

MUSKRAT FALLS PROJECT TIMELINE OF EVENTS

Briefing Note as Requested by Nalcor Legal Counsel McInnes-Cooper

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muskratfalls.nalcorenergy.com





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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
Feb-2007	DG Milestone	Decision Gate 1 (DG1) approval – Gull Island (GI), Muskrat Falls (MF), transmission systems	No	
14-Mar-2007	Procurement	Contract Award: Awarded contracts to three engineering consultant firms (Fugro Jacques Geosurveys Inc., Hatch Energy, and SNC-Lavalin (SLI)) for engineering support services for the Lower Churchill Project (LCP).	No	
May to Oct 2007	Execution Strategy	Gathering of marketplace trends, activity and lessons learned to support formulation of contracting and execution strategy discussion paper.	No	
31-May-2007	Shareholder	New Legislation: The Government of Newfoundland and Labrador (GNL) tables <i>Energy Corporation Act</i> . GNL news release states: <i>"The Energy Corporation Act allows for the creation of a holding company to separate the regulated operations of Newfoundland and Labrador Hydro (NLH) from the unregulated activities associated with its expanded mandate. The creation of an energy corporation was a commitment in the 2003 election policy document, A Blue Print for the Future."</i>	No	
13-Jun-2007	Shareholder	New Legislation: GNL tables amendment to the <i>Electrical Control Power Act</i> in legislature. The <i>Electrical Control Power Act</i> (ECPA) provides a framework for the Newfoundland and Labrador Board of Commissioners of Public Utilities (PUB) to regulate the coordination of water management agreements.	No	
Jul-2007	Execution Strategy	Contracting strategy discussion paper issued for internal review and discussion.	No	
11-Sep-2007	Shareholder	GNL releases the Province's Energy Plan.	No	
Oct-2007	Execution Strategy	LCP engages Independent Project Analysts (IPA) to deliver their 2-day seminar "Successful Mega Projects."	No	
Nov-2007	Procurement	Contract Award: Westney selected for risk management advisory services following issue of NLH RFP 36821-OQ.	No	



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7-Mar-2008	Schedule	<p>Schedule Review with Nalcor Executive: Nalcor Executive review of Project Schedule, organization and execution model in order to maintain alignment on plan and key decisions that are required in the near term. <i>It could be stated that this schedule represents the first credible schedule that was produced for review, in particular for the post Decision Gate 3 (DG3) scope as it was routed in preliminary construction planning that had occurred in 2007-2008 for a Gull Island development. Unfortunately, the front-end of the schedule re power sales would not hold valid, thereby significantly driving out the schedule to DG3.</i></p> <p>Key points of note from this discussion are as follows:</p> <ul style="list-style-type: none"> • Execution Model – Integrated Team with Project Support Contractor (3 Components) • Decision Gate 2b (DG2b) expected by July 2008 (Power Sales Letter of Intent) • Generation and Transmission Environmental Assessment (EA) Release – expected in Fall 2009 • DG3 – Project Sanction / Start of Construction – mid 2010 • Financial Close – end of 2010 • First Power – Q1 2015, Full Power – Q1 2016 • Based upon Gull Island (not Muskrat Falls), with both Quebec and Maritime Link (ML) exports options 		
21-Apr-2008	Schedule	<p>Schedule Review with Nalcor Executive: Nalcor Executive detailed briefing on Execution Model and Contracting Strategy – alignment achieved on Integrated Team with Project Support Contractor.</p> <p>It was noted that significant risk to achieving Gate 2b by July 2008 given the desire to have an Impacts and Benefits Agreement (IBA) accepted by Innu Leadership and a ratification plan in-place, as well as an arrangement that encompasses Upper Churchill Redress. The requirement to have Letters of Intent (LOIs) for anchor power sale arrangements is also critical.</p> <p>Net result advising Nalcor Executive that First Power will shift by 12 months, however we must continue to progress key work to ensure requirements for Financial Close are in-place.</p>	Yes	Schedule – DG2 Predecessor




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23-May-2008	Schedule	Environmental Assessment (EA) Release: Nalcor Executive detailed briefing to advise delays to the Generation EA will result in EA release not being achieved before May-2010, a further slippage of 6-months. Nalcor Executive is advised that any further slippage will shift Gull Island First Power into 2016 and Full Power into 2017. It is stated that all scheduling assumes Gull Island Construction commences following Generation EA Release and without Transmission Line (TL) EA Release, which will occur some months thereafter.	Yes	Schedule
26-May-2008	Shareholder	IBA: News release from GNL Natural Resources Minister Dunderdale and Nalcor CEO Ed Martin advising that Project will not pass through Gate 3 without an IBA with Innu Nation. Further states that planning framework is developed that <i>"could see major construction starting begin 2010 and potentially First Power in 2015."</i>	Yes	Schedule – DG2 Predecessor
10-Jun-2008	Cost	Pre-Decision Gate 2 (DG2) Cost Estimate: Presentation of revised cost estimate for Gull Island + 1800 MW Infeed + Link to Lingan = \$6.9 billion (B) . More importantly this presentation included an extensive discussion surrounding the definition of contingency and management reserve, providing recommendations for each. In the case of the earlier, contingency set at the P50 Level, with Management Reserve = P75 + Strategic Risk Reserve. Project team is directed to undertake via value-engineering in order to find cost savings opportunities.	Yes	Tone setting - aggressiveness
30-Jun-2008	Cost	Pre-DG2 Cost Estimate: Nalcor Executive Briefing on cost growth between 2006 and 2008 estimates, including identifying cost reduction opportunities to be explored. Development options including Maritime explore vs. Labrador Smelter option discussed. At this point, off-taker risk remains significant, and is dependent upon power price that capital costs are influencing.	No	
Jun-2008	Independent Review	IPA Pacesetter Review occurs, concluding that LCP was well on-track to optimize Front-Ending Loading (FEL) prior to Project Sanction.	No	
8-Jul-2008	Schedule	Gull Island Construction Schedule (document no. GEN-PJ-003) issued for use as Rev B1. This provides the basis for progression of the development in Gateway Phase 2 culminating at DG2 which is targeted for mid-2008, with First Power from Gull Island being delivered by Nov-2015. At this point, financing and Generation EA Release are driving the critical path with both targeted for Jun-2010 start. No construction is planned to occur prior to Jun-2010. Financial Close concluded by Dec-2010.	No	
Jul-2008	Milestone	Gate 2a achieved – Gull Island development option	No	

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4-Sep-2008	Rebaseline	Gate 2b forecasted to slip from the planned Jul-2008 to end of Mar-2009 , while Project Engineering, Procurement and Construction (EPC) schedule is out of sequence with EA, Power Sales and Financing – i.e. 2015 / 2016 dates cannot be maintained if these areas are not progressed. Already under significant threat. Advises that a mid-2010 Generation EA Release is not plausible which will have a direct impact on start of early construction works, thus threatening the schedule. For all practical purposes the 2015 First Power target has vaporized at this point.	Yes	Schedule – DG2 Predecessor
14-Oct-2008	QRA	Cost and Schedule Quantitative Risk Analysis (QRA): Document “ <i>Gate 2a Project Risk Management Plan, document no. GEN- RI-001 Rev B1</i> ”, issued. Incorporates June 2008 QRA undertaken with Westney for Gull Island first development scenario, including Island and Maritime Links, as well as Sep 2008 updates for Gull with Labrador domestic load only. Introduces strategic risk or gatekeeper risks and differentiate between it and estimate contingency defined by tactical risk exposure.	Yes	Risk
17-Oct-2008	Schedule	Nalcor Executive Briefing on project including 2009 Budget requirements. Key messages include: <ul style="list-style-type: none"> • “Gap between Gate 2a and 2b has grown from 3 to 6+ months – Must leverage this time span to respond to increase in Phase 3 scope and continue front-end loading of Project otherwise increase risk of pushing schedule outward” and • “Deferment of Gate 2b and commencement of engineering is creating an incompressible bow-wave effect that will result in delay in Gate 3.” 	No	
22-Oct-2008	Sustaining Capital	Authorization for Expenditure ((AFE) LCP-2008-02 Rev A is approved at \$23.6 million (M) to provide sustaining capital to continue LCP until 31-Dec-2008. Cumulative funds approved at \$162.5M. Predicated upon Gate 2b being achieved by 31-Mar-2009.	No	
11-Dec-2008	Shareholder	Nalcor Energy’s birth: The new name for the Province’s Energy Corporation is released – Nalcor Energy	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
6-Jan-2009	Schedule	Gate 2b forecasts slips by another 6 months to late summer / early fall, which activity levels flatten. AFE LCP-2008-02 Rev A not expected to be exceeded from the planned end of Dec 2008 to now 31-Mar-2009.	Yes	Schedule
4-Feb-2009	Schedule	<p>Rev B1 of Target Milestone Schedule (document no. GEN-PJ-011) released, based upon Gull Island + Infeed + Maritime Link. This was the first issue of this form of schedule, and provided the basis for 2009 Budget Planning.</p> <p>Noteworthy changes from the July 2008 schedule, is the strategy shift wherein construction begins up to two (2) years before Financial Close (non-recourse financing without benefit of Federal Loan Guarantee (FLG) which would not materialize until 2012), funded by equity. This change was an attempt to maintain the overall First Power date as early as possible (note had shifted out ~1 year) from Nov-2015 to Sep-2016), while recognizing that power sales arrangements required to support financing would not be available until later, thus the requirement for bridging equity. During this period, significant maturity of the requirement for project financing had occurred as heavily influenced by Price Waterhouse Coopers (PwC).</p> <p>At this junction, the plan encompasses both power sales in the domestic and Maritimes market, with Letters of Intent expected in June – August 2009.</p> <p>Key dates include:</p> <ul style="list-style-type: none"> • Start Engineering and Design – September 2009 • Generation EA approved – October 2010 • Financial Close – Jun-2013 • First Power – End of September 2016 • Full Power – December 2017 	Yes	
5-Feb-2009	Sustaining Capital	In order to maintain a 2016 First Power, Nalcor's Chief Financial Officer (CFO) is reminded that \$70M of expenditure is required in 2009. Effort is now being directed towards securing budget to maintain essential activities to maintain schedule, which is greatly under threat, largely due to Gate 2b deliverables not be able to be achieved (i.e. power sales and market access).	No	
6-Feb-2009	EA	EA Schedule: Nalcor Executive Briefing on the risk of Generation EA slippage from mid-2010. In short, risk is significant.	Yes	Schedule
17-Feb-2009	EA	Generation EA: Generation Project Environmental Impact Statement (EIS) Submitted	Yes	Schedule
25-Feb-2009	Procurement	Strategy Change: Expression of Interest (EOI) issued for Engineering Design and Project Support Services predicated upon an Integrated team model. EOI responses were received in April 2009.	No	



