

Response to GT RFI #Q10.32

Question: NAL0130478 table 2 includes key performance indicators that were to be monitored throughout the project. Please provide an explanation of how these KPI's were monitored throughout construction, including but not limited to, who tracked this performance, the frequency of reporting KPI results, and who the results were reported to.

Response:

The Key Performance Indicators (KPIs) outlined in Doc. No. NAL0130478 **Project Execution Plan (Scope and Approach)** and included below, have been monitored and reported throughout construction of the Lower Churchill Project (LCP). It should be noted that the target ranges noted in the table below were suggested as an appropriate estimate against industry standard; however, various ranges (mainly Health and Safety) were defined at a Corporate level for all business units of the Company throughout the lifecycle of the Project, with performance reviewed for the current year against prior year, along with development of the upcoming year's indicators. This has mainly been reported in the Corporate Plan Performance Report.

KPI Category	KPI Name	Basis for Target Calculation	Target	Target Range			Actual
				Green	Yellow	Red	
Health and Safety	Lost Time Incident (LTI)	Number of Lost Time Injuries	0	0	1	>1	
	Medical Aids Incident	Number of Medical Aids Incidents	0	0	1	>1	
	Near Miss	Number of Near Misses	0	0	2	>2	
	Lost Time Incident Frequency Rate (LTIFR)	TBD in annual basis for LCP	-	-	-	-	
	All Injury Frequency Rate (AIFR)	TBD in annual basis for LCP	-	-	-	-	
	Total Recordable Incident Frequency Rate (TRIFR)	TBD in annual basis for LCP	-	-	-	-	
Cost	Cost Performance Index (CPI)	Earned Value (\$) / Actual Cost (\$)	1	≥1	0.96 – 0.99	≤0.95	
	Budget vs. Forecast FFC	Current Budget / Final Forecast	1	≥1	0.96 – 0.99	≤0.95	
Schedule	Schedule Performance Index (SPI)	Earned Progress (%) / Planned Progress (%)	1	≥1	0.96 – 0.99	≤0.95	
Environment	Environmental Releases	Number of Releases	-	-	-	-	
Quality	Non-conformance	Number of Non-conformance resulting from the Project Quality Audits	-	-	-	-	

A synopsis of each KPI category in correlation with the table is as follows:

Health and Safety:

The LCP Benefits Monitoring and Reporting System was implemented on the LCP and used to monitor and track 1) hours expended by both the Project Delivery Team and Contractors; 2) project related health & safety incidents occurring at all construction and office sites throughout execution of the Project; and 3) recordable frequency rates for the Project. Overall monitoring of this system is maintained dually by the LCP Industrial Benefits Team with respect to hours, and by the Health & Safety Team with respect to safety incidents and statistics.

In accordance with the **Lower Churchill Construction Projects Benefits Strategy (Nalcor Doc. No. LCP-PT-MD-0000-IB-ST-0001-01)**, Attachment 01, we refer you to Section 6 which outlines Project reporting requirements to the Government of Newfoundland and Labrador in relation to the Government's Energy Plan, and compliance with the maximization of benefits from the development of the province's natural resources, with one such requirement being the reporting of all person hours. Person hours expended by the LCP Project Delivery Team are entered by the Industrial Benefits Team; person hours expended by the Contractor are entered by a Contractor representative. Exhibit 13 (Provincial Benefits) of each standard LCP Contract outlines Contractor requirement to adhere to this strategy; and upon mobilization and subsequent kick-off meetings, each Contractor is also provided significant instruction and training from the LCP Industrial Benefits Team with respect to the process for entry of all person hours into the LCP Benefits System. The LCP Industrial Benefits Team provides extensive validation of all Project hours, ensuring all requirements are fulfilled and investigating any inconsistencies.

In parallel with reporting of hours, the LCP Project Delivery Team and all Contractors have a responsibility to report all project related health & safety incidents as they occur; Exhibit 5 (Health & Safety Requirements) of each standard LCP Contract outlines a Contractor's overall responsibility to Health & Safety practices. Project related incidents include (but are not limited to): Lost Time Injuries, Medical Aids, Near Misses, Modified Work Cases, High Potential Near Misses, and First Aids. Contractors are set up as HSE users in the LCP Benefits Monitoring and Reporting system and are instructed by the LCP Health and Safety Team on how to use the system. The correlation of project hours with project incidents contribute to calculation of the frequency ratings – LTIFR, AIFR, and TRIFR noted in the table of KPI's above. The LCP Health & Safety Team consistently monitors all health & safety incidents, and frequency ratings, tracking the condition of the Project, functioning within the guidelines of the **Health and Safety Management Plan (Nalcor Doc. No. LCP-PT-MD-0000-HS-PL-0001-01)**, Attachment 02; and ensuring the safe execution of the Lower Churchill Project.

The information contained in the LCP Benefits System is retrieved for reporting purposes on a monthly basis and provided to the LCP Project Controls Team in accordance with the **Stewardship Reporting Procedure (Nalcor Doc. No. LCP-PT-MD-0000-PC-PR-0017-01)**, Attachment 03. This information includes all safety incidents for the period, along with period, YTD (year to date) and PTD (project to date) hours, statistics, and frequency ratings, and is reported within the following documentation.

