

# Muskkrat Falls Project Oversight Committee

Quarterly Report

Period Ending June 2017

# Overview

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# 1.1 Summary - General

- In keeping with previous Quarterly Reports, this report provides details on costs incurred, changes in costs and project milestone schedule, the status of manufacturing and installation contracts, and major contracts awarded for the April 2017 to June 2017 period. This report also includes an update on other key oversight activities up to the date of release of this report. In addition, this report provides a detailed breakdown of the Revised Project Capital Budget announced by Nalcor in June 2017.
- The Oversight Committee (Committee) receives and analyzes information that is made available by the Project. The Committee identifies risks and issues and follows up with Nalcor to obtain more detail and explanation.
- As the project proceeds toward construction completion and commissioning, the Committee will also be monitoring plans and preparation for integration and operations.

# 1.1 Summary - General

- During the period:
  - The Committee met on five occasions as part of the regular Nalcor reporting schedule and other Committee business. Committee meeting minutes and monthly reports are available on the Committee website
  - Nalcor provided its June 2017 Project update to the public
  - EY commenced work in preparation of the “Assessment of the Implementation of EY Interim Report Recommendations” Report in June 2017 and concluded on August 31, 2017
  - A new independent Committee member, Mr. Paul Snelgrove was appointed in September 2017 to replace the independent member, Mr. Sterling Peyton
  - The Committee wishes to thank Mr. Peyton for his valuable contribution to the Committee

## 1.2 Summary - Costs

- Since the June 2016 Project Capital Budget:
  1. Nalcor has completed a Quantitative and Cost and Schedule Risk Assessment (QRA) performed by Westney Consulting Group including an assessment of risks to project completion and analysis of associated impact on cost and schedule
  2. In June 2017, the Nalcor Board of Directors approved the 2017 Revised Project Capital Budget of \$10.12 billion, which includes:
    - Muskrat Falls Generation (MFGGen): \$5.50 billion
    - Labrador Island Transmission Link (LITL): \$3.72 billion
    - Labrador Transmission Assets (LTA): \$894 million
  3. This is an increase of \$990 million (\$1.29 billion including financing and other costs) to the project budget. A summary of increases can be found on the following pages with additional detail in Section 2
  4. Project Operations and Maintenance costs (O&M) were increased by \$75 million annually from 2012 estimates, commencing in 2020

## 1.2 Summary - Costs

- Cost impacts associated with Additional Risks such as protest unrest, reservoir vegetation and soil removal and other unforeseen directives from government were not included in the June 2017 Project Capital Budget
- The Project Capital Budget Cost increases are primarily due to:
  - Astaldi Completion Agreement and impacts to other contractors
  - Protest delays
  - Geotechnical challenges in Labrador - unit rate increases and site access
  - Muskrat Falls camp expansion
  - Other commercial settlements
  - Proud strand conductor replacement
  - Cofferdam repairs and other mitigations
  - Identified project changes and remaining execution risk
- See Sections 2 and 3 for further details

## 1.3 Summary - Schedule

- Since the June 2016 Project Capital Budget:
  - A new Project Milestone Schedule has been developed for the LITL to incorporate phased commissioning (Pole 1)
  - Phased commissioning will enable one pole of the two pole system to be energized to allow transfer of power from Churchill Falls to the Island
  - LITL first power transfer for Pole 1 and commissioning of the fully completed LITL planned dates are July 1, 2018 and September 1, 2020 respectively
  - MFGen first power and commissioning complete planned dates are November 2, 2019 and September 1, 2020 respectively
  - See Section 2 for further details

# 1.4 Summary - Construction

- Period ending June 2017
  - Overall construction progress is at 78.0%
  - \$7.029 billion in incurred costs
  - \$8.337 billion in committed costs, including incurred costs
  - The Balance of Plant contract has been awarded to GJ Cahill-Ganotec
  - Bifurcation of the Project into separate and distinct work streams (Generation and Transmission) with individual leadership and project resources has been operationalized
  - Manufacturing and installation contracts:
    - Most major Generation manufacturing is complete
    - Contract progress is primarily affected by installation and commissioning delays resulting from civil works delays
    - Contractor schedules may be adjusted based on outcomes commercial negotiations
  - See Section 4 for further details



## 1.5 Summary - Risks

- In its project reporting, Nalcor identifies risks which may impact project cost and schedule. The Committee is currently focused on a number of project risks including:
  - Safety Performance
  - Contractor Management and Productivity;
  - Phased Commissioning;
  - Insurance Claims and Coverage;
  - Cofferdam Performance;
  - Reservoir Rim Stability;
  - Project Integration and Operations Readiness; and
  - Additional Risks<sup>1</sup>
- The Committee is addressing these risks with Nalcor and will continue to follow up and report on these and any new risks that are identified
- See Section 5 for further details

<sup>1</sup> Cost impacts associated with Additional Risks such as protest unrest, reservoir vegetation and soil removal and other unforeseen directives from government were not included in the June 2017 Project Capital Budget

## 2. Project Capital Budget

Project Capital Budget Comparison - (Billion)	Capital Costs	Financing and Other Costs	Total
• December 2012 (Sanction)	\$6.20	\$1.2	\$7.40
• December 2013 (Financial Close)	\$6.53	\$1.2	\$7.73
• June 2014	\$6.99	\$1.3	\$8.29
• September 2015	\$7.65	\$1.3	\$8.95
• June 2016	\$9.13	\$2.3	\$11.43
• December 2016	\$9.40	\$2.3	\$11.70
• June 2017	\$10.12	\$2.6	\$12.72

June 2016 vs. June 2017 Project Capital Budget increase of \$1.29 billion including financing and other charges

Financing and other costs have increased due to the acquisition of additional debt (FLG2) and project delay

See Annex A for June 2017 Project Capital Budget details

## 2. Project Capital Budget – June 2016 vs. June 2017

June 2016 Project Capital Budget (\$ Billion)		June 2017 Project Capital Budget (\$ Billion)	
<b>Generation</b>		<b>Generation</b>	
	\$4.80		\$5.50
<b>Transmission</b>		<b>Transmission</b>	
LITL	\$3.44	LITL	\$3.73
LTA	<u>\$0.88</u>	LTA	<u>\$0.89</u>
	<u>\$4.32</u>		<u>\$4.62</u>
<b>Total</b>	\$9.13	<b>Total</b>	\$10.12

June 2016 vs. June 2017 Project Capital Budget increase of \$990 million (Capital Costs only)

See Annex A for June 2016 Project Capital Budget details

## 2. Project Capital Budget – Generation Capital Cost Increases

June 2017 Project Capital Budget	Capital Cost Increase (Millions)
<b>Generation</b>	
• Astaldi Completion Agreement	\$270
• Balance of Plant Contract <sup>1</sup>	\$60
• Cofferdam Repairs and other mitigations <sup>2</sup>	\$28
• Site Services - 3 month delay	\$45
• Muskrat Falls Camp Expansion	\$11
• Remaining commercial and execution risks	\$330
• Allowance for camp operation expenses <sup>3</sup>	-\$45
<b>Total Increase</b>	<b>\$699</b>

1 Increase over 2016 Project Capital Budget

2 Currently subject to an insurance claim - possible recovery of some costs

3 Reallocation of costs from Generation to Transmission budget for Muskrat Falls camp usage

## 2. Project Capital Budget – Transmission Capital Cost Increases

June 2017 Project Capital Budget	Capital Cost Increase (Millions)
<b>Transmission</b>	
• Labrador transmission line geotechnical challenges and unit rate increases	\$140
• Proud strand conductor issue <sup>1</sup>	\$50
• Muskrat Falls Camp cost sharing <sup>2</sup>	\$45
• Allowance for remaining commercial and execution risk	\$65
<b>Total Increase</b>	<b>\$300</b>