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2-Apr-2009	Power Sales	Power Sales: GNL News Release advising that Hydro is now wheeling Recall Power Block through Quebec via Open Access Transmission Tariff (OATT) and selling at the Canadian side of the border to Emera Energy Inc.	No	
3-Apr-2009	Shareholder	Briefing of Premier: Nalcor Executive provides Project Status update to Minister Dunderdale.	No	
6-Apr-2009	Sustaining Capital	Nalcor Executive provided with detailed presentation of budget and activity plan for remainder of 2009 in order to support dates contained in the Target Milestone Schedule (i.e. First Power by end of Sep-2016). Total request is for additional \$64.8M.	No	
24-Apr-2009	Sustaining Capital	Decision Support Package (DSP) prepared for Nalcor Board of Directors (BOD) requesting 2009 Capital Approval was elected not be presented at this time.	No	
5-May-2009	Sustaining Capital	AFE LCP-2009-01 (submitted on 4-April) is approved providing incremental funding of \$4.6M to cover incurred costs up to 30-Apr-2009. (i.e. Project has run out of money to pay its bills).	No	
29-May-2009	Strategy	Internal Sr. Management briefing on the planned 2009 Field Program for the Strait of Belle Isle (SOBI).	No	
15-Jun-2009	Rebaseline	<p>Rebaseline: Nalcor Executive briefing on project budget and schedule (reference Rev B2 of Target Milestone Schedule, document GEN-PJ-011).</p> <p>Since Rev B1 of the Target Milestone Schedule was issued in Feb-2009 (Gull + Infeed + Maritime Link), significant forecasted slippage of power sales and market access is requiring the re- sequence of the Project. At this point Gate 2b has slipped to May 2010, requiring in the shift of start of detailed engineering nearly 1-year (late Q3-2009 to early Q3-2010). The net result is a curtailment in 2009 activity and spending, which has a direct impact of First Power schedule.</p> <p>Revised Target Milestone Schedule is presented with various scenarios to maintain First Power, but in general would require excessive spending pre-Financial Close. The risk of achieving a 2013 river diversion is emphasized. First Power slips to Apr-2017.</p> <p>At this junction, discussions are underway with Rio Tinto re domestic option, while there is a push from the Nalcor CEO to ramp-up discussions with Emera.</p>	Yes	Schedule
26-Jun-2009	Sustaining Capital	Budget: In line with the discussions held with Nalcor Executive on 15-June, the 2009 Budget presented to Board of Directors for approval.	No	
8-Jul-2009	Sustaining Capital	AFE LCP-2009-02 approved at \$41.9M (cumulative \$209M) for remaining expenditures to 31-Dec- 2009.	No	



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9-Sep-2009	Power Sales	<p>GNL News Release advises that Nalcor is still seeking options to transmit up to 740 MW of LCP power through New Brunswick (NB) and made an application in 2007 via NB OATT process. Key points of note in the News Release include:</p> <ul style="list-style-type: none"> The Lower Churchill project is advancing on multiple fronts. Transmission access requests have been filed with Quebec and New Brunswick as an exit point into Ontario, the Maritimes and the northeast U.S. Nalcor Energy has also entered into discussions with Emera and Nova Scotia Power to study the subsea link and access to northeast U.S. markets. A full environmental assessment process has started for the generation portion of the Lower Churchill project. Appropriate consultations continue to take place with Aboriginal groups and discussions are proceeding with Innu Nation on an Impacts and Benefits Agreement. "We will understand this project completely before we make critical decisions on the project," said Minister Dunderdale. "We are doing the necessary due diligence that is incumbent upon us to ensure we have the best possible project configuration from front-end engineering through to transmission and market delivery. We are advancing this project methodically and strategically and in the best interest of the people of this province for generations to come." 		
13-Nov-2009	Power Sales	Amidst a planned 2010 Budget review, Nalcor Executive advises that LCP budget submission to GNL will have to be delayed pending decisions re market access. Options discussed include project deferral by 1-year, and 6 development options in-total. EA Release now expected to slip from December 2010 to March 2011.	Yes	Schedule
24-Nov-2009	Power Sales	Six development scenarios for LCP presented to Nalcor Executive. First reference to Muskrat Falls first development option. Nalcor Executive is cautioned that MF has not been a priority and thus the level of engineering maturity is less. Team asked to overlay labour demand between LCP, Vale and Hebron to understand if LCP would compound provincial supply risk. Nalcor Executive push for action to be taken to have First Power from Muskrat Falls by end of 2016, with construction commencing in 2010 pre-Financial Close using equity from the Province. From this session, it becomes probable that Muskrat Falls will be the preferred development scheme.	Yes	Development Scheme – MF First
11-Dec-2009	Strategy	Recommended Engineering, Procurement and Construction Management (EPCM) Model: Following EOI to validate contracting strategy, preferred option switched from Integrated Team to Engineering, Procurement and Construction Management (EP+CM) Model. Bid list selected – SNC-Lavalin, Hatch, and Black & Veatch / MWH		




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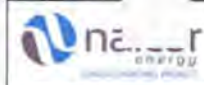
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10-Jan-2010	Cost	<p>Cost and Schedule QRA: Document “Project Risk Analysis Update – Fall 2009 (Confidential), document no. GEN-RI-002 Rev B1” issued as an update to the information presented in the Gate 2a Risk Analysis produced in October 2008. The document states its purpose as “Of primary importance during this review was to re-assess the cost and schedule exposure for known Strategic Risks.”</p> <p>Scope of the analysis is Gull Island plus various transmission options. Significant time-risk modelling included in this review in order to validate whether the target schedule is viable. No update on tactical risk that could influence the estimate, rather effort directed towards overall time-risk and strategic risk exposure. Concludes a P50 provision of 15% of base cost, and a P75 provision of 21% is a reasonable planning assumption.</p>	No	
Feb-2010	Milestone	New Dawn Agreement initialed by all parties.	No	
12-Mar-2010		Nalcor Executive briefing on key issues facing project. Include EA release, EP+CM Request for Proposals (RFP), challenge, maintaining a 2011 start of construction, governance, etc. Discussions around how to maintain schedule for both Gull and Muskrat First options, pending outcome of Regie de l’énergie (Regie) Hearings.	No	
30-Mar-2010	Shareholder	Legislation: GNL News Release re Water Management Agreement established for the Churchill River	No	
Mar to Oct-2010	Cost	Capital Cost and Schedule Estimates prepared on 16 unique development scenarios for LCP with information provided to Nalcor Investment Evaluation for screening. Case 11OL – Muskrat Falls with 900 MW Line Commutated Converter (LCC) with Overload Island Link + 500 MW Voltage Source Converter (VSC) Maritime Link selected as the preferred option and the basis of the Muskrat Falls development scenario moving forward.	No	
9-Apr-2010	Cost	Nalcor Executive briefing on Gate 2 estimate for Gull Island + Infeed + Maritime Link (Case 11OL). No change for numbers presented in 2008. Total cost is \$11.1B. Discussion had surrounding escalation, contingency, and strategic / management reserve. Nalcor Executive reviewed probabilistic curves and appeared comfortable with position taken on P50 contingency.	Yes	Cost
23-Apr-2010	Market Access	Nalcor Executive briefing with Premier Williams. Regie hearings held but ruling is being awaited. Muskrat Falls first begins to appear as the preferred development option and is quite possible with deep equity investment.	No	
30-May-2010	Market Access	GNL News Release – Unfavorable ruling providing by the Quebec Régie de l’énergie to Nalcor’s OATT. MF first becomes more likely	No	

