



Muskrat Falls Project Oversight Committee

Project Update

September 28, 2015

CS 96

20150928 - [REDACTED] 114 - Presentation -
Muskrat Falls Project Oversight Committee

Project Budget



Overall Project Costs: June 2014 vs. September 2015

Muskrat Falls Project	Project Budget		Change		Incurred Costs August 2015
	June 2014	September 2015	(\$)	(%)	
Muskrat Falls Generation Facility	\$3,371,988	\$3,685,966	\$313,978	9.3%	\$1,726,356
Labrador-Island Transmission Link	\$2,786,481	\$3,089,378	\$302,897	10.9%	\$1,046,647
Labrador Transmission Assets	\$831,945	\$877,557	\$45,612	5.5%	\$488,277
Total Project	\$6,990,414	\$7,652,901	\$662,487	9.5%	\$3,261,280

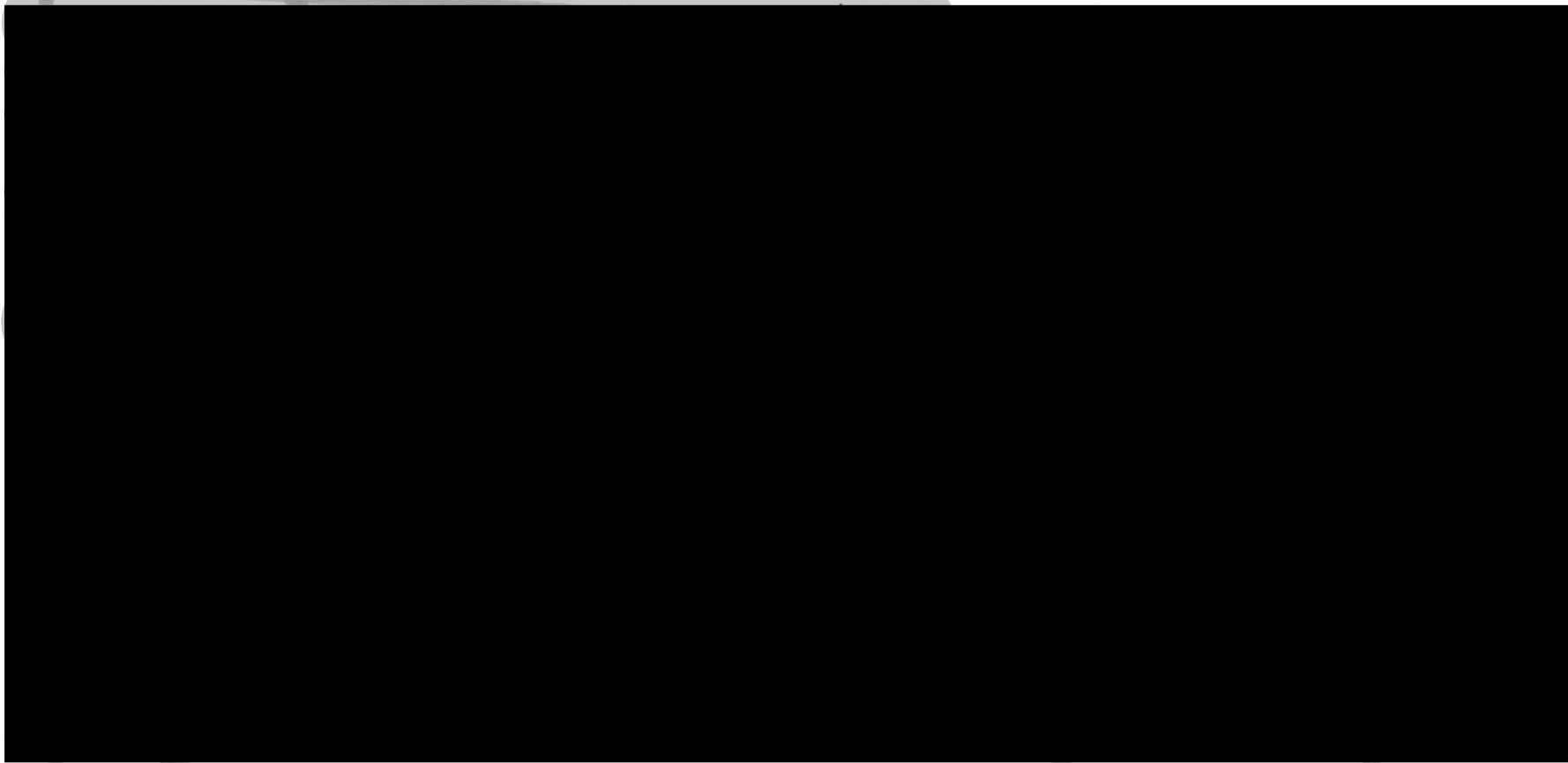
Sub-Project Cost Reconciliation



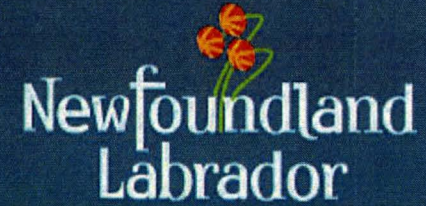
I - Muskrat Falls Generation Facility

Muskrat Falls Generation Facility	Project Budget		Change	
	June 2014	September 2015	(\$)	(%)
NE-LCP Owners Team, Admin and EPCM Services	\$382,811	\$408,723	\$25,912	6.8%
Feasibility Engineering	\$17,949	\$17,949	(\$0)	0.0%
Environment & Regulatory Compliance	\$24,312	\$25,825	\$1,513	6.2%
Aboriginal Affairs	\$13,314	\$13,314	\$0	0.0%
Procurement and Construction	\$2,786,766	\$3,121,813	\$335,047	12.0%
Commercial & Legal	\$25,989	\$25,239	(\$750)	-2.9%
Contingency	\$120,847	\$73,102	(\$47,745)	-39.5%
Total MFGen	\$3,371,988	\$3,685,966	\$313,978	9.3%

Muskrat Falls Generation Facility - \$314M



Sub-Project Cost Reconciliation



II - Labrador-Island Transmission Link