1 Currently subject to an insurance claim - possible recovery of some costs

2 Costs for Muskrat Falls camp usage

## 2. Project Capital Budget - Contingency

### Contingency Budget

- September 2015 \$187 million
- June 2016 \$386 million
- June 2017 \$339 million
- Represents the total amount of contingency funding available within the Project Capital Budget for additional expenditure, if required
- See Annex A for Contingency Budget details

## 2. Project Capital Budget – June 2016 vs. June 2017 Schedule

### Key Project Milestone Revised Planned Schedule Dates

• LTA Ready for Power Transmission	Dec 2017	+2 months
• LITL Ready for Power Transmission (Now Pole 1)	Jul 2018	-2 months
• MFGen First Power	Nov 2019	+3 months
• <u>Commissioning Complete</u>	<u>Sep 2020</u>	<u>+3 months</u>

- Changes to the LITL Project Milestones have been made to incorporate phased commissioning (Pole 1) - June 2016 Project Milestone Schedule in certain instances may not be comparable to the June 2017 Project Milestone Schedule
- Planned Date for LITL First Power Transfer (Pole 1) is 2 months earlier than the June 2016 First Power Transfer Planned Date. Planned Date for MFGen First Power is 3 months later than the June 2016 Planned Date
- Commissioning Complete is 3 months later than the June 2016 Planned Dates
- Actual/Forecast completion dates may be earlier than Planned Dates in the corresponding Project Milestone Schedule
- See Annex B for Project Milestone Schedule details

### 3. Operating and Maintenance Cost Update (O&M)

- Estimated in 2012 @ \$55 million annually, commencing in 2018
- Estimated in 2017 @ \$130 million annually, commencing in 2020
  - Nalcor advises this is consistent with known industry standard
  - Cost includes:
    - Water rentals, Impacts and Benefits Agreement (IBA) and environmental monitoring
- Estimate provided in the Nalcor June 23, 2017 Muskrat Falls Project update of \$109 million annually did not include additional annual costs for water rentals and IBA payments



## 4. June 2017 Reporting

### Expenditure

- \$7.029 billion incurred in compliance with the June 2017 Project Capital Budget revision planned expenditure
  - \$8.337 billion committed, including incurred costs
  - No drawdown in contingency for June as the contingency budget was reset in the June 2017 Project Capital Budget revision
- 
- See Annex C for June 2017 cost details

## 4. June 2017 Reporting

### Earned Progress (Project Cumulative)

	Actual	Planned
MFGGen	68.7%	68.1%
LITL	83.8%	87.1%
LTA	95.8%	99.8%
Project Overall	78.0%	79.5%

- Concrete placement ahead of plan
  - Major Generation equipment manufacturing substantially complete
  - Spillway/Gates and Powerhouse at 85% and 60% complete respectively
  - SOBI installation and static testing complete
- 
- See Annex C for Earned Progress details and Astaldi concrete placement volumes

## 4. June 2017 Reporting

### Project Milestones Schedule

- LITL Project Milestone Schedule has been changed to incorporate phased commissioning (Pole 1)
- LTA and LITL forecast dates are tracking in compliance with the revised June 2017 Project Capital Budget Project Milestone schedule
- MFGGen Project Milestone Forecast Dates are subject to ongoing commercial negotiations - Nalcor advises that Forecast changes are not anticipated to be beyond Planned Dates
- See Annex D for details

## 4. June 2017 Reporting

### Manufacturing/Supply/Installation Contract Progress

- Most contract progress is primarily affected by installation and commissioning delays resulting from civil works delays
- Most major equipment manufacturing is substantially complete -Turbines and Generators, Spillway and Hydro Mechanical and HVdc and Switchyard equipment
- HVdc Converters and Transition Compounds and AC Substations contracts are reporting against rebaselined schedules resulting from commercial settlements
- Further schedule rebaselining may occur based on outcomes of ongoing commercial negotiations

## 4. June 2017 Reporting

### CH0031 – Balance of Plant Contract

- Last major contract awarded for the project construction phase for the supply and installation of mechanical and electrical auxiliaries in the powerhouse
- Contract was awarded to GJ Cahill-Ganotec
- \$60 million increase for execution risks was included in the June 2017 Project Capital Budget

## 5. Risks / Issues being Monitored by the Committee

- **Safety Performance**
  - Increased risk associated with simultaneous operations across multiple work sites and impact on project delivery particularly in the powerhouse and energized switchyards
  - Impact of Emera and NLH Occupational Health and Safety (OHS) transmission directives on project execution
  - Reservoir safety boom not yet installed
- **Contractor Management and Productivity**
  - Nalcor ability to manage contractors and contractor ability to meet schedule
  - Potential commercial negotiations to settle claims

## 5. Risks / Issues being Monitored by the Committee

- Phased Commissioning
  - Ability to meet aggressive Pole 1 completion schedule
  - Associated warranty considerations with early asset hand over during Pole 1 commissioning and completion
- Insurance Claims and Coverage
  - LITL conductor modification and replacement, MFGen cofferdam repairs and other powerhouse protection mitigation, replacement of subsea cable section, and Draft Tube 2 formwork failure

## 5. Risks / Issues being Monitored by the Committee

- **Cofferdam**
  - Performance of existing temporary cofferdam to enable impoundment for winter ice protection and construction of Roller Compacted Concrete (RCC) North Dam
- **Reservoir Rim Stability**
  - Impact of changing water levels during interim impoundment on reservoir shoreline/slope stability



## 5. Risks / Issues being monitored by the Committee

- Project Integration and Operations Readiness
  - Nalcor/NLH readiness to connect the Muskrat Falls Project to the Island and North American electricity grid and operate facilities effectively
- Additional Risks
  - Quantified, but not included in the June 2017 Project Capital Budget
    - Protest unrest
    - Reservoir vegetation and soil removal
    - Other unforeseen directives from Government
  - EY commented in the August 31, 2017 report that it considers Nalcor's treatment of the "Additional Risks" to be reasonable as it relates to budgeted project costs

## 6. Other Oversight Activities

- Independent Engineer (IE), Natural Resources Canada and Oversight Committee site visit and meetings held July 24-28, 2017 - IE Report will be posted to the Oversight Committee website when completed
- EY Report completed August 31, 2017

## 7. 2017 EY Review

- 2017 Report assessed the status of the implementation of the recommendations in the 2016 EY Report
- Report was released on August 31, 2017 and is available @ [Click here](#)
- The Committee is reviewing recommendations from the 2017 Report
- Lower Churchill Management Corporation response to the Report is available @ [Click here](#)

## 8. Oversight Committee Reporting

- Oversight Committee meeting Minutes and Monthly and Quarterly reports are available @ [Click here](#) and [Click here](#)
- Next Quarterly Report will cover the period July 2017-September 2017