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9-Jun-2010	Market Access	Nalcor Energy files an Application for Administrative Revision with the Régie de l'énergie (Régie) in response to its May 11 decision. While there is no formal timeline for this review, it is anticipated that it will occur during the fall of 2010.	No	
27-Jun-2010	Sustaining Capital	AFE LCP-2010-01 approved at \$32.3 M (\$241.3 M cumulative), reflecting an increase in planned 2010 work activities to support Muskrat Falls + Infeed option first.	No	
Jul-2010	QRA	<p>Cost and Schedule QRA: In June / July 2010 Westney completes QRA for Muskrat Falls + Island Link (600 MW 250 kilovolt (kV) High Voltage Direct Current (HVdc) Island Link (50-year return period)) – Capital Cost Scenario / Case 8 option with a Sep-2016 First Power target.</p> <p>This analysis builds upon the 2009 analysis for Gull Island. At this point in time the smaller Muskrat Falls project is not envisioned to be “project financed,” rather funded entirely from equity. Further the assumptions for handling power sales are now different, with the Maritime Link now viewed as a separate project phase, hence not included in the QRA. Nalcor's summarization of the DG2 Risk Analysis work is encapsulated in the document “Gate 2 Project Risk Analysis, document no. LCP-PT-ED-0000-RI-RP-0001-01 Rev. B1”, issued in Jun 2011 and subsequently revised and reissued at Rev B2 on 15-Sep-2011. Revision B2 reflects revised Nalcor Executive position on Strategic Risk Exposure at Decision Gate 2.</p> <p>These documents are key to documenting the basis upon which a viewpoint on cost risk and contingency setting was established.</p> <p>Noteworthy points from Rev B1 of this document include: <i>“It must be noted that subsequent to the completion of this risk assessment, the planning basis changed (Capital Cost 110L). Changes included:</i> <ul style="list-style-type: none"> • Increase in Island Link capacity from 600 to 900 MW • Increase in the Labrador – Island Transmission Link system voltage from 250 to 320kV • Revert back to use of traditional LCC HVdc technology rather than the state-of-the-art VSC technology. • Development of a standalone Maritime Link from Bottom Brook, NL to Lingan, Nova Scotia” (p.24) <i>“Considering Nalcor's plan to seek Contingent Equity commitment from the Province of Newfoundland and Labrador) of \$300 to 600 million as well as the decision not to use VSC HVdc technology rather stick with the traditional LCC technology, it was determined pragmatic to reduce the allowance for Strategic Risk Exposure (i.e. a means of determining Management Reserve) carried in the economics. To this effect a 6% of Base Estimate allowance was considered to be reasonable for proxy of a P50 exposure for the</i> </p>	Yes	Cost



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		<p><i>purposes of Decision Gate 2 economic modelling.</i></p> <p><i>In summary, Decision Gate 2 economic modelling parameters utilized were a P50 proxy /representative as indicated below:</i></p> <ul style="list-style-type: none"> • Estimate Contingency 15% • Strategic Risk Exposure 6% • Full Power Date June 2017 <p><i>It must be emphasized that these parameters were for Decision Gate 2 decision making purposes only, and prior to Project Sanction must be thoroughly reviewed and reassessed for suitability considering the design maturity of the Project as well as Nalcor's risk appetite.</i></p> <p>Note: During the negotiations of the Term Sheet with Emera, Senior Management elected to drop the Strategic Risk Exposure allowance of 6% from the overall capital cost recommendations for both the Muskrat Falls and Labrador – Island Transmission Link Projects in order to address Emera's concern regarding its ability to sell the Strategic Risk concept to it's the Nova Scotia (NS) regulator, the Nova Scotia Utility and Review Board." (p. 25 – 26)</p> <p>Revision B2 includes the following statements on p. 26.</p> <p><i>"When considering the level of the financial reserve to address potential strategic risk exposure, Nalcor Executive considered progress made on mitigating and/or eliminating the strategic risk exposures, which it considered as substantial. For the reasons set out below, the following two (2) were of particular importance:</i></p> <p><u><i>R7 – Federal government support for generation and transmission investment</i></u> <i>Negotiations with the federal government regarding support for the Project, either in the form of a loan guarantee or support through the P3 Canada Fund, were ongoing through 2010. A loan guarantee had the potential to reduce the present value of project financing costs by over \$600 million, so considering this from a probabilistic view, the P50 value of the federal support could reasonably be in the order of -\$300 million dollars. This risk was not quantified in the initial analysis by the Project team in June 2010.</i></p> <p><u><i>R34 – Application of VSC technology on Island Link</i></u> <i>While Voltage Source Converter (VSC) technology was identified as a potential technical solution for the Labrador-Island Transmission Link, modelling completed at DG 2 indicated that conventional Line Commutated Converter (LCC) technology offered equivalent performance. As a result, the technology risk (and up to \$200 million exposure) was retired.</i></p>		




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		<p><i>Eliminating this risk could reasonably be valued at -\$100 million on a P50 basis.</i></p> <p><i>With the extent of the mitigation activities, reference Project's Key Risk Status Report, undertaken and in progress, and possible cost reductions in the order of -\$400 million being available and a P50 strategic exposure of \$290 million (in the range of \$187 million (P25) to \$413 million (P75)), Nalcor executive determined that it was not appropriate to create a positive or negative financial reserve provision at DG2. These factors were also considered in establishing Estimate Contingency at 15%.</i></p> <p><i>Nalcor executive recognizes that the strategic risks identified for the development of Muskrat Falls and Labrador-Island Transmission Link also transcend both other alternatives being explored to meet the Island's energy requirements, thus work continues to ensure a thorough and diligent approach to risk management and mitigation in the alternative business case. For example, Nalcor is closely following the oil price forecast which represents a considerable strategic risk in the Isolated Island scenario, and similarly is closely monitoring the potential for near term greenhouse gas costs as a result of emissions regulation."</i></p>		
22-Jul-2010	Strategy	Turbines and Generators (TGs): DSP to seek approval of model testing for Muskrat Falls TGs under the premise that it is will help preserve opportunity to achieve a 2016 First Power from Muskrat Falls.	No	
09-Jul-2010	Procurement	Issued a Request for Proposals (RFP) to engineering and project management companies for the Lower Churchill Project's detailed engineering design, procurement and construction management work (EPCM Services).	No	
14-Jul-2010	Shareholder	<p>GNL News Release – LCP Construction Benefits Strategy released advising that for both of MF and Gull Island (GI) combined, at least 21.5 million person-hours of construction effort and 6.5 million person-hours of engineering and procurement work.</p> <p>The Benefits Strategy makes strong, unbudgeted commitments related to engineering being conducted in the Province, specifying stating:</p> <ul style="list-style-type: none"> • "The Lower Churchill Construction Project and its EPCM contractors and sub-contractors will perform all engineering and project management, with the possible exception of specialized engineering, for the project in the province." • "All reasonable efforts will be made to have specialized engineering performed in the province. In the event there is specialized engineering undertaken outside the province, Nalcor Energy-Lower Churchill Project will ensure that such work is done in full collaboration with and is integrated into the local engineering effort." 		

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13-Aug-2010	Cost	DG2 Estimate released at \$5.0B CDN (2010 \$). Reference email to S. Goudie with input for Investment Evaluation.	No	
Aug-2010	Independent Review	IPA Pacesetter Review occurs for Decision Gate 2a (DG2a).	No	
17-Sep-2010	Procurement	Three (3) RFP responses for EP+CM bid received. Targeting issue of a LOI by 22-Dec-2011.	No	
15-Sep-2010	Milestone	Seabed option selected as the preferred option for crossing the Strait of Belle Isle. Recommendation presented to and accepted by Nalcor Executive.	Yes	Cost
16-Sep-2010	Procurement	Three (3) proposals received for EPCM Services . Proposals received from Black & Veatch, Hatch and SNC-Lavalin. LOI was subsequently issued to SNC-Lavalin on 22-Dec-2010.	No	
17-Nov-2010	Shareholder	DG2 Readiness: Document “ <i>DG2 Decision Support Package – Summary Recommendation to Nalcor’s Board of Directors</i> ” issued recommending a phased approach for development of the lower Churchill River resources. Phase 1 – Muskrat Falls, High Voltage Alternating Current (HVac) lines (MF to Churchill Falls (CF)), HVdc link to Island, and HVdc link to Maritimes. States that DG3 is targeted for Q3-2011 and additional \$100 to \$150 million of capital will require to be spent. The DSP states “ <i>A contingent equity commitment of \$300-600M from the Province is also considered prudent and necessary.</i> ”	No	
18-Nov-2010	Power Sales	Emera Deal: Term Sheet signed between Nalcor Energy and Emera providing the arrangements for development of the Maritime Link and explore of power to the Maritimes.	No	
18-Nov-2010	Milestone	Decision Gate 2 Approval. Capital cost estimated at \$5.0B (2010 CDN \$). At this point the DG3 sanction decision is expected within 12 months, but takes twice that duration, while the Project Team is pushed to maintain schedule to the extent possible.	Yes	Cost
3-Dec-2010	Shareholder	Leadership: End of Premier Danny Williams Term as Premier of Newfoundland and Labrador. Incoming Premier Kathy Dunderdale. Shawn Skinner replaces Dunderdale as Minister of Natural Resources.	No	
6-Dec-2010	Rebaseline	Re-baseline: Target Milestone Schedule, document no. LCP-PT-ED-0000-EP-SH-0001-01 Rev. B1 is issued for use, providing the list of schedule targets for project planning purposes and formed the basis for DG2 approval. (Note document was prepared in October 2010). The document states that “ <i>schedule reserve has not been included in the Target Milestone Schedule.</i> ” The Project management Institute (PMI) defines Schedule Reserve as “ <i>A separately planned quantity used to allow for future situations which may be planned for only in part</i> ” (sometimes called the “known unknowns”). Key Target Dates:	Yes	Schedule