Labrador-Island Transmission Link	Project Budget		Change	
	June 2014	September 2015	(\$)	(%)
NE-LCP Owners Team, Admin and EPCM Services	\$225,814	\$221,293	(\$4,521)	-2.0%
Feasibility Engineering	\$21,252	\$21,252	\$0	0.0%
Environment & Regulatory Compliance	\$22,306	\$14,446	(\$7,860)	-35.2%
Aboriginal Affairs	\$2,244	\$2,684	\$440	19.6%
Procurement and Construction	\$2,426,095	\$2,717,326	\$291,231	12.0%
Commercial & Legal	\$16,490	\$16,490	\$0	0.0%
Contingency	\$72,280	\$95,887	\$23,607	32.7%
Total LIL	\$2,786,481	\$3,089,378	\$302,897	10.9%

Labrador-Island Transmission Link - \$303M



Geotechnical Conditions – \$173M

- Increase in Time and Material (T&M) contracts \$150M.
- Converter layout enhancements for geotechnical conditions \$23M. Due to potential issues relating to the soil at Muskrat Falls and size constraints in Soldiers Pond. Also, grounding quantities were increased after the review and interpretation of recent resistivity testing results.

Construction Design Changes - \$70M

- Overall long term access reliability improvements \$50M - to upgrade bridging, culverts and roads that would be left in place for post operational support.
- Tower & foundation design enhancements for geotechnical conditions confirmed in field \$15M.
- Converter filter enhancements \$5M.

Other - \$60M

- Foreign Exchange \$20M.
- MF Converter \$8M, Island AC Upgrades \$8M, and DC Line access construction \$24 - Increased risks related to labour productivity and T&M related aspect of the contract.