## 9. Annex A

\*Data columns in Annexes that follow may not total due to rounding

# Project Capital Budget

Muskrat Falls Generating Facility (in \$ thousands)	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	June 2017	Change (Jun 2016 vs. Jun 2017)	
							\$	%
<i>Expenditure Category</i>								
NE-LCP Owners Team, Admin and EPCM Services	\$369,386	\$378,969	\$382,811	\$408,723	\$536,423	\$655,850	\$119,427	22.3%
Feasibility Engineering	\$5,784	\$18,345	\$17,949	\$17,949	\$17,626	\$17,543	(\$83)	-0.5%
Environmental & Regulatory Compliance	\$28,883	\$20,312	\$24,312	\$25,825	\$25,825	\$27,125	\$1,300	5.0%
Aboriginal Affairs	\$13,314	\$13,314	\$13,314	\$13,314	\$15,370	\$16,395	\$1,025	6.7%
Procurement & Construction	\$2,236,921	\$2,719,626	\$2,786,766	\$3,121,813	\$3,927,984	\$4,501,984	\$574,000	14.6%
Commercial & Legal	\$20,021	\$20,457	\$25,989	\$25,239	\$42,431	\$54,760	\$12,329	29.1%
Contingency	\$226,849	\$94,255	\$120,847	\$73,102	\$235,755	\$226,400	(\$9,355)	-4.0%
<b>Muskrat Falls Generation Total</b>	<b>\$2,901,158</b>	<b>\$3,265,278</b>	<b>\$3,371,988</b>	<b>\$3,685,965</b>	<b>\$4,801,414</b>	<b>\$5,500,056</b>	<b>\$698,642</b>	<b>14.6%</b>
Labrador-Island Transmission Link (in \$ thousands)	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	June 2017	Change (Jun 2016 vs. Jun 2017)	
							\$	%
<i>Expenditure Category</i>								
NE-LCP Owners Team, Admin and EPCM Services	\$254,581	\$247,074	\$225,814	\$221,293	\$306,767	\$322,101	\$15,334	5.0%
Feasibility Engineering	\$38,824	\$34,012	\$21,252	\$21,252	\$19,470	\$19,167	(\$303)	-1.6%
Environmental & Regulatory Compliance	\$25,751	\$25,768	\$22,306	\$14,446	\$14,726	\$14,726	\$0	0.0%
Aboriginal Affairs	\$2,244	\$2,244	\$2,244	\$2,684	\$1,753	\$1,003	(\$750)	-42.8%
Procurement & Construction	\$2,181,118	\$2,135,212	\$2,426,095	\$2,717,326	\$2,954,814	\$3,233,690	\$278,876	9.4%
Commercial & Legal	\$20,603	\$22,490	\$16,490	\$16,490	\$21,039	\$30,280	\$9,241	43.9%
Contingency	\$86,628	\$79,355	\$72,280	\$95,887	\$128,825	\$102,750	(\$26,075)	-20.2%
<b>Labrador-Island Transmission Link Total</b>	<b>\$2,609,749</b>	<b>\$2,546,155</b>	<b>\$2,786,481</b>	<b>\$3,089,378</b>	<b>\$3,447,394</b>	<b>\$3,723,716</b>	<b>\$276,322</b>	<b>8.0%</b>
Labrador-Transmission Assets (in \$ thousands)	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	June 2017	Change (Jun 2016 vs. Jun 2017)	
							\$	%
<i>Expenditure Category</i>								
NE-LCP Owners Team, Admin and EPCM Services	\$89,306	\$76,238	\$99,973	\$144,958	\$145,848	\$137,284	(\$8,564)	-5.9%
Feasibility Engineering	\$2,240	\$256	\$220	\$220	\$363	\$363	\$0	0.0%
Environmental & Regulatory Compliance	\$705	\$710	\$710	\$811	\$811	\$817	\$6	0.7%
Aboriginal Affairs	\$188	\$188	\$188	\$188	\$188	\$80	(\$108)	-57.4%
Procurement & Construction	\$542,289	\$626,869	\$696,322	\$709,643	\$704,884	\$739,617	\$34,733	4.9%
Commercial & Legal	\$2,479	\$2,030	\$3,141	\$3,891	\$3,891	\$5,383	\$1,492	38.3%
Contingency	\$54,375	\$14,030	\$31,391	\$17,846	\$21,571	\$10,012	(\$11,559)	-53.6%
<b>Labrador Transmission Assets Total</b>	<b>\$691,582</b>	<b>\$720,321</b>	<b>\$831,945</b>	<b>\$877,557</b>	<b>\$877,556</b>	<b>\$893,556</b>	<b>\$16,000</b>	<b>1.8%</b>
<b>Muskrat Falls Capital Cost Budget Total</b>	<b>\$6,202,489</b>	<b>\$6,531,754</b>	<b>\$6,990,414</b>	<b>\$7,652,900</b>	<b>\$9,126,364</b>	<b>\$10,117,328</b>	<b>\$990,964</b>	<b>3030</b>

# Project Capital Budget – Contingency Budget

Contingency Budget (in \$ thousands)	Project Budget at Jun 2016	Project Budget at Jun 2017
<b>Sub-Project:</b>		
<b>Muskrat Falls Generating Facility</b>	\$235,755	\$226,400
<b>Labrador-Island Transmission Link</b>	\$128,825	\$102,750
<b>Labrador Transmission Assets</b>	\$21,571	\$10,012
<b>Total Project</b>	<b>\$386,151</b>	<b>\$339,162</b>

# 9. Annex B



# Project Capital Budget – MFGen Project Milestone Schedule

Muskrat Falls Generating Facility	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	Jun 2017	Change Jun 2017 vs. Jun 2016 (Months)
North Spur Works Ready for Diversion	Nov-15	Nov-15	Nov-15	Nov-15	Oct-16	Oct-16	0
River Diversion Complete	Nov-16	Nov-16	Nov-16	Nov-16	Dec-16	Feb-17	2
Reservoir Impoundment Complete	Nov-17	Nov-17	Nov-17	Nov-17	Aug-19	Nov-19	3
Powerhouse Unit 1 Commissioned - Ready for Operation	Dec-17	Dec-17	Dec-17	Dec-17	Sep-19	Dec-19	3
First Power from Muskrat Falls	Dec-17	Dec-17	Dec-17	Dec-17	Aug-19	Nov-19	3
Powerhouse Unit 2 Commissioned - Ready for Operation	Feb-18	Feb-18	Feb-18	Feb-18	Dec-19	Mar-20	3
Powerhouse Unit 3 Commissioned - Ready for Operation	Apr-18	Apr-18	Apr-18	Apr-18	Mar-20	Jun-20	3
Powerhouse Unit 4 Commissioned - Ready for Operation	May-18	May-18	May-18	May-18	May-20	Aug-20	3
Full Power from Muskrat Falls	May-18	May-18	May-18	May-18	May-20	Aug-20	3
Commissioning Complete - Commissioning Certificate Issued	Jun-18	Jun-18	Jun-18	Jun-18	Jun-20	Sep-20	3

# Project Capital Budget – LTA Project Milestone Schedule

Labrador Transmission Assets	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	Jun 2017	Change Jun 2017 vs. Jun 2016 (Months)
Hvac Transmission Line Construction Complete	Jun-16	Jun-16	Jun-16	Jun-16	Oct-16	May-17	7
Churchill Falls Switchyard Ready to Energize	May-17	May-17	May-17	May-17	Jun-17	Nov-17	5
Muskrat Falls Switchyard Ready to Energize	May-17	May-17	May-17	May-17	Sep-17	Nov-17	2
Ready for Power Transmission	May-17	May-17	May-17	May-17	Oct-17	Dec-17	2
Commissioning Complete - Commissioning Certificate Issued	Jun-18	Jun-18	Jun-18	Jun-18	Jun-20	Sep-20	3

# Project Capital Budget – LITL Project Milestone Schedule

	Dec 2012 Sanction	Dec 2013 Financial Close	Jun 2014	Sep 2015	Jun 2016	Jun 2017	Change Jun 2017 vs. Jun 2016 (Months)
<b>Labrador-Island Transmission Link</b>							
SOBI Cable Systems Ready	Oct-16	Oct-16	Oct-16	Oct-16	Dec-16	Dec-16	0
MF Switchyard and Converter Station Ready for Operation	Feb-17	Feb-17	Feb-17	Feb-17	Mar-18	Revised for Pole 1 schedule change – see table below	
HVdc Transmission Line Construction Complete and Connected	Jun-17	Jun-17	Jun-17	Jun-17	Mar-18		
Soldier's Pond Switchyard & Converter Stn. Ready for Operation	Oct-17	Oct-17	Oct-17	Oct-17	Mar-18		
Ready for Power Transmission	Oct-17	Oct-17	Oct-17	Oct-17	Sep-18		
Soldier's Pond Synchronous Condenser Ready for Operation	Nov-17	Nov-17	Nov-17	Nov-17	Nov-17		
Commissioning Complete - Commissioning Certificate Issued	Jun-18	Jun-18	Jun-18	Jun-18	Jun-20	Sep-20	3

