C (6.3°C colder on average each day of that month) (ref. Environment Canada). Combined, this has resulted in higher than normal transportation difficulties, equipment breakdowns, and extra work in snow clearing and removal. These challenges have contributed to lower than planned overall performance.

Other Oversight Activities

The Committee provides the following update with respect to additional oversight activities.

Independent Engineer

During the week of March 16 to 20, 2015 the Independent Engineer accompanied Nalcor representatives on factory visits to the Andritz facility in Chengdu, China where the turbines and generators are being manufactured and to the Nexans facility in Futtsu, Japan where the submarine cables for the Strait of Belle Isle cable crossing are being manufactured.

The Independent Engineer has not yet issued its report on those factory site visits. A copy of this report will be made available when issued by the Independent Engineer.

Nalcor's External Auditor

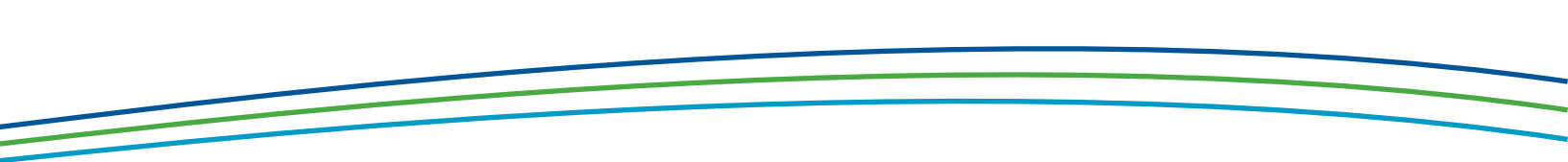
Nalcor's Combined Audited Statements for the Lower Churchill Project Companies for the year ended December 31, 2014 have been completed by Deloitte, LLP in their capacity as Nalcor's external auditor.

Total assets were reported at \$6.536 billion. Total liabilities were reported at \$5.547 billion and total shareholders' and partners' equity \$989 million. The statements were released in April 2015 and can be found on the Committee's website at: www.gov.nl.ca/mfoversight

or on Nalcor's website at:

www.nalcorenergy.com/uploads/file/APR%201%202015%20LCP%20COMBINED%20DEC%202014%20-%20ISSUED%20FINAL.pdf

In July 2014 the Committee issued a letter to Nalcor requesting its external auditor undertake additional procedures with respect to the validity of costs charged to the Muskrat Falls Project when undertaking their audit for the fiscal year ended December 31, 2014. Specifically, the Committee requested that:

- 
- a) Additional audit sample testing be conducted for the Lower Churchill Project Companies; and,
 - b) Additional procedures be applied to these companies to:
 - a. Ensure all expenditures were approved as budget items; and,
 - b. Review Nalcor's overhead classification and allocations and test to ensure that any transactions were appropriately classified and allocated.

In April 2015 representatives of Deloitte, LLP met with the Committee and issued a letter to Nalcor reporting on these additional procedures applied and that as a result of applying these procedures they found no issues of concern. In their letter issued to Nalcor (see Appendix 'B') Deloitte, LLP reports that:

We have performed the following additional procedures ...:

- *Compared all samples selected as part of the year end audit to the approved capital budget for the following companies to ensure each expenditure is an approved budget item by performing the following procedures:*
 - *For each selection, obtained the total expenditures incurred for the respective contract to the date of the invoice selection and compared the balance to the commitment amount for the respective contract and ensured the amount billed to date did not exceed the commitment amount; and,*
 - *For each selection, compared the commitment amount to the budget amount for the respective contract included in the Authorization for Expenditure approved by the Board of Directors of the Companies in June 2014 and ensured the commitment did not exceed the budget amount.*
- *We obtained an understanding of the methodology used by the companies to record internal shared costs and overhead allocations to the Project.*
- *For each sample selected, we verified that the expenditure was allocated to the Project in accordance with the companies' methodology and is consistent with the appropriate standards under the International Financial Reporting Standards.*

As a result of applying the above procedures, we found no exceptions.



Other Assurance Reviews

In fulfilling its mandate, throughout the construction period the Committee will examine issues such as whether management processes and controls are well designed and followed. The Committee provides the following update with respect to three areas of focus for review:

1. Project Controls for Risk Management

Nalcor's Internal Audit Department (Internal Audit) has completed its review and report on the Project controls and procedures for risk management. Their stated primary objectives of the audit were to determine if the risk management framework for the Project is consistent with best practices and is being effectively implemented.

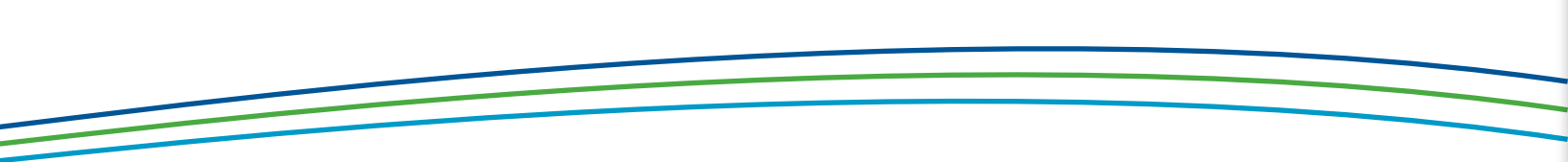
The Internal Audit report indicates that adequate resources have been allocated within the project to manage risk, and consistent with best practices, risks are being categorized and ranked properly, and are being effectively managed. Internal Audit concluded that Nalcor's risk management plan for the Project effectively identifies and manages risks that could prevent the project from achieving its objectives.