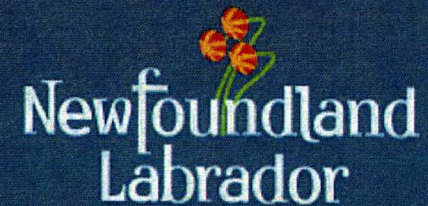
Sub-Project Cost Reconciliation



III - Labrador Transmission Assets

Labrador Transmission Assets	Project Budget		Change	
	June 2014	September 2015	(\$)	(%)
NE-LCP Owners Team, Admin and EPCM Services	\$99,973	\$144,958	\$44,985	45.0%
Feasibility Engineering	\$220	\$220	\$0	0.0%
Environment & Regulatory Compliance	\$710	\$811	\$101	14.3%
Aboriginal Affairs	\$188	\$188	\$0	0.2%
Procurement and Construction	\$696,322	\$709,643	\$13,321	1.9%
Commercial & Legal	\$3,141	\$3,891	\$750	23.9%
Contingency	\$31,391	\$17,846	(\$13,545)	-43.2%
Total LTA	\$831,945	\$877,557	\$45,612	5.5%

Labrador Transmission Assets - \$46M



Geotechnical /Terrain Conditions– \$34M

- 735 kV Tline \$2M – Productivity conditions influencing T&M portion of contracts.
- MF & CF Switchyards \$10M – Productivity conditions influencing T&M portion of contracts.
- Switchyard Layout Changes based on final geotechnical investigation \$3M.
- AC Line design changes to suit terrain confirmed in the field during construction \$19M.

Project Management Execution - \$45M

- Additional contractor management (NE-LCP Owners Team, Admin and EPCM Services).

Other – (\$33M)

- Savings realized – Example, certain contract packages were finalized below original estimates.

Project Progress August 2015



Muskrat Falls Project: Sub-Project	Planned Schedule Progress – August 2015	Actual Schedule Progress – August 2015	Variance August 2015	Variance June 2015	Variance March 2015
Muskrat Falls Generating Facility	48.8%	34.8%	-14.0%	-14.3%	-11.7%
Labrador-Island Transmission Link	33.4%	27.1%	-6.3%	-5.5%	-1.4%
Labrador Transmission Assets	57.1%	51.8%	-5.3%	-2.1%	1.0%
Total	43.3%	33.5%	-9.8%	-9.3%	-6.2%

Earned Progress

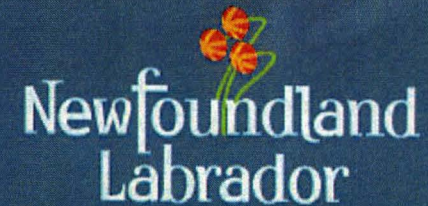
MF Generating Facility



<u>August 2015</u>	Weight Factor %	August 2015 Cumulative %			March 2015 Variance
		Plan	Earned	Variance	
<i>Sub-Project</i>	A	B	C	D = C - B	E
MFG Road/Camp/Constr. Power	7.9%	100.0%	99.8%	-0.2%	- 0.2%
MFG Reservoir Preparation	6.5%	71.5%	60.8%	-10.7%	0.6%
MFG Spillway & Gates	11.4%	54.6%	58.0%	3.4%	- 9.0%
MFG North Spur Stabilization	4.2%	41.6%	16.6%	-25.0%	- 21.2%
MFG North Dam	7.5%	0.0%	1.4%	1.4%	0.1%
MFG Powerhouse & intake	54.9%	41.9%	18.5%	-23.4%	- 18.3%
MFG South Dam	1.1%	0.0%	4.3%	4.3%	3.0%
MFG Misc:Eng/ 315kV/Site Rest./logistic	6.5%	83.2%	83.5%	0.3%	1.8%
MFGGen-Overall	100.0%	48.8%	34.8%	-14.0%	- 11.7%