<b>Labrador-Island Transmission Link</b>	<b>Jun 2017</b>
SOBI Cable Systems Ready	Dec-16
Soldiers Pond Switchyard Ready to Energize	Aug-17
Ready for Power Transmission (LTA)	Dec-17
Muskrat Falls Converter Station Ready to Energize (Pole 1)	Jun-18
HVdc Transmission Line Construction Complete	Dec-17
Soldier's Pond Converter Station Ready to Energize (Pole 1)	Jun-18
1ST Power Transfer (Pole 1)	Jul-18
Soldiers Pond Synchronous Condenser Ready for Operation	Jun-18
Ready for Power Transmission (Low Load Testing Complete Pole 1)	Dec-18
Muskrat Falls and Soldiers Pond Converter Stations - Bipole Dynamic Testing Complete	Mar-19
Commissioning Complete - Commissioning Certificate Issued	Sep-20

- New June 2017 Project Milestone Schedule to incorporate phased commissioning (Pole 1)

# 9. Annex C

# Costs to June 31, 2017 - Project Overall

- Planned vs. Incurred (in \$ thousands)

June 2017	Project Budget	Cumulative \$			Cumulative %		
		Plan	Incurred	Variance	Plan	Incurred	Variance
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>C-B</i>	<i>D=B/A</i>	<i>E=C/A</i>	<i>E-D</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$1,115,235	\$766,159	\$766,159	\$0	68.7%	68.7%	0.0%
<b>Feasibility Engineering</b>	\$37,072	\$37,072	\$37,072	\$0	100.0%	100.0%	0.0%
<b>Environmental &amp; Regulatory Compliance</b>	\$42,699	\$35,392	\$35,392	\$0	82.9%	82.9%	0.0%
<b>Aboriginal Affairs</b>	\$17,478	\$10,948	\$10,948	\$0	62.6%	62.6%	0.0%
<b>Procurement &amp; Construction</b>	\$8,475,290	\$6,139,704	\$6,139,704	\$0	72.4%	72.4%	0.0%
<b>Commercial &amp; Legal</b>	\$90,423	\$39,789	\$39,789	\$0	44.0%	44.0%	0.0%
<b>Contingency</b>	\$339,162	\$0	\$0	\$0	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>\$10,117,328</b>	<b>\$7,029,064</b>	<b>\$7,029,064</b>	<b>\$0</b>	<b>69.5%</b>	<b>69.5%</b>	<b>0.0%</b>

# Costs to June 31, 2017 - Project Overall

- Incurred and Project Forecast Cost (in \$ thousands)

June 2017 <i>Description</i>	Project Budget	Incurred Costs Jun 2017	Project Forecast Cost Jun 2017	Variance PFC from Budget <i>D=A-C</i>
	<i>A</i>	<i>B</i>	<i>C</i>	
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$1,115,235	\$766,159	\$1,115,235	\$0
<b>Feasibility Engineering</b>	\$37,072	\$37,072	\$37,072	\$0
<b>Environmental &amp; Regulatory Compliance</b>	\$42,699	\$35,392	\$42,669	\$0
<b>Aboriginal Affairs</b>	\$17,478	\$10,948	\$17,478	\$0
<b>Procurement &amp; Construction</b>	\$8,475,290	\$6,139,704	\$8,475,290	\$0
<b>Commercial &amp; Legal</b>	\$90,423	\$39,789	\$90,423	\$0
<b>Contingency</b>	\$339,162	\$0	\$339,162	\$0
<b>TOTAL</b>	<b>\$10,117,328</b>	<b>\$7,029,064</b>	<b>\$10,117,328</b>	<b>\$0</b>

# Costs to June 31, 2017 – Muskrat Falls Generation

- Planned vs Incurred (in \$ thousands)

June 2017	Project Budget	Cumulative \$			Cumulative %		
		Planned	Incurred	Variance	Planned	Incurred	Variance
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>C-B</i>	<i>D=B/A</i>	<i>E=C/A</i>	<i>E-D</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$655,850	\$404,417	\$404,417	\$0	61.7%	61.7%	0.0%
<b>Feasibility Engineering</b>	\$17,543	\$17,543	\$17,543	\$0	100.0%	100.0%	0.0%
<b>Environmental &amp; Regulatory Compliance</b>	\$27,125	\$23,070	\$23,070	\$0	85.1%	85.1%	0.0%
<b>Aboriginal Affairs</b>	\$16,395	\$10,335	\$10,335	\$0	63.0%	63.0%	0.0%
<b>Procurement &amp; Construction</b>	\$4,501,984	\$2,858,514	\$2,858,514	\$0	63.5%	63.5%	0.0%
<b>Commercial &amp; Legal</b>	\$54,760	\$21,216	\$21,216	\$0	38.7%	38.7%	0.0%
<b>Contingency</b>	\$226,400	\$0	\$0	\$0	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>\$5,500,056</b>	<b>\$3,335,095</b>	<b>\$3,335,095</b>	<b>\$0</b>	<b>60.6%</b>	<b>60.6%</b>	<b>0.0%</b>

# Costs to June 31, 2017– Muskrat Falls Generation

- Incurred and Project Forecast Cost (in \$ thousands)

<b>June 2017</b>	<b>Project Budget</b>	<b>Incurred Costs Jun 2017</b>	<b>Project Forecast Cost Jun 2017</b>	<b>Variance PFC from Budget</b>
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D=A-C</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$655,850	\$404,417	\$655,850	\$0
<b>Feasibility Engineering</b>	\$17,543	\$17,543	\$17,543	\$0
<b>Environmental &amp; Regulatory Compliance</b>	\$27,125	\$23,070	\$27,125	\$0
<b>Aboriginal Affairs</b>	\$16,395	\$10,335	\$16,395	\$0
<b>Procurement &amp; Construction</b>	\$4,501,984	\$2,858,514	\$4,501,984	\$0
<b>Commercial &amp; Legal</b>	\$54,760	\$21,216	\$54,760	\$0
<b>Contingency</b>	\$226,400	\$0	\$226,400	\$0
<b>TOTAL</b>	<b>\$5,500,056</b>	<b>\$3,335,095</b>	<b>\$5,500,056</b>	<b>\$0</b>



# Costs to June 31, 2017 – Labrador Island Transmission Link

- Planned vs. Incurred (in \$ thousands)

June 2017	Project Budget	Cumulative \$			Cumulative %		
		Plan	Incurred	Variance	Plan	Incurred	Variance
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>C-B</i>	<i>D=B/A</i>	<i>E=C/A</i>	<i>E-D</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$322,101	\$243,685	\$243,685	\$0	75.7%	75.7%	0.0%
<b>Feasibility Engineering</b>	\$19,167	\$19,167	\$19,167	\$0	100.0%	100.0%	0.0%
<b>Environmental &amp; Regulatory Compliance</b>	\$14,726	\$11,508	\$11,508	\$0	78.1%	78.1%	0.0%
<b>Aboriginal Affairs</b>	\$1,003	\$612	\$612	\$0	61.0%	61.0%	0.0%
<b>Procurement &amp; Construction</b>	\$3,233,690	\$2,597,255	\$2,597,255	\$0	80.3%	80.3%	0.0%
<b>Commercial &amp; Legal</b>	\$30,280	\$15,387	\$15,387	\$0	50.8%	50.8%	0.0%
<b>Contingency</b>	\$102,750	\$0	\$0	\$0	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>\$3,723,716</b>	<b>\$2,887,615</b>	<b>\$2,887,615</b>	<b>\$0</b>	<b>77.5%</b>	<b>77.5%</b>	<b>0.0%</b>

# Costs to June 31, 2017 – Labrador Island Transmission Link

- Incurred and Project Forecast Cost (in \$ thousands)