Representatives of the Committee and Ernst & Young, LLP, in its role as consultant to the Committee, met with Internal Audit to review their audit plan and final report. This review of Internal Audit's plan and report does not constitute a reliance review of Internal Audit's reported results.

The review of Internal Audit's plan indicated that the scope of this audit included assessing multiple components of risk management and reporting procedures. The scope of this audit did not include a review of the method of quantifying cost and schedule risk; the method of determining the budget for contingency; or the procedures for assessing, reforecasting and reporting the usage of contingency. The Committee has recommended to Internal Audit that their audit plan should include a review to address this additional scope for project controls for risk management.

2. Project Controls for Change Management

Nalcor's Internal Audit completed its review and report on the Project controls and procedures for change management. Their objectives of the audit were to determine if the Project change management plan and procedures are consistent with best practices and to ensure that change management has adequate design and support.



Internal Audit's stated audit objective was to conduct a comprehensive review of the Project Charter, change management procedures, and human resources involved in the change management process. The audit file indicates that there was a low risk issue identified relating to the timelines of Project Change Notice approvals. Management has committed to identify criteria and methods to better document approvals during urgent or emergency events. Internal Audit concluded that Nalcor's change management process is in alignment with best practices and is operating within a properly designed control environment.

Representatives of the Committee and Ernst & Young, LLP, in its role as consultant to the Committee, met with Internal Audit to review their audit plan and final report. This review of Internal Audit's plan and report does not constitute a reliance review of Internal Audit's reported results.

The review of Internal Audit's plan indicated that there was sufficient scope coverage planned for this audit. As this audit was focused on assessing whether the design of the change management processes and controls are based on best practices, it did not include procedures to assess compliance with these processes. This next phase to assess compliance with procedures is included in Internal Audit's current plan.

3. Project Controls for Cost and Schedule

As noted in the September 2014 Committee Report, Ernst & Young, LLP (EY), in its role as consultant to the Committee, has been engaged to undertake a review of the Project Controls for Cost and Schedule. EY has completed execution of this work and is currently finalizing their report. EY's report is being finalized at the time of issuance of this report. The Committee will post the EY report to the Committee website when completed and will include the findings of the review in the next Committee report for the quarter ended June 2015.

Next Report

The Committee will continue its oversight of the construction of the Project in accordance with its mandate and the Oversight Framework. The next report will be for the quarter ended June 2015.

Appendix A

Project Budget Summary Expenditure Categories

The summary expenditure categories are described as follows:

NE-LCP Owners Team, Admin and EPCM Services: includes the labour, facilities and overhead costs of the LCP Project team as well as costs of SNC Lavalin.

Feasibility Engineering: includes the cost of early stage engineering activities which are now complete.

Environmental & Regulatory Compliance: includes costs associated with environmental assessment, permits, licenses and similar such costs.

Aboriginal Affairs: includes costs associated with activities in the Aboriginal communities along with obligations under the Impact and Benefits Agreement.

Procurement & Construction: includes costs associated with the major construction activities and the award of contracts.

Commercial & Legal: includes costs associated with insurance, legal and other commercial activities.

Contingency: provision for additional expenditure, if required.

Appendix B

Deloitte, LLP - Additional Procedures



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April 1, 2015

Mr. Derrick Sturge, FCA, CMA
VP Finance and CFO
Nalcor Energy
P.O. Box 12400
St. John's, NL A1B 4K7

Dear Mr. Sturge:

Deloitte LLP ("Deloitte" or "we" or "us") has been engaged to provide assistance to the Lower Churchill Project (the "Project"), which includes Muskrat Falls Corporation, Labrador Transmission Corporation, Labrador-Island Link Limited Partnership and Lower Churchill Management Corporation (hereinafter referred to as the "Companies"), for completion of specified procedures on the capital expenditures of the Companies for the year ended December 31, 2014, as per the letter from the Government of Newfoundland and Labrador Muskrat Falls Oversight Committee dated July 31, 2014 and our engagement letter dated March 26, 2015.

During the course of our audit for the year ended December 31, 2014, we selected a sample of 225 capital expenditures recorded in the Companies' accounts. For each sample selected, we tested the validity of the capital expenditure by verifying that the amount recorded agrees to supporting documentation in the form of supplier invoice.

We have performed the following additional audit procedures specified by you:

- Compared all samples selected as part of the year end audit to the approved capital budget for the Companies to ensure each expenditure is an approved budget item by performing the following procedures:
 - For each selection, obtained the total expenditures incurred for the respective contract to the date of the invoice selection and compared the balance to the commitment amount for the respective contract and ensured the amount billed to date did not exceed the commitment amount; and
 - For each selection, compared the commitment amount to the budget amount for the respective contract included in the Authorization for Expenditure approved by the Boards of Directors of the Companies in June 2014 and ensured the commitment amount did not exceed the budget amount.
- We obtained an understanding of the methodology used by the Companies to record internal shared costs and overhead allocations to the Project.
- For each sample selected, we verified that the expenditure was allocated to the Project in accordance with the Companies' methodology and is consistent with the appropriate standards under International Financial Reporting Standards.

Lower Churchill Project
April 1, 2015
Page 2

As a result of applying the above procedures, we found no exceptions. However, these procedures do not constitute an audit with the objective of expressing a separate opinion regarding the subject financial information and accordingly, we do not express an opinion on such information.

We appreciate the opportunity to be of service to you and would be more than happy to discuss our findings with you at your convenience.

Yours very truly,

A handwritten signature in black ink that reads "Deloitte LLP". The signature is written in a cursive, slightly slanted style.

Chartered Professional Accountants

Muskat Falls Oversight Committee
P.O. Box 8700
St. John's, NL
A1B 4J6