Earned Progress

Labrador Island Transmission Link



August 2015	Weight	August 2015 Cumulative %			March 2015 Variance
	Factor %	Plan	Earned	Variance	
<i>Sub-Project</i>	A	B	C	D = C - B	E
LITL Muskrat Falls Converter	5.7%	19.5%	5.0%	-14.5%	- 3.3%
LITL Soldiers Pond Converter	5.8%	18.3%	11.9%	-6.4%	- 0.3%
LITL HVdc Transmission Line Seg 1/2	19.3%	36.4%	27.9%	-8.5%	- 1.3%
LITL HVdc Transmission Line Seg 3/4/5	35.3%	20.1%	5.7%	-14.4%	- 3.0%
LITL Electrode Sites	1.7%	5.0%	52.9%	47.9%	0.0%
LITL Transition Compounds	1.8%	30.5%	33.3%	2.8%	2.8%
LITL SOBI Cable Crossing	18.0%	59.6%	66.5%	6.9%	3.6%
LITL Soldiers Pond Switchyard	3.2%	30.3%	19.9%	-10.4%	- 2.1%
LITL Soldiers Pond Synchronous Condensers	4.9%	23.0%	21.5%	-1.5%	- 3.9%
LITL Misc	4.3%	83.0%	77.3%	-5.7%	- 8.8%
LITL-Overall	100.0%	33.4%	27.1%	-6.4%	- 1.4%

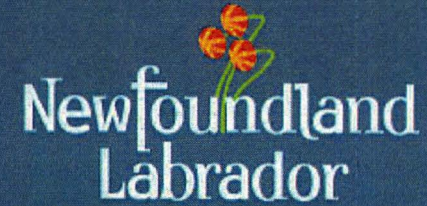
Earned Progress Labrador Transmission Assets



<u>August 2015</u>	Weight	August 2015 Cumulative %			March 2015
	Factor %	Plan	Earned	Variance	Variance
Sub-Project	A	B	C	D = C - B	E
LTA CF Accommodations	1.1%	100.0%	100.0%	0.0%	0.0%
LTA HVac Transmission Line Seg1/2 - MF to CF	56.0%	66.1%	66.9%	0.8%	- 2.4%
LTA Churchill Falls Switchyard	20.9%	37.4%	25.1%	-12.3%	2.1%
LTA Muskrat Falls Switchyard	14.0%	29.3%	6.3%	-23.0%	0.0%
LTA Misc	8.0%	89.1%	89.2%	-0.1%	- 1.0%
LTA-Overall	100.0%	57.1%	51.8%	-5.3%	- 1.0%

Muskrat Falls Project

Manufacturing Activities



- Offsite manufacturing work not included in Construction progress measure
- Six major manufacturing contracts are:
 - Andritz – Turbines and Generators
 - Andritz – Powerhouse Hydro-Mechanical Equip.
 - Alstom – HVdc Convertors and Transition Comp.
 - Nexans – Submarine Cable Strait of Belle Isle
 - Alstom – AC Substations
 - Alstom – Synchronous Condensers (Soldiers Pond)

Muskrat Falls Project

- Risks



- **Risk of Project Schedule Delays**
 - Risk assessments remains high for contractor performance causing schedule delays and Powerhouse concrete placement
- **Risk of Cost Escalation**
 - Critical for the civil contractor for MF Generating Facility to sustain the productivity improvements; may require acceleration of work from certain Project contractors; potential claims. This could impact costs beyond the Project execution risk contingency that has been established.

Muskrat Falls Project Other Oversight



1. Independent Engineer

- Issued report from March site visits to China and Japan
- Visited MF site this past July – Report anticipated in early October

2. Nalcor's External Auditor

- Released 2nd Quarter financial report in August

3. EY Report

Direction Required



- Approval to publicly release the Oversight Committee Report for the period ending August 2015.



2015/09/28

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Deputy Clerk
File

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A Presentation respecting Muskrat Falls Project Oversight Committee Report was received from the Clerk of the Executive Council.

Approval was given to release the Muskrat Falls Project Oversight Committee's Public Report for the period ending August 2015.

Clerk of the Executive Council