<b>June 2017</b>	<b>Project Budget</b>	<b>Incurred Costs Jun 2017</b>	<b>Project Forecast Cost Jun 2017</b>	<b>Variance PFC from Budget</b>
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D=A-C</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$322,101	\$243,685	\$322,101	\$0
<b>Feasibility Engineering</b>	\$19,167	\$19,167	\$19,167	\$0
<b>Environmental &amp; Regulatory Compliance</b>	\$14,726	\$11,508	\$14,726	\$0
<b>Aboriginal Affairs</b>	\$1,003	\$612	\$1,003	\$0
<b>Procurement &amp; Construction</b>	\$3,233,690	\$2,597,255	\$3,233,690	\$0
<b>Commercial &amp; Legal</b>	\$30,280	\$15,387	\$30,280	\$0
<b>Contingency</b>	\$102,750	\$0	\$102,750	\$0
<b>TOTAL</b>	<b>\$3,723,716</b>	<b>\$2,887,615</b>	<b>\$3,723,716</b>	<b>\$0</b>

# Costs to June 31, 2017 – Labrador Transmission Assets

- Planned vs. Incurred (in \$ thousands)

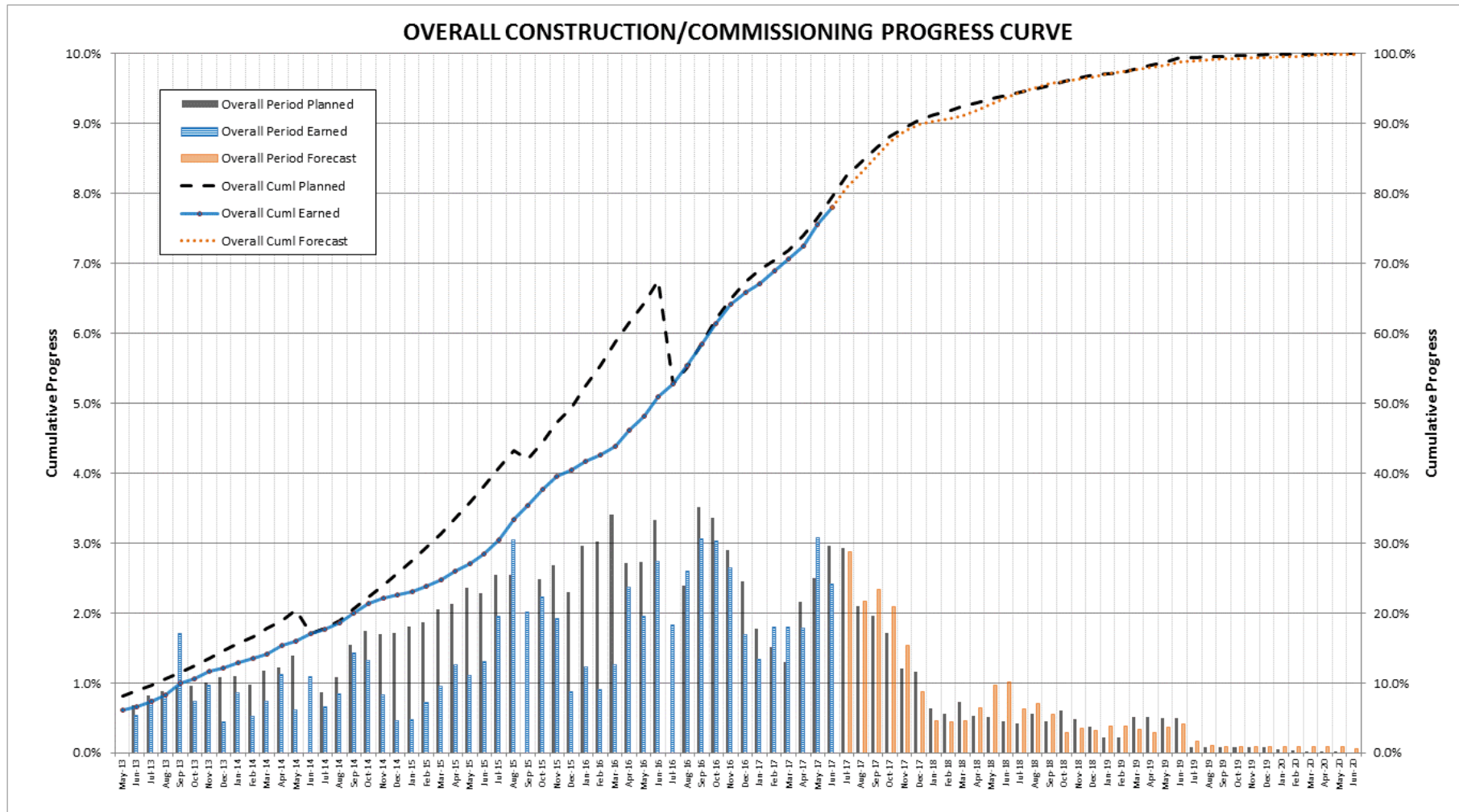
June 2017 <i>Description</i>	Project Budget <i>A</i>	Cumulative \$			Cumulative %		
		Plan <i>B</i>	Incurred <i>C</i>	Variance <i>C-B</i>	Plan <i>D=B/A</i>	Incurred <i>E=C/A</i>	Variance <i>E-D</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$137,284	\$118,057	\$118,057	\$0	86.0%	86.0%	0.0%
<b>Feasibility Engineering</b>	\$363	\$363	\$363	\$0	100.0%	100.0%	0.0%
<b>Environmental &amp; Regulatory Compliance</b>	\$817	\$814	\$814	\$0	99.6%	99.6%	0.0%
<b>Aboriginal Affairs</b>	\$80	\$0	\$0	\$0	0.0%	0.0%	0.0%
<b>Procurement &amp; Construction</b>	\$739,617	\$683,935	\$683,935	\$0	92.5%	92.5%	0.0%
<b>Commercial &amp; Legal</b>	\$5,383	\$3,186	\$3,186	\$0	59.2%	59.2%	0.0%
<b>Contingency</b>	\$10,012	\$0	\$0	\$0	0.0%	0.0%	0.0%
<b>TOTAL</b>	<b>\$893,556</b>	<b>\$806,355</b>	<b>\$806,355</b>	<b>\$0</b>	<b>90.2%</b>	<b>90.2%</b>	<b>0.0%</b>

# Costs to June 31, 2017 – Labrador Transmission Assets

- Incurred and Project Forecast Cost (in \$ thousands)

<b>June 2017</b>	<b>Project Budget</b>	<b>Incurred Costs Jun 2017</b>	<b>Project Forecast Cost Jun 2017</b>	<b>Variance PFC from Budget</b>
<i>Description</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D=A-C</i>
<b>NE-LCP Owners Team, Admin and EPCM Services</b>	\$137,284	\$118,057	\$137,284	\$0
<b>Feasibility Engineering</b>	\$363	\$363	\$363	\$0
<b>Environmental &amp; Regulatory Compliance</b>	\$817	\$814	\$817	\$0
<b>Aboriginal Affairs</b>	\$80	\$0	\$80	\$0
<b>Procurement &amp; Construction</b>	\$739,617	\$683,935	\$739,617	\$0
<b>Commercial &amp; Legal</b>	\$5,383	\$3,186	\$5,383	\$0
<b>Contingency</b>	\$10,012	\$0	\$10,012	\$0
<b>TOTAL</b>	<b>\$893,556</b>	<b>\$806,355</b>	<b>\$893,556</b>	<b>\$0</b>