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		<ul style="list-style-type: none"> DG3: Oct-2011 Generation EA Release: Aug-2011 (Note that the EIS had been submitted in Feb-2009) Labrador-Island Link (LIL) EIS Submittal: May-2011 LIL EA Release: Apr-2012 (~ 12 months post EIS Submittal) MF First Power: Oct-2016 <p>Noteworthy assumptions that the targeted dates predicated upon that did not occur and significantly impacted the schedule:</p> <ul style="list-style-type: none"> <i>"The EPCM consultant will be able to rapidly mobilize and prepare for the necessary levels of detailed design.</i> <i>The environmental process for the generation site will be concluded in Q3 2011.</i> <i>The environmental process for the Labrador-Island Transmission Link will take approximately 12 months from the submittal of the EIS to the release from the process, that final EIS guidelines will be provided by no later than January 2011, and that no EA panel is required.</i> <i>The design and orientation of the Muskrat Falls generating facility will not significantly change as a result of the 2010 Field Investigation Program and Feasibility Studies.</i> <i>Early Site Infrastructure Works for Muskrat Falls (access, accommodations, communications, construction power) to commence following EA release and permitting in September 2011."</i> 		
21-Dec-2010	Shareholder	<p>Board of Directors Meeting wherein BOD was advised of the preferred EPCM bidder, 2011 budget requirements, as well as made aware of the key risks that could impact the timing of Project Sanction which at that point was targeted for Q4-2011.</p>	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
3-Feb-2011	Procurement	Contract Award: EPCM Services Agreement awarded to SNC-Lavalin.	No	
8-Feb-2011	Cost	<p>Nalcor Executive briefing on the planned award of EPCM Services Contract to SNC-Lavalin, including review of risk exposure if Project does not proceed. At this time, contract is pegged at 2.5 million person-hours and an overall value of \$350M, thereby representing a forecasted DG2 budget growth of ~\$140M.</p> <p>Note that this deck includes the comment: <i>“Contingency adjusted from 21% to 15% during Emera negotiations to remove Project’s recommended allowance for Strategic Risk Exposure.”</i> This comment provides insight that the concept of strategic risk exposure and hence management reserve had been removed from the Project Team’s cost purview and that such costs were carried elsewhere.</p>	Yes	Cost
9-Feb-2011	Sustaining Capital	AFE LCP-2011-01 approved at \$65.7 M (\$307 M cumulative) with the expectation that this will cover all planned expenditures to end of June 2011.	No	
19-Feb-2011	Scope	LCP’s <i>Basis of Design</i> , document no. LCP-PT-ED-0000-EN-RP-0001-01, Rev. B1 issued for Use.	No	
28-Feb-2011	Schedule	<p>Management Summary Schedule, document no, LCP-PT-ED-0000-EP-SH-0003-01 Rev B1 issued for use and largely reflects the DG2 approval schedule contained in Rev B2 of the Target Milestone Schedule. In this development scenario, MF will be developed in advance of LIL with MF Unit 1 power flowing westward to Churchill Falls until LIL becomes available.</p> <p>Document includes the statement: <i>“Schedule reserve has not been included in this Management Summary Schedule, however recommended schedule reserve arrived at from risk analysis activities for the Project is included within the economic analysis conducted for the Project.”</i></p>	No	
3-Mar-2011	Cost	Nalcor Executive briefing on “Estimate Contingency Discussion.” Focus of the briefing was to anchor back to terminology for cost estimate components, including contingency and management reserve and how the quantification of both tactical and strategic risks has been used to form a view on the valuation of both cost categories. In this deck, it is noted that strategic risk allowance of 10% has been removed from the overall cost estimate, with the understanding that is covered by a \$600 M contingent equity allowance held by GNL, thus avoiding double dipping and aligns terminology with what that used by the project finance team.	Yes	Cost
3-Mar-2011	Execution Strategy	Following a lengthy EOI and market sounding process, the basic envisioned execution approach for the Project is formally released within the document Project Management Approach and Contracting Strategy (Post Gate 2) , document no. LCP-PT-M D-0000-PM-ST-0001-01, Rev. B1.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
7-Mar-2011	Execution Strategy	<p>Strategy: Rev B1 of Project Controls Management Plan, document no. LCP-PT-MD-0000-PC-PL-0001-01, issued for use. This document sets the stage for all processes used for estimating, incurring, forecasting and reporting project costs.</p> <p>Final Forecast Cost: The anticipated cost of a project or component when it is complete. It represents the value of the Incurred Costs plus the estimated value of work left to complete, including approved Forecast Change Notices. Also referred to as Estimate at Completion (EAC).</p> <p>Forecast Change Notice: A recommendation prepared by the Cost Engineer / Controller recommending an adjustment to the final forecast cost or completion schedule.</p> <p>From Rev B2 <i>"The Final Forecast Cost (FFC) will be driven by both Project Changes and Trends which will trigger Forecast Change Notices, a mechanism used to formally adjust the FFC."</i></p>	No	
30-31 Mar-2011	Procurement	EPCM Services Agreement Kick-off Meeting held at Sheraton Hotel – 2-day event with significant participation from both LCP and SNC-Lavalin.	No	
1-Apr-2011	Shareholder	Nalcor Board of Directors meeting wherein a recap of 2010 performance against the LCP Business Plan is provided.	No	
15-Apr-2011	EA	Generation EA Public Hearings conclude. Open houses begin.	No	
Winter-2011	Cost	DG3 Estimate Development Starts.	No	
16-May-2011		The Muskrat Falls (MF) and Labrador Island Link (LIL) Project Team relocated to the SLI Project office at 272 Torbay Road.	No	
May-2011	EA	LIL EA – Final EIS Guidelines were received from the provincial and federal governments (following public review).	No	
15-Jun-2011	Scope Change	Scope Change: PCN-0015 "Increase in LIL Operating Voltage from 320 kV to 350 kV" was approved. Preliminary cost impact beyond DG2 estimated at \$100M.	Yes	Cost
17-Jun-2011	Independent Review	The PUB announces the Muskrat Falls Review . The terms of reference state: <i>"The Board shall review and report to Government on whether the Projects represent the least-cost option for the supply of power to Island Interconnected Customers over the period of 2011-2067, as compared to the Isolated Island Option."</i>	No	
1-Jul-2011	IBA	IBA: GNL News Release – New Dawn Agreement ratified by Innu on 30-Jun-2011.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
18-Jul-2011	Cost	Pre-DG3 Cost Estimate: Nalcor Executive briefing of potential changes and cost impacts since DG2. In short, despite a robust change management process, the maturing project has resulted in changes being identified that will largely erode the DG2 contingency. Nalcor Executive are concerned re range of outcomes, while questioning the requirement for both the third SOBI cable, and the second TL between MF and Churchill Falls (CF).		
Jul-2011	Scope Change	Scope Change: Several key project changes approved by Nalcor Executive via Project Change Notices (PCNs), specifically: <ul style="list-style-type: none"> • PCN-0016: Labrador to Newfoundland HVdc Link Overload Capacity for Submarine Cable • PCN-0018: Optimize HVac Transmission voltage for MF to CF lines from 345 to 315 kV • PCN-0020: Re-oriented powerhouse and intake – cost impact \$50 to \$60M • PCN-0021: Hybrid spillway configuration with vertical lift gates – cost impact \$10 to \$15M • PCN-0022: Largest intake structure – cost impact \$70 to \$90M 	Yes	Cost
22-Jul-2011	Schedule	Nalcor Executive Briefing: Detailed briefing on all aspects of the project (engineering, EA, markets, financing, etc.) provided to Nalcor Executive. Plans reviewed for start of construction in summer 2012, with key long lead items being placed in Q1-Q2 2012. Risks highlighted include market and market access requirements to secure financing. LCP Executive Committee mandate reviewed as part of this session.	No	
Aug-2011	Milestone	SOBI submarine Cable RFP issued with a target proposal submittal date of 18 November 2011.	No	
19-Aug-2011	Financing	Memorandum of Understanding (MOU) executed between Canada, NL and NS re project financing support.	Yes	Financing cost
23-Aug-2011	EA	Generation EA Joint Review Panel (JRP) Report Released	No	
8-Sep-2011	Execution Strategy	Document Project Execution Plan (Scope and Approach) , document no. LCP-PT-MD-0000-PM-PL-0001-01, Rev B1, is issued for use. Note that this document was issued as Rev A1 in August 2010, and supersedes its predecessor document <i>Project Execution Phase (Phase 3)</i> , document no. MSD-PM-005, Rev B1.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
14-Sep-2011	Independent Review	<p>Navigant Consulting Ltd.'s report <i>"Independent Supply Decision Review"</i> issued. Focus on this review was to assess the quality of the DG2 decision. Key observations made by Navigant in its report related to cost and schedule include:</p> <ul style="list-style-type: none"> • Key Finding No. 25: <i>"Nalcor's risk assessment analysis for Muskrat Falls and the Labrador-Island Link project was thorough and comprehensive."</i> • Key Finding No. 26: <i>"Nalcor's focus on time, tactical and strategic risks for the Muskrat Falls and Labrador-Island Link is consistent with best practices and provides a high level of confidence in the integrity of capital cost estimates."</i> • <i>"Based on the identified best practices, a methodology for estimating cost escalation linking estimated capital costs with project scheduling was developed."</i> (p. 40) 	No	
16-Sep-2011	Schedule	<p>Rebaseline: High-Level Roadmap to DG3 (Management Summary Schedule) produced in order to provide clarity of the various work streams that had to progress, coming together to support a Project Sanction / DG3 decision by 1-May-2012 (vs. the envisioned Oct-2011 at DG2). At this point, FLG was envisioned, with MF+LIL+ML being the development option.</p>	No	
23-Sep-2011	Scope Change	<p>Scope Change: Change Request LC-G-002-CR-001 issued to SLI to add to the scope of work at Soldier's Pond's 230 kV substation along with Synchronous Condensers.</p>	No	
5-Oct-2011	Milestone	<p>SOBI: Commenced the Horizontal Direct Drilling (HDD) Geotechnical Pilot Bore program at Shoal Cove.</p>	No	
18-Oct-2011	Shareholder	<p>Letter of Commitment provided by GNL under signature of Premier Kathy Dunderdale. This letter lists a number of policy commitments of the GNL which are available to support development of the Muskrat Falls Project including:</p> <ul style="list-style-type: none"> • <i>"Approve the creation of those subsidiaries or entities controlled by Nalcor which are required in order to facilitate the development and operation of the MF, the LIL and the Labrador Transmission Assets (LTA)"</i> • <i>"Provide the base level and contingent equity support that will be required by Nalcor to support successful achievement of in-service for MF, the LTA and the LIL, in cases with and without the participation of Emera."</i> 	No	
28-Oct-2011	Shareholder	<p>GNL Minister of Natural Resources: Jerome Kennedy replaces Shawn Skinner as Minister of Natural Resources. Skinner held the position for ~ 10 months (Dec 6, 2010 to Oct 28, 2011).</p>	No	
11-Nov-2011	Independent Review	<p>Muskrat Falls Review: Nalcor makes it DG2 submission to the PUB in order to the PUB to fulfill its mandate of determining whether the Interconnected Island with Muskrat Falls is the least cost option for the ratepayers of Newfoundland and Labrador.</p>	No	