- LCP Monthly Progress Report (issued monthly)
- Corporate Plan Performance Report (issued monthly)
- Government Oversight Committee Presentation (issued monthly)
- LCP Presentation for Nalcor Energy Board of Directors (issued quarterly)
- Muskrat Falls Monthly Benefits Report (issued monthly)

The distribution for each of these reports, excluding the Muskrat Falls Monthly Benefits Report, is outlined within the **LCP Reporting Matrix (Nalcor Doc. No. LCP-PT-MD-0000-PC-FR-0002-01)**, Attachment 04. The Muskrat Falls Monthly Benefits Report is distributed Project wide and is of public record, posted at <http://muskratfalls.nalcorenergy.com>.

In addition to the reports noted above, the LCP Health & Safety Team provides the Corporate Manager, Safety & Health, a short summary of the Project's current condition including (but not limited) highlights, risks, and statistics, for incorporation into a Corporate Safety Performance Report. This is provided on a monthly basis and is distributed company wide.

Cost:

Cost Performance Index (CPI) is not tracked at the Project level; however, it is tracked at the Package/Contract level as applicable. Many of the Contracts on LCP are either lump sum or lump sum/unit rate (i.e., CH0007, CH0030, CH0032, and CD0501); and for both of these Contract types, Nalcor would have no visibility with respect to actual costs, only invoiced/paid costs. The actual cost of work performed and reported to Nalcor in these cases would be the same as the earned value of work performed, meaning the CPI would always be 1.0. An exception to this would be a contract that is unit rate/reimbursable labour (i.e. CH0009 and CH0031); and for these types of contracts, the contractors report CPI within their Monthly Progress Reports submitted to the LCP.

Budget vs. Final Forecast Cost (FFC) on the LCP has been monitored extensively throughout construction. The Project Controls Team regularly perform an analysis of current package and contract scope in consultation with other Project Delivery Team members including (but not limited to) Package Leads, Area Managers and Component Managers, with respect to budget requirements, scope changes, and forecast at completion for all contracts. Information is reviewed, with proactive steps taken to address concerns and ultimately report action, as the latest information is made available. Data is implemented into PM+, LCP's Cost Management System, and is reported on a monthly basis. The latest approved AFE budget remains constant from one reporting period to the next. The FFC (at both the asset level (MF/LTA/LIL) and overall project) also remains constant from one reporting cycle to the next; however, the forecast is regularly adjusted at the package/contract level to align with the latest available information within the period. The LCP Monthly Progress Report (distribution noted above), and the Construction Reports prepared in alignment with the Financial Loan Guarantee (distribution noted in the LCP Reporting Matrix noted above) report Budget vs. FFC data at a category and asset level, along with a detailed analysis of the FFC changes within the respective contracts.

Schedule:

Schedule Performance Index (SPI) or earned vs. planned progress is tracked, monitored, and reported monthly. The LCP Project Controls Team, in consultation with both contractors and other Project Delivery Team members including (but not limited to) Package Leads, Area Managers and Component Managers, gather and validate current progress data for all contractual scopes and measure earned progress against the baseline planned data. As outlined in Exhibit 3 (Coordination Procedures) of each standard LCP Contract, Contractors are responsible for providing progress information for their scope of work. Similar to cost, all data is reviewed, with proactive steps taken to address concerns and ultimately report action, as the latest information is made available. The LCP Monthly Progress Report (distribution noted above), and Integrated Progress Schedule (IPS) Monthly Schedule and Progress

Analysis (distribution also noted in the LCP Reporting Matrix), are the primary monthly reporting deliverables that outline earned vs. planned progress.

Environment:

As outlined in Exhibit 6 (Environment & Regulatory Compliance Requirements) of each standard LCP Contract, Contractors are responsible to report all environmental incidents to the LCP Team. Environmental Releases (fluid release incidents/material spills) related to the LCP are regularly tracked and monitored by the LCP Environmental Team, provided to the Project Controls Team in accordance with the ***Stewardship Reporting Procedure (Nalcor Doc. No. LCP-PT-MD-0000-PC-PR-0017-01)***, Attachment 03, and are reported in the LCP Monthly Progress Report (distribution noted above). Prior to February 2015, all Environmental Releases, including the total number for each reporting period, and the detail including Contract/Scope, Date, and Description of Incident, were reported on the respective report for the current reporting period. From February 2015 onward, the LCP Monthly Progress Report includes, in addition to the total number of releases for the respective reporting period, a year to date graphical summary. This graphical summary was also reported on the LCP Executive Summary Dashboard Report from February 2015 onward. In addition to the reports noted above, the LCP Environmental Team also provides regular updates to its respective corporate entities.

Quality:

Non-conformances identified on the LCP, including those resulting from Project Quality Audits, are regularly tracked and monitored by the LCP Quality Team. Period, YTD (year to date), and PTD (project to date) statistics are provided to the Project Controls Team in accordance with the ***Stewardship Reporting Procedure (Nalcor Doc. No. LCP-PT-MD-0000-PC-PR-0017-01)***, Attachment 03, and are reported in the LCP Monthly Progress Report (distribution noted above).

List of Attachments:

Attachment 01: Lower Churchill Construction Projects Benefits Strategy (Nalcor Doc. No. LCP-PT-MD-0000-IB-ST-0001-01)

Attachment 02: Health and Safety Management Plan (Nalcor Doc. No. LCP-PT-MD-0000-HS-PL-0001-01)

Attachment 03: Stewardship Reporting Procedure (Nalcor Doc. No. LCP-PT-MD-0000-PC-PR-0017-01)

Attachment 04: LCP Reporting Matrix (Nalcor Doc. No. LCP-PT-MD-0000-PC-FR-0002-01)

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