# Earned Progress to June 31, 2017 – Project Overall

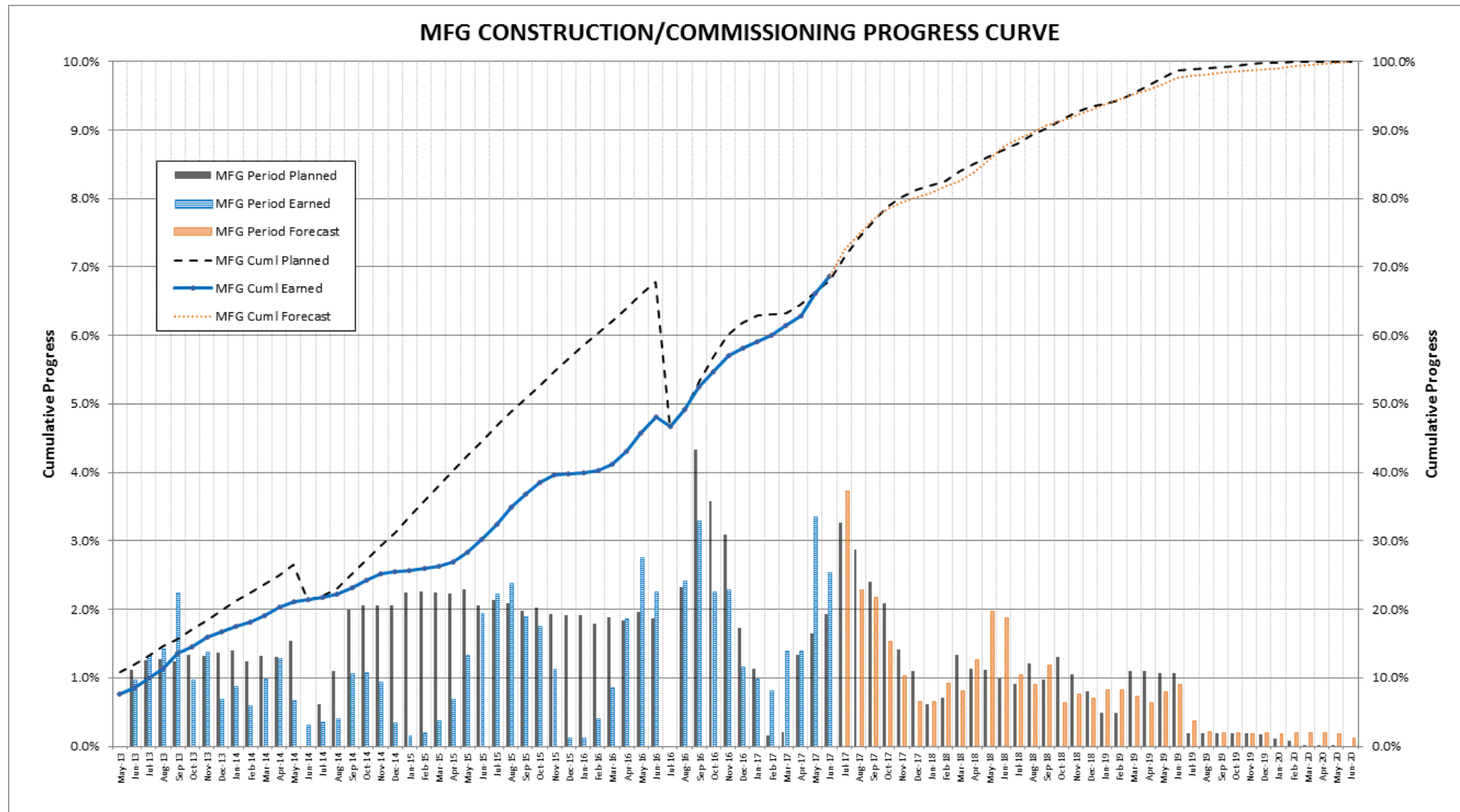


# Earned Progress to June 31, 2017 – Project Overall

Cumulative to end of June 2017	Weight Factor %	June 2017 Cumulative %			May 2017 Variance
		Planned	Earned	Variance	
<i>Sub-Project</i>	A	B	C	D = C - B	E
Muskrat Falls Generation (MFGGen)	46.3%	68.1%	68.7%	0.6%	-0.1%
Labrador Island Transmission Link (LITL)	43.9%	87.1%	83.8%	-3.3%	-1.3%
Labrador Transmission Asset (LTA)	9.8%	99.8%	95.8%	-4.0%	-3.9%
Muskrat Falls Project - Overall	100.0%	79.5%	78.0%	-1.5%	-1.0%

June 2017 Period	Weight Factor %	Period %		
		Planned	Earned	Variance
<i>Sub-Project</i>	A	B	C	D = C - B
Muskrat Falls Generation (MFGGen)	46.3%	1.9%	2.6%	0.7%
Labrador Island Transmission Link (LITL)	43.9%	4.5%	2.6%	-1.9%
Labrador Transmission Asset (LTA)	9.8%	0.8%	0.8%	0.0%
Muskrat Falls Project - Overall	100.0%	2.9%	2.4%	-0.5%

# Earned Progress to June 31, 2017 – Muskrat Falls Generation



# Earned Progress to June 31, 2017 – Muskrat Falls Generation

Cumulative to end of June 2017	Weight Factor %	June 2017 Cumulative %			May 2017 Variance
		Planned	Earned	Variance	
<i>Sub-Project</i>	A	B	C	D = C - B	E
MFG Road/Camp/Constr. Power	8.9%	100.0%	100.0%	0.0%	0.0%
MFG Reservoir Preparation	5.8%	100.0%	98.0%	-2.0%	-2.0%
MFG Spillway & Gates	12.2%	86.2%	84.5%	-1.7%	0.0%
MFG North Spur Stabilization	3.9%	100.0%	98.5%	-1.5%	-0.5%
MFG North Dam	5.7%	52.6%	31.7%	-20.9%	-19.7%
MFG Powerhouse & intake	61.3%	55.6%	59.5%	3.9%	2.3%
MFG South Dam	1.1%	95.7%	85.6%	-10.1%	-14.3%
MFG Misc:Eng/ 315kV/Site Rest./logistic	1.1%	75.6%	70.5%	-5.1%	-2.3%
MFGGen - Overall	100.0%	68.1%	68.7%	0.6%	-0.1%



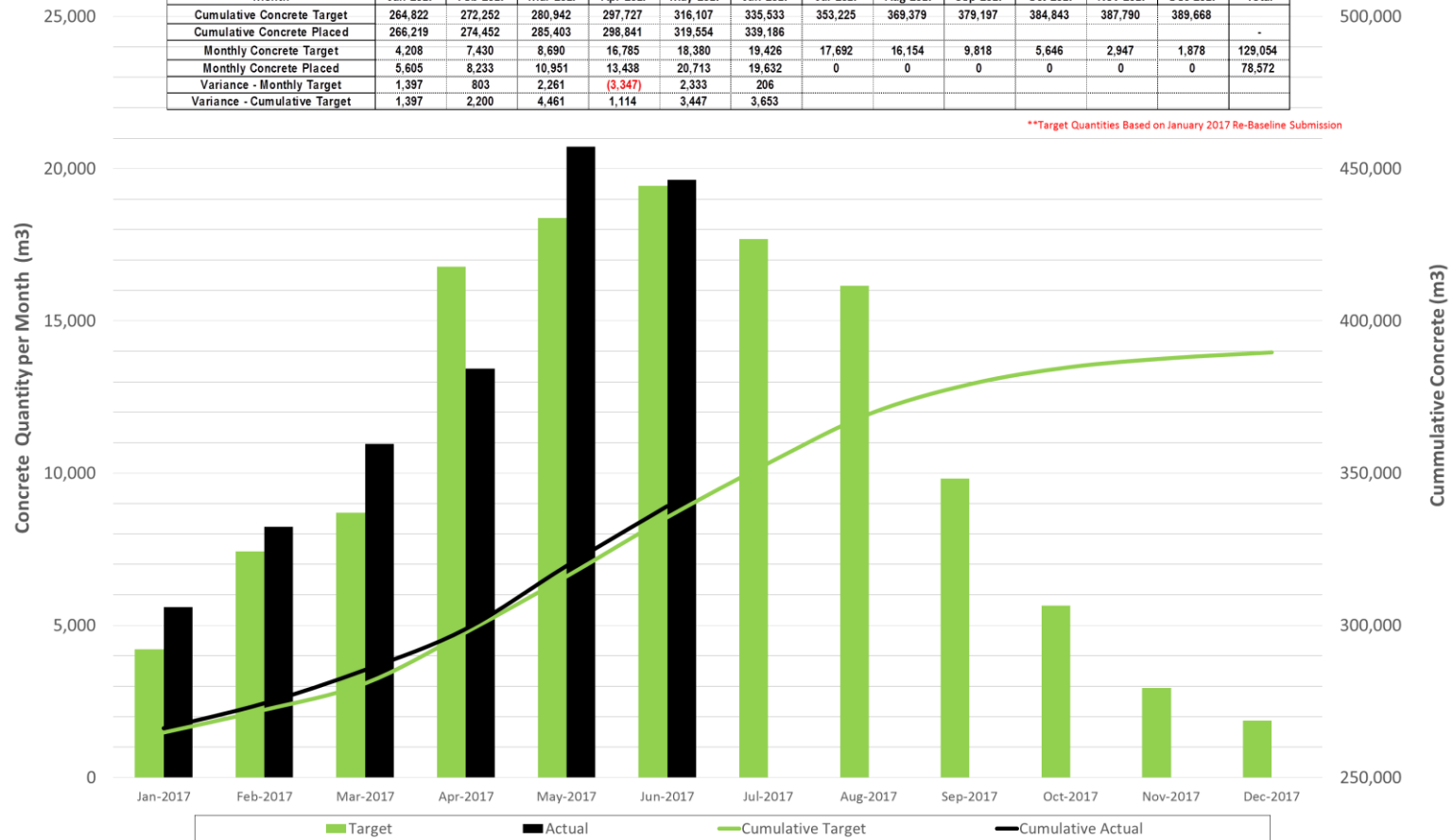
# CH0007 Concrete Placement – Muskrat Falls Generation