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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
15-Nov-2011	Schedule	2012 Capital Budget Submission made having the assumption that Generation EA Release will come before end of 2011, with Sanction of MF + LTA occurring in April 2012, with LIL sanctioning to follow with EA release expected in Q3-2012.	No	
17-Nov-2011	Sustaining Capital	AFE LCP-2011-05 approved at \$20.6M (\$339M cumulative) for funds to carry project until end of 2011. It is noted in the submission that the 2011 Capital Budget has been underspent by \$146 M due to the slippage of Gate 3 forecasted date and hence scaling of activities.	No	
24-Nov-2011	Engineering	Physical Hydraulic Model powerhouse and spillway witness testing complete.	No	
25-Nov-2011	Scope Change	Scope Change: PCN-0033 "Increase in HVdc Overland Transmission distance from MF to SOBI" approved. Overall route increased by 30km due to final location of the converter station at MF and routing selection. Cost impact estimated at \$11M.	No	
28-Nov-2011	FLG	Federal Loan Guarantee: GNL News Release – advises that each of Government of Canada, Government of Nova Scotia, and Government of Newfoundland and Labrador continue to work together to progress the federal loan guarantee.	No	
28-Nov-2011	Cost	Commitment to Benefits: GNL News Release – The Government of Newfoundland and Labrador has completed a Memorandum of Understanding with the Government of Nova Scotia which outlines the business and employment opportunities for Newfoundland and Labrador and the Atlantic region of the \$6.2 billion Lower Churchill Project.	No	
8-Dec-2011	Schedule	Maintaining 2016 First Power: Nalcor Executive briefing on project commitments associated with Early Works Construction that must be made in order to achieve 2016 First Power. This date is predicated upon a Feb-2012 start of the main MF access road and start of Bulk Excavation in June, thus allowing the Riverside Cofferdam to be completed by the weather cut-off date of 15-October.	No	
15-Dec-2011	Estimate	SLI Phase 2 Deliverable due and submitted which included Cost Estimate for the components SLI falling within the EPCM Services Agreement (i.e. Component (C1), Component 3 (C3) and Component 4 (C4)). This estimate as produced by SLI was considered poor quality as it did not follow the requirements specified in the EPCM Services Agreement as it relates to the approach to develop the estimate. Upon receipt of this deliverable the SLI estimating resources were reorganized under Nalcor's direction in order to ensure the cost estimate deliverable was delivered on schedule.	No	
19-Dec-2011	Procurement	RFP issued for Commitment Package CH0002 "Supply and Installation of Accommodations Complex – Muskrat Falls." Proposals were received on 19-Apr-2012, with the bids providing the ability for late "conditioning" of the DG3 estimate.	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
16-Jan-2012	Cost	DG3 Estimate: First glimpse of DG3 estimate numbers provided to Nalcor Executive. Preliminary numbers of \$6.153 B.	No	
Jan-2012	Independent Review	<p>Manitoba Hydro International ("MHI") report "Report on Two Generation Expansion Alternatives for the Island Interconnected Electrical System" issued as part of the PUB review.</p> <p>Noteworthy statements re DG2 cost and schedule include:</p> <ul style="list-style-type: none"> • <i>"Capital cost estimates evolve with improving accuracy as the level of engineering progresses. Nalcor has adopted estimating practices of the Association for the Advancement of Cost Engineering (AACE) International for the Infeed Option. Nalcor considers the DG2 capital cost estimate to be commensurate with an AACE Class 4 estimate which is a feasibility estimate and has a range of accuracy of +50% to -30%.² The DG3 or project sanction capital cost estimate is considered by Nalcor to be a Class 3 estimate with a range of accuracy of +30% to -20%.³" (Vol. 1, p.7)</i> • Key Finding No. 10: "Muskrat Falls Cost Estimate Increase – The cost estimate for the Muskrat Falls development has increased by 104% between 1998 and 2010 which can largely be explained by inflation and a change in scope. The change in scope is the addition of the 2 – 345 kV transmission lines from Muskrat Falls Generating Station to Churchill Falls Generating Station, associated switchyards, environmental costs and other items such as insurance. Despite the additional costs, MHI considers the cost estimate at DG2 to be within the accuracy range of an AACE Class 4 estimate (+50%/-30%) which is representative of a feasibility level study." • Key Finding No. 15: "HVdc Overhead Transmission Line Capital Cost Estimate – The capital cost estimate of the transmission line at DG2 is reasonable, but at the low end of the range for this type of construction utilizing industry benchmark costs as a comparison. A design based on a 150-year return period could be accommodated within the variability of an AACE Class 4 estimate at this stage of development for the entire Labrador-Island Link HVdc project." <p>Regarding escalation, MHI makes the following statement: "At Manitoba Hydro, escalation indices are then applied to the base estimate using the Global Insight data for the various project drivers (labour, equipment, commodities, fuel etc.) which are specific for the hydro power projects built in Manitoba. The escalation indices are modified to take into account regional economic activity. Nalcor's process is very similar to that used by Manitoba Hydro and is a utility best practice." (p. 36)</p>	Yes	Increased expectations re LIL TL reliability by increasing design return period.

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
		<p>It should be noted that the same process was used at DG3, however the quality of the input data had dramatically improved.</p> <p>Regarding estimate accuracy, it notes that the Class 2 estimate can swing by up to 50% in its statement: <i>"The current capital estimates are within the accuracy of an AACE Class 4 estimate which has a plus factor variance potential of as much as 50%."</i> (p. 88)</p> <p>On the subject of reliability of the overhead transmission lines, an area that was subject to much debate and discussion during the review, MHI states (emphasis added):</p> <p><i>"Given the significance of the Labrador-Island Link HVdc transmission line for serving the load on the Island of Newfoundland, Nalcor has gathered significant historical metrological data in accordance with the IEC and CSA Standards. Exhibit 30 indicates that Nalcor has selected a 1:50-year reliability return period which is inconsistent with the recommended 1:500-year reliability return period outlined in the IEC and CSA Standard for this class of transmission line without an alternate supply. In the case where an alternate supply is available, e.g. the Maritime Link or backup generation, then the 1:150-year reliability return period is acceptable. Nalcor has stated that the additional capital cost increase for the 1:150-year return period for the transmission line would be \$150 million. In the latter case, Nalcor should also give consideration to an even higher level reliability return period in the remote alpine regions. MHI recommends that Nalcor adhere to these criteria for the HVdc transmission line design."</i></p> <p>Prudently concerning this recommendation, Nalcor made a number of strategic decisions to optimize the reliability of the line including:</p> <ul style="list-style-type: none"> Shortening the exposure of the overhead line containing the electrode for the alpine region of Labrador via removal of electrode and routing via a separate wood pole arrangement <p>Considerable investment in access infrastructure to not only facilitate the line construction, but reduce the repair time in those alpine areas, which in-turn would improve overall reliability</p>		
Jan-Feb-2012	Cost	<p>DG3 Estimate Preparation: Re-alignment of SLI estimate submission of 15-Dec-2011, addressing punch list items in order to produce an estimate suitable for use. Details of this exercise are contained in the <i>Decision Gate 3 Basis of Estimate</i>, document no. LCP-PT-ED-0000-EP-ES-0001- 01, Rev. B2.</p>	No	




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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
26-Jan-2012	Procurement	Bid Receipt: Three (3) responses received to RFP for Commitment Package CH0030 – “Supply & Installation of Turbines and Generators.” This was the first bid received for a major commitment package and provided the ability to validate the DG3 estimate. DG3 estimate was \$200M, while opening bids were as low as \$170M to a high as \$220M.	Yes	Ability to validate DG3 estimate
1-Feb-2012	Sustaining Capital	AFE LCP-2012-01 approved at \$125.9M (\$465M cumulative) to provide sustaining funding up to 30-Jun-2012.	No	
13-23 Feb-2012	Independent Review	PUB’s Muskrat Falls Review – Public hearings occur	No	
15-Feb-2012	Schedule	DG2 Target Date for start of early works at Muskrat Falls.	No	
Feb-2012	SLI	SLI Performance: From the Feb-2012 Monthly Progress Report: <i>“Lack of development and full implementation of SLI Processes and Systems/Tools resulting in less than optimal utilization of SLI personnel. To that effect, a Post-DG3 Execution Planning Task Force Charter has been presented to SLI for immediate commencement of structured planning sessions with SLI Subject Matter Experts and using the Mines and Metallurgy procedures as a basis. The Procurement Task Force was quickly initiated thereafter, with construction management to shortly follow.”</i>	Yes	Distraction
24-29 Feb-2012	Independent Review	SLI Pre-DG3 Independent Project Review (IPR) Readiness Check: Cold-eyes review of Gate 3 deliverables and SLI readiness for DG3 carried out by Derek Owen, Stan Genega (Westney), and Paul Gendreau (SLI). Concluded that SLI performance and preparation of DG3 deliverables were not ready for Gate 3. Highlighted that SLI had not implemented PM+ and M&M procedures, nor SLI corporate experience; that senior SLI persons had no experience with SLI systems or procedures, key positions in SLI were not filled and that team moral was low.	No	
29-Feb-2012	Execution Strategy	Building upon the document Project Management Approach and Contracting Strategy (Post Gate 2), document no. LCP-PT-M D-0000-PM-ST-0001-01, Rev B1, the Project’s final contracting and packaging strategy is documented within the document Overarching Contracting Strategy , document no. LCP-PT-MD-0000-PM-ST-0002-01 Rev B1 published for use. Provides overall commercial / execution framework for the LCP, including the definition of all contract packages.	No	
2-Mar-2012	Independent Review	PUB Muskrat Falls Review: Nalcor makes it final submission to the PUB regarding the Muskrat Falls Review.	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
15-Mar-2012	EA	EA Release: Nalcor Energy received release from environmental assessment for the Lower Churchill Hydroelectric Generation Project from the governments of Newfoundland and Labrador and Canada. Note that DG2 baseline line plan for this was August 2011 (i.e. 7 months late).	Yes	Schedule slippage
March-2012	Independent Review	DG3 Estimate Process Review: 1 week estimate review process undertaken by John Hollman of Validation Estimating.	No	
26-Mar-2012	SLI Performance	Gaining Alignment with SLI: Construction Management workshop hosted by Nalcor on 26-March in order to bring alignment on the overall approach towards this critical area. SLI have been actioned to develop its Construction Management Plan using the philosophies discussed in this session. Focus will be to bring SLI into alignment on the approach to be used on LCP.	No	
2-Apr-2012	Independent Review	Muskrat Falls Review: PUB issues its report into the review of whether Interconnected Island with Muskrat Falls is the least cost option. Concludes stating that it does not have sufficient information, and requires DG3 cost information in order to form an opinion.	No	
16-Apr-2012	Schedule	Rebaseline: With reference to the Target Milestone Schedule Rev B1, PCN-0052 "Delay in Early Works Construction Start" approved. This PCN resulted from the delay in Generation EA release and its impact on the planned commencement of the Muskrat Falls site infrastructure works, which were shifted from September 2011 to May 2012. The impact on First Power had not been confirmed at the time of approval of this PCN, but it was noted as likely slipping into Q3-2011.	Yes	Schedule
April-2012	EA	EIS for the Labrador-Island Transmission Link was submitted to the provincial and federal governments under the Environmental Assessment process. Based upon EA experience to-date, the EIS review process is forecast to take a further 12 months (i.e. April 2013). Note EA Release was finally achieved in November 2013, or ~18 months post EIS submittal which resulted in loss of the 2013 construction season as planned for the HVdc TL.	Yes	Schedule
18-Apr-2012	Strategy	LCP Master Package Dictionary (Rev B2), document no. LCP-SN-CD-0000-PM-LS-0001-01, issued for use. This document becomes the Control Basis for controlling change of all package scope and contracting strategy. DG3 Estimate is aligned with the contents of this document.	No	
19-Apr-2012	Procurement	Bid Receipt: RFP submissions received for CH0002 – Supply & Installation of Accommodations Complex. While providing preliminary, unconditioned numbers to check the DG3 estimate, a final award recommendation would not be available until mid-Oct-2012.	Yes	Cost



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
25-Apr-2012	Construction Milestone	Construction Start: Commenced early works program at Muskrat Falls on 25 April with the start of snow removal from South Side Access Road to prepare for right-of-way (ROW) clearing. The April Monthly Progress Report includes the statement <i>"Delay in start of South Side Access Road construction is having a 'knock on effect' for other early works packages"</i> which is reflective of the amount of uncertainty around key dates moving forward, every challenging the project schedule being presented.	Yes	Schedule
Spring-2012	Independent Review	Manitoba Hydro's DG3 Review: Manitoba Hydro's review of DG3 estimate and estimating process as part of the DG3 Review sanctioned by GNL. Referenced in MHI October 2012 report.	No	
25-May-2012	Procurement Milestone	Contract Award: South Side Access Road Construction Contract (CH0004) awarded to Liannu. This was the first major award.	No	
May-Jun-2012	SLI Performance	Gaining Alignment with SLI: Kick-off of Team Effectiveness Work Plan with Deloitte	No	
May-2012	Cost	Westney DG3 QRA which recommended Estimate Contingency and Management Reserve levels. Based upon this review the \$368 M contingency contained in the DG3 Control Budget was established.	Yes	Contingency Levels
May-2012	Scope Change	Scope Change – Happy Valley-Goose Bay (HVGB) Upgrades: Project Single Line Diagrams frozen, which include provision for the HVGB connection. From the May Monthly Progress Report: <i>"A decision was made to allocate approximately \$20 million of the Muskrat Falls switchyard cost estimate to the HVGB Upgrade Project; which is considered the net incremental cost on the base design to meet this requirement. A decision will be made as to how this is funded as the Project Team is continuing to move forward with the approved Single Line Diagram which reflects the inclusion of this upgrade requirement."</i>	No	
29-May-2012	Baseline	Following a series of workshops and issue of a draft document for comments, the document Construction Management Plan , document no. LCP-PT-MD-0000-CS-PL-0001-01, Rev. B1 is issued for use.	No	
31-May-2012	Procurement	Issued RFP for package "CH0006 – Construction of Bulk Excavation and Associated Civil Works" on 31 May 2012. Site visit with potential bidders held on 21-June.	No	
5-Jun-2012	Cost	Nalcor Energy 2012 Annual General Meeting (AGM) (www.nalcorenergy.com/?s=agm) Discussions occur re necessary and essential changes re layout and costs for Muskrat Falls. This is laying the foundation for DG3 Cost Estimate which was released later this year.	No	
June-2012	SLI Performance	SLI Performance: Given SLI's poor performance on the construction power scope, intense discussion occurring surrounding the optimal contracting strategy for the switchyards.	No	




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16-Jul-2012	Cost	<p>Final DG3 Estimate locked-down at \$6.2 B (2012 CDN \$) for 1-May-2012 going forward, excluding financing costs. Total historical cost up to 30-Apr-2012 is \$186 M. Cost is based upon starting site Early Works by June 2012, achieving a target First Power date of mid-2017, with Full Power in December 2017.</p> <p>Other key cost estimating parameters included:</p> <ul style="list-style-type: none"> • Contractor profit assumed at 5% • Contractor home office / corporate overhead assumed at 10% • No allowances for design growth to be included in the Base Estimate • CDN = 0.964 USD = 0.742 Euro <p>Estimate marketed as meeting the accuracy required of a Class 3 Estimate as defined by AACE International.</p> <p>Cost estimate presented to Nalcor Executive.</p>	Yes	Cost Targets
18-Jul-2012	FLG	Project Financing: Presentation made to Federal Government in support of Federal Loan Guarantee. Focus on the basis upon which the cost estimate has been prepared, including the maturing design definition since DG2.	No	
31-Jul-2012	Power Sales	Emera Deal: GNL News Release – Formal Agreements Signed Between Nalcor Energy and Emera Inc. for Muskrat Falls Development	No	
20-Aug-2012	FLG	Project Financing: Presentation of DG3 Costs made to Feds in support of Federal Loan Guarantee. Growth between DG2 and DG3 explained.	No	
27-Aug-2012	FLG	Project Financing: MWH Canada (MWH) selected as Independent Engineer (IE) for project financing activities.	No	
31-Aug-2012	Independent Review	<p>DG3 Independent Project Review (IPR) undertaken. Review indicates that <i>"LCP exhibits a degree of readiness for Decision Gate 3 that meets or exceeds Nalcor and industry requirements."</i></p> <p>DG3 IPR Team advises that they cannot comment on cost and schedule allowances indicated in the Project, only that best practice risk analysis processes were followed. Goes on to state that <i>"The IPR Team concurs with the expectations set by the LCP Project Execution and Risk Management Plans that adequate provisions for Management Reserve and Schedule Reserve be included in the Project Sanction costs and schedules."</i> The importance of such reserves were emphasized in the review session with Nalcor Executive.</p>	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
Aug-2012	Scope Change	Scope Change – MF Layout: PCN-0055 Muskrat Falls Spillway Configuration approved. This PCN was revised to capture the need for additional measures to ensure structural and sliding stability during construction of two rollways after impoundment to elevation 39 m.	Yes	Cost
12-Sep-2012	Scope Change	Scope Change – Temporary Camp: Decision made to move forward with securing a 300-person temporary camp from Manitoba Hydro in order to support winter 2013 construction activity and de-risk the bulk excavation program, whose timely completion drives all successor critical path activities. Total cost of \$15 M. Reference PCN-0080.	No	
20-Sep-2012	Procurement	Contract Award: Limited Notice to Proceed (LNTP) issued for Tower Steel supply for HVac TL	No	
28-Sep-2012	Procurement	RFP issued for package “CT0319 – Construction of 315kV HVac Transmission Lines (MF to CF)”. Four (4) proposals were received on 15-Jan-2013, while final award coming in Dec-2013.	No	
28-Sep-2012	Procurement	RFP issued for package “CH0007 – Construction of Intake, Powerhouse, Spillway and Transition Dams.” Four responses were received 16-Apr-2013.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
1-Oct-2012	Schedule	<p>Rebaseline: Target Milestone Schedule, document no. LCP-PT-ED-0000-EP-SH-0001-01 Rev. B2 is published, providing the list of schedule targets upon which the Project will be sanctioned.</p> <p><i>"The development of this Target Milestone Schedule for Decision Gate 3 (DG3) is predicated on a number of assumptions. These assumptions will change over time and this Target Milestone Schedule will need to be revised accordingly. They include:</i></p> <ul style="list-style-type: none"> <i>The environmental assessment process for the Labrador-Island Transmission Link project will be completed no later than the end of the first quarter of 2013.</i> <i>The environmental assessment process for the Maritime Link project will be completed no later than early in the third quarter of 2013.</i> <i>Project Sanction will occur at DG3 and is a pre-requisite for financial commitment required to proceed with major construction works, other than Early Works underway pre-DG3.</i> <i>The SOBI subsea cables can be installed in a single construction season.</i> <i>The Cabot Strait subsea cables can be installed in a single construction season.</i> <i>The supply and installation works for subsea cables on both the LIL and ML projects can proceed independently without affecting each other.</i> <i>Sufficient construction contractors and construction labour is available to execute the overland transmission works on the three separate projects (LTA, LIL and ML) within the required timeframes.</i> <i>Either the Labrador Transmission Assets or the Labrador-Island Transmission Link is required to commission the Muskrat Falls generating facility.</i> <i>Full Power from Muskrat Falls can only be delivered to the Island of Newfoundland after completion of the Labrador-Island Transmission Link as well as commissioning of the four (4) generating units at Muskrat Falls."</i> 	No	
1-Oct-2012	Cost	<p>DG3 QRA: Document "Decision Gate 3 Project Cost and Schedule Risk Analysis Report, document no. LCP-PT-ED-0000-RI-RP-0002-01 Rev B1" issued. Documents the basis of contingency used in the sanction decision process.</p> <p>Basis of QRA completed in May 2012 is:</p> <ul style="list-style-type: none"> Project Sanction – Sep-2012 LTA-LIL Ready – Jun-2017 MF First Power – Jul-2017 Full Power – Dec 2017 Base Capital Cost = \$5,472 million 	Yes	DG3 Cost and Schedule Targets




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		<p>(Note that these dates are largely consistent with those in Rev B2 of the Target Milestone Schedule.)</p> <p>Regarding Estimate Accuracy includes the statements:</p> <p><i>"Risk Assessment results are carefully considered in the determinations of both project contingency and any financial reserve levels as described in Section 12.4 of the Project Controls Management Plan, document LCP-PT-MD-0000-PC-PI-0001-01. Nalcor has elected to use a probabilistic estimating basis which will be used in line with the AACE International Recommended Practice 42R-08 using P50 as an expected cost for Cumulative Present Worth (CPW) modeling, with P10 as the low side and P90 as the high side basis used as a means to assess estimate accuracy." (p 8 – 9); and</i></p> <p><i>"Interpretation of these results indicates that the entire Base Estimate has an overall accuracy (P10/P90) in the range of -12% to +13%, which is well within the expectations of the targeted Class 3 estimate for a DG3." (p. 18)</i></p> <p>QRA concludes that a P50 estimate contingency of 7% should be sufficient, exclusive of external events (i.e. strategic risk exposure) and that MF Full Power range is 11 to 21 months (P25 to P75) beyond targeted Dec 2017 date. Schedule is driven by powerhouse concreting and weather. Key strategic risk center around labor availability and productivity. Concludes with the statement:</p> <p><i>"With consideration of the potential cost to mitigate the contributory risks as well as the residual risk exposure, the total financial exposure remains within the \$300 to \$600 million exposure identified at DG2; presently an expected value is approximately \$500 million. For the LCP, this Management Reserve would be funded by Contingent Equity from the Shareholder."</i></p>		
2-Oct-2012	Procurement	Award Recommendation: Nalcor Executive provided with DSP for award of Package CH0006 – Bulk Excavation with a recommended award value of \$129M. First major civil package to be awarded and within DG3 budget estimate, which raised confidence in the estimate.	Yes	Cost
3-Oct-2012	Schedule	Nalcor Executive Alignment Session: Detailed review of 2012 and forecasted 2013 commitments provided in order to maintain mid-2017 First Power.	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
10-Oct-2012	Shareholder	Shareholder Alignment: Material provided by LCP Project Team to support briefing note by Nalcor Executive to Premier on the rationale of cost increase between DG2 and DG3.	No	
11-Oct-2012	Sustaining Capital	AFE LCP-2012-02 approved at \$156.7M (\$621.7M cumulative) to provide sustaining capital to end of 2012.	No	
11-Oct-2012	Procurement	Award Recommendation: Recommendation for Award for package “CH0002 – Supply & Installation of Accommodations Complex – Muskrat Falls” approved. Estimated package value of \$110.8 M (\$68.5 k per room) vs. a DG3 estimate of \$65.9 M (\$43.8 k per room). This was a major concern.	Yes	Cost
12-Oct-2012	Project Financing	Rating Agency Presentations finalized for review with 3 Rating Agencies in the month of November.	No	
22-Oct-2012	Project Financing	Independent Engineer: Meetings were held in Boston, MA with MWH Canada as Independent Engineer (IE) for discussion as a start of their review of the DG3 Capital Cost Estimate and economic model. Largely same deck as provided to Federal Government on 20-Aug-2012.	No	
30-Oct-2012	Independent Review	<p>GNL News Release re issue of MHI’s report “Review of the Muskrat Falls and Labrador Island HVdc Link and the Isolated Island Options” which supports the recommendation of MF + Infeed as the preferred option to meet the long-term power needs of the Island.</p> <p>Noteworthy comments related to cost and schedule contained in the MHI’s report include:</p> <p>“Muskrat Falls Generating Station. The cost estimates, construction schedules, and design work undertaken by Nalcor and its consultants were reviewed as part of the Decision Gate 3 process. The proposed schedule is appropriate and consistent with best utility practices. Based on the amount of engineering completed and on the number of tenders for which estimates have been provided by potential suppliers, MHI considers the Decision Gate 3 cost estimate to be an AACE Class 3 and thus would be considered reasonable for a Decision Gate 3 project sanction. The Labrador transmission assets have also been appropriately designed and scheduled, and the cost estimate for them is consistent with good utility practice.” (p. 6)</p> <ul style="list-style-type: none"> “Comparing the Decision Gate 3 cost estimate evaluated on a cost-per-line-km basis with other similar projects under way in Canada, MHI finds the Muskrat Falls transmission line component costs are at a reasonable level and accuracy for this stage of the estimate. 	No	




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		<p><i>The costs for the transmission lines are within an AACE Class 3 estimate accuracy congruent to the requirements of Decision Gate 3.” (p 40)</i></p> <ul style="list-style-type: none"> <i>“The transmission line structures and routes selected for all transmission facilities are cost-effective considering the terrain, route, and climatic loading expected. From the review of the written documentation provided, design methodology, and information recorded in the Nalcor staff interviews, MHI has found that the Decision Gate 3 estimates for all transmission facilities were prepared in accordance with good utility practice and within an AACE International Class 3 level accuracy range.” (p. 49)</i> <i>From a review of the information provided, Nalcor has performed the design, scheduling and cost-estimating work for the Muskrat Falls Generating Station and the Labrador Transmission Assets with the degree of skill and diligence required by customarily accepted practices and procedures utilized in the performance of similar work. The current Lower Churchill Project design, schedules and cost estimates are considered consistent with good utility practice. The design, construction planning, cost estimate and schedule are comprehensive and sufficiently detailed to support a Decision Gate 3 project sanction and appropriate for input into a cumulative present worth analysis. (p. 56)</i> 		
1-Nov-2012	LR	The MF Project Agreement has been ratified and was executed by the Muskrat Falls Employers’ Association Inc. and the Resource Development Trades Council (RDTC). The Special Project Order (“SPO”) was granted June 17, 2013.	No	
6-Nov-2012	Procurement	Contract Award: Package CH-0006 “Bulk Excavation and Associated Civil Works” was awarded to IKC-ONE with a provision for mobilization only pre-Sanction.	No	
15-Nov-2012	Procurement	RFP Proposals Received for Package CH0024 – Reservoir Clearing.	No	
15-Nov-2012	Schedule	<p>Nalcor Executive briefing of 2013 Capital Budget requirements, totaling some \$1B. Predicated upon key assumptions, including:</p> <ul style="list-style-type: none"> Project Sanction – Q4-2012 CH0006 Mobilization – Nov 2012 LIL EA Release – March 2013 Maritime Link EA Release – July 2013 	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
28-Nov-2012	Shareholder	<p>Decision Gate 3 Decision Support Package for Nalcor Board of Directors.</p> <p><u>Noteworthy Points re Cost and Schedule</u></p> <ul style="list-style-type: none"> • <i>“For the Interconnected Island Option, the detailed estimates were prepared over a 12 month period by a Nalcor led team with representation from SNC Lavalin and various external experts.” (p. v)</i> • <i>The new DG3 or sanction quality estimates are considered to be commensurate with the requirements for a Class 3 estimate as defined by the Association for the Advancement of Cost Engineering (AACE) International, and have an expected accuracy range of plus 10% to minus 10%. This range is reasonable given that more than 50% of project engineering is now complete versus the approximate 5% engineering completed at DG2. (p. vi)</i> • <i>“The project schedule for the Interconnected Island Option will result in First Power from Muskrat Falls in 2017. The Labrador Island Transmission Link will also be available in 2017, which will allow the displacement of power from the Holyrood plant with less expensive Labrador power, which will be of benefit to rate payers.” (p. vii)</i> <p>The DSP makes passing reference to schedule risk in the statement:</p> <ul style="list-style-type: none"> • <i>“Further challenges to the schedule exist because of tight weather windows for certain activities, such as powerhouse construction, cofferdam completion and river diversion. Contingency plans are being considered and will be employed should these risks materialize.” (p. vii)</i> 	No	
29-Nov-2012	Procurement	<p>Contract Award: Awarded Contract LC-SB-003 “SOBI Submarine Cable Design, Supply and Installation” to Nexans at a value of \$146.1M.</p>	No	
30-Nov-2012	Project Financing	<p>Federal Loan Guarantee: GNL News Release – Premier, Prime Minister Announce Agreement on Loan Guarantee</p>	No	
3-Dec-2012	Cost	<p>Decision Gate 3 Basis of Estimate, document no. LCP-PT-ED-0000-EP-ES-0001-01 Rev B1 issued for use.</p>	No	
7-Dec-2012	Procurement	<p>RFP Issued for package “CH0032 – Supply and Installation of Powerhouse Hydro-mechanical Equipment” with proposals received on 16-Apr-2013.</p>	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
Dec-2012	SLI Performance	<p>Team Integration: Push towards integrated team continues in order to address performance and experienced resources short-fall within SLI. In the December 2012 Monthly Progress Report the following statements were noted:</p> <ul style="list-style-type: none"> “Continued evaluation and implementation of plans for integration of key areas of the Project Delivery Team, in order to ensure leverage efficiencies and ensure organizational effectiveness. During December an integrated Quality Team was established and is being led by a single LCP Quality Manager. Re-organization and creation of an integrated Project Delivery Team to address the execution requirements of the Project, including focus attention towards package delivery.” <p>It is also noted that Nalcor has successfully executed a services agreement with Hatch for the provision of technical expertise to supplement the capacity of both itself and SNC-Lavalin. This is seen as a strategic risk-reduction measure.</p>	No	
17-Dec-2012	Shareholder	<p>Project Sanction occurs. Control Budget set at \$6.2 B (2012 CDN\$), excluding any management reserve (contingent equity), or allowances for strategic risk exposure. Sanction is predicated upon a target schedule of First Power by mid-2017 and Full Power by end of 2017, including the critical pivot point of river diversion in 2015. Sanction premised upon LIL being able to move power from Labrador prior to MF being ready.</p> <p>It should be noted that by this point in time, the capital cost estimate forming the basis of DG3 was prepared ~ 12 months earlier (Jan 2012 basis).</p>	No	
21-Dec-2012	Procurement	<p>RFP Issued for Package CD0501 “Supply and Installation of Converter Stations and Transition Compounds” was released to bidders. Three (3) proposals were received on 26-Jun-2013, or ~ 6 months post issue.</p>	No	
Dec-2012	Procurement	<p>Contract Award: Full Award of Contract CH0002 “Supply and Installation of Accommodations Complex” to Liannu. Approved PCN-0119 Muskrat Falls Accommodations Complex - Cost Growth \$45,145,649.</p>	Yes	Cost




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02-Jan-2013	Procurement	Contract Award: Full Award of Commitment Package CH0030 – Supply & Installation of Turbines and Generators to Andritz Hydro Canada Inc. Contract value at award was well within the DG3 estimate. No red flags or concerns.	No	
Jan-2013	External	In January 2013, a series of events on the system of Newfoundland and Labrador Hydro (NLH) caused extensive outages primarily for customers on the Avalon Peninsula.	Yes	Scope Changes – TL
15-Jan-2013	Procurement	Bids Received for package "CT0319 – Construction of 315kV HVac Transmission Lines (MF to CF)". Four (4) proposals were received. Final award in Dec-2013.	Yes	Cost
16-Jan-2013	Shareholder	GNL Minister of Natural Resources: Tom Marshall replaces Jerome Kennedy as Minister of Natural Resources. Kennedy held the position for ~ 14.5 months (Oct 28, 2011 to Jan 13, 2013).	No	
25-Jan-2013	-	The Association for Advancement of Cost Engineering (AACE) International releases its Recommended Practice 69R-12: Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Hydropower Industry. This new RP provides much need clarity on the degree of estimate accuracy that can be expected at Project Sanction. Indicates that a P50 estimate, inclusive of contingency, can be expected to have an accuracy of -10% to -20% on the low side, and +10% to +30% on the high side, however reaffirms that the accuracy of an estimate must be determined through a risk assessment.	No	
28-Jan-2013	Milestone	Collective Agreement: Ratification of the Lower Churchill Project Transmission Construction Collective Agreement between Lower Churchill Transmission Construction Employers' Association Inc. and International Brotherhood of Electrical Workers (IBEW) and IBEW Local Union 1620. The Special Project Order ("SPO") was granted June 17, 2013.	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
Jan-2013	SLI Performance	<p>Team Integration: From the Jan-2013 Monthly Progress Report: Regarding the organization, the following statements are made:</p> <ul style="list-style-type: none"> “Continued evaluation and implementation of plans for integration of key areas of the Project Delivery Team, in order to ensure leverage efficiencies and ensure organizational effectiveness. During January an integrated Information Management / Document Control Team was established, followed thereafter by an Integrated Project Delivery Team for Muskrat Falls Generation (Component).” “Continued Re-organization and creation of an integrated Project Delivery Team to address the execution requirements of the Project, including focused attention towards package delivery. Deloitte are expected to be reengaged in Q2 to support the re-organization efforts through team effectiveness initiatives.” <p>Regarding schedule the following is noted:</p> <ul style="list-style-type: none"> “The current critical path for the MF Generation project includes the bulk excavation works, river diversion, north dam construction, and unit commissioning. At the current time, the Labrador Transmission Assets and Labrador-Island Transmission Link projects, while having their own critical paths, are not on the critical path for the overall project.” “Pending project changes (primarily related to the North Dam design) will affect the critical path for the MF Generation.” 	No	
4-Feb-2013	Rebaseline	<p><u>Powerhouse Schedule Concerns and Decision to Shift Target First Power to end 2017</u></p> <p>Nalcor Executive briefing on concerns expressed by CH0007 bidders re the aggressiveness of the project schedule and cost premium that would be born if the dates are maintained. At this point, the original award date had slipped to the sanction and financing delay, but the Project was trying to hold firm on the end date. Alignment with Nalcor Executive achieved on CH0007 as a hybrid target price contract, and amending key dates. First Power will still be in 2017 (as thus consistent with public messaging to-date), but Full Power will shift to mid-2018 and river diversion to 