CH0007-001 - Concrete Production

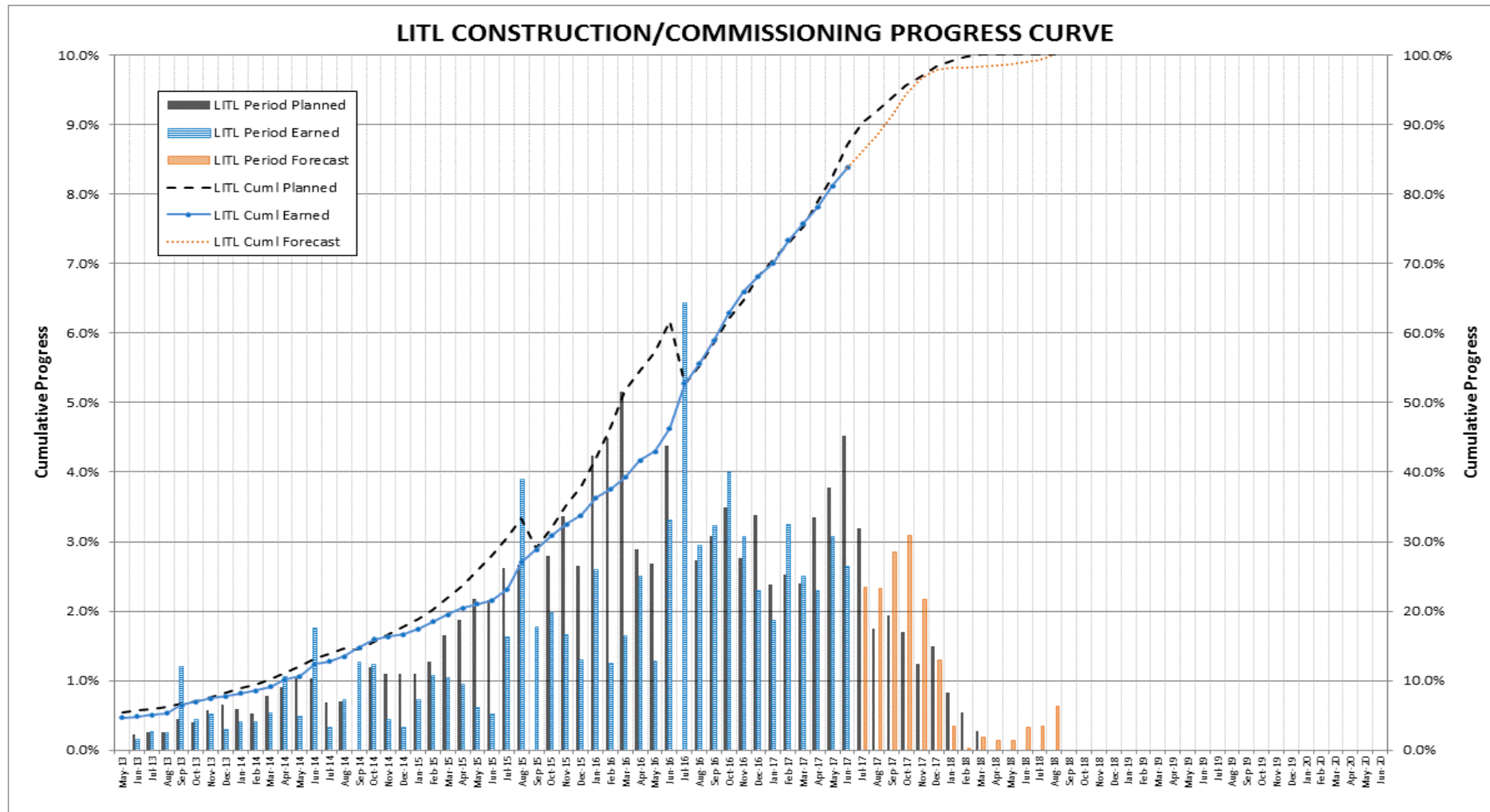
Data Date: 01-July-2017

Month	Jan-2017	Feb-2017	Mar-2017	Apr-2017	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Total
Cumulative Concrete Target	264,822	272,252	280,942	297,727	316,107	335,533	353,225	369,379	379,197	384,843	387,790	389,668	-
Cumulative Concrete Placed	266,219	274,452	285,403	298,841	319,554	339,186							
Monthly Concrete Target	4,208	7,430	8,690	16,785	18,380	19,426	17,692	16,154	9,818	5,646	2,947	1,878	129,054
Monthly Concrete Placed	5,605	8,233	10,951	13,438	20,713	19,632	0	0	0	0	0	0	78,572
Variance - Monthly Target	1,397	803	2,261	(3,347)	2,333	206							
Variance - Cumulative Target	1,397	2,200	4,461	1,114	3,447	3,653							

\*\*Target Quantities Based on January 2017 Re-Baseline Submission



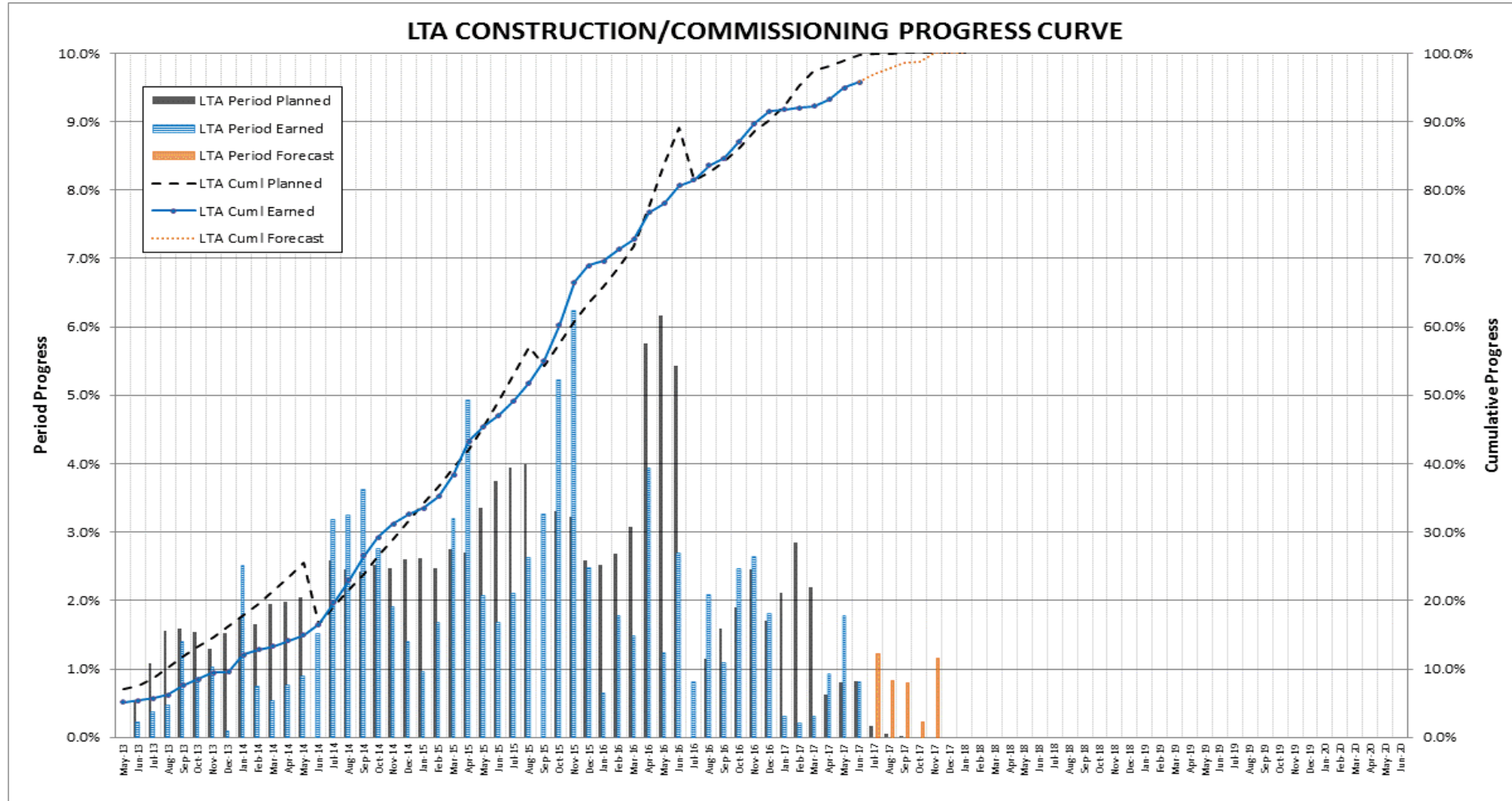
# Earned Progress to June 31, 2017 – Labrador Island Transmission Link



## Earned Progress to June 31, 2017 – Labrador Island Transmission Link

Cumulative to end of June 2017	Weight	June 2017 Cumulative %			May
	Factor %	Plan	Earned	Variance	2017 Variance
<i>Sub-Project</i>	A	B	C	D = C - B	E
LITL Muskrat Falls Converter	6.1%	89.6%	42.2%	-47.4%	-25.2%
LITL Soldiers Pond Converter	5.5%	87.8%	51.7%	-36.1%	-13.3%
LITL HVdc Transmission Line Seg 1/2	26.8%	100.0%	100.0%	0.0%	0.4%
LITL HVdc Transmission Line Seg 3/4/5	34.2%	67.8%	78.3%	10.5%	7.3%
LITL Electrode Sites	0.8%	100.0%	75.0%	-25.0%	-16.5%
LITL Transition Compounds	1.7%	70.1%	62.1%	-8.0%	-3.5%
LITL SOBI Cable Crossing	17.7%	100.0%	100.0%	0.0%	0.0%
LITL Soldiers Pond Switchyard	2.7%	100.0%	96.8%	-3.2%	-4.5%
LITL Soldiers Pond Sync. Condensers	3.1%	97.4%	59.8%	-37.6%	-36.1%
LITL Misc	1.4%	97.5%	68.2%	-29.3%	-21.9%
LITL- Overall	100.0%	87.1%	83.8%	-3.3%	-1.3%

# Earned Progress to June 31, 2017 – Labrador Transmission Assets



## Earned Progress to June 31, 2017 – Labrador Transmission Assets

Cumulative to end of June 2017	Weight	June 2017 Cumulative %			May 2017
	Factor %	Plan	Earned	Variance	Variance
Sub-Project	A	B	C	D = C - B	E
LTA HVac Transmission Line Seg1/2 - MF to CF	62.8%	100.0%	100.0%	0.0%	0.0%
LTA Churchill Falls Switchyard	21.7%	99.8%	93.2%	-6.6%	-6.7%
LTA Muskrat Falls Switchyard	13.4%	98.5%	82.6%	-15.9%	-15.4%
LTA Misc	2.1%	100.0%	81.6%	-18.4%	-21.0%
LTA - Overall	100.0%	99.8%	95.8%	-4.0%	-3.9%

# 9. Annex D

# Milestone Schedule – Muskrat Falls Generation

Muskrat Falls Generation	June 2017 Budget Planned Date	June 2017 Actual / Forecast
Project Sanction	17-Dec-12	Complete
North Spur Works Ready for Diversion	31-Oct-16	Complete
River Diversion Complete	15-Feb-17	Interim Impoundment Achieved (Feb 2017) Impoundment to 25 metres pending
Reservoir Impoundment Complete	1-Nov-19	Forecast Dates subject to ongoing commercial negotiations. Nalcor advises Forecast changes are not anticipated to be beyond Planned Dates
Powerhouse Unit 1 Commissioned - Ready for Operation	19-Dec-19	
First Power from Muskrat Falls	02-Nov-19	"
Powerhouse Unit 2 Commissioned - Ready for Operation	3-Mar-20	"
Powerhouse Unit 3 Commissioned - Ready for Operation	9-Jun-20	"
Powerhouse Unit 4 Commissioned - Ready for Operation	14-Aug-20	"
Full Power from Muskrat Falls	14-Aug-20	"
Commissioning Complete - Commissioning Certificate Issued	01-Sep-20	"

# Milestone Schedule – Labrador Island Transmission Link

Labrador Island Transmission Link	June 2017 Budget Planned Date	June 2017 Actual / Forecast
Project Sanction	17-Dec-12	Complete
SOBI Cable Systems Ready	9-Dec-16	Complete
Soldiers Pond Switchyard Ready to Energize	31-Aug-17	18-Aug-17
Ready for Power Transmission (LTA)	31-Dec-17	11-Dec-17
Muskrat Falls Converter Station Ready to Energize (Pole 1)	1-Jun-18	6-Mar-18
HVdc Transmission Line Construction Complete	31-Dec-17	14-Nov-17
Soldier's Pond Converter Station Ready to Energize (Pole 1)	1-Jun-18	31-Jan-18
1ST Power Transfer (Pole 1)	1-Jul-18	21-Mar-18
Soldiers Pond Synchronous Condenser Ready for Operation	1-Jun-18	23-May-18
Ready for Power Transmission (Low Load Testing Complete Pole 1)	1-Dec-18	20-May-18
Muskrat Falls and Soldiers Pond Converter Stations - Bipole Dynamic Testing Complete	31-Mar-19	19-Mar-19
Commissioning Complete - Commissioning Certificate Issued	1-Sep-20	1-Sep-20



# Milestone Schedule – Labrador Transmission Assets

Labrador Transmission Assets	June 2017 Budget Planned Date	June 2017 Actual / Forecast
Project Sanction	17-Dec-12	Complete
Hvac Transmission Line Construction Complete	31-May-17	Complete (energization pending)
Churchill Falls Switchyard Ready to Energize	30-Nov-17	8-Nov-17
Muskrat Falls Switchyard Ready to Energize	30-Nov-17	19-Nov-17
Ready for Power Transmission	31-Dec-17	11-Dec-17
Commissioning Complete - Commissioning Certificate Issued	1-Sep-20	1-Sep-20

# End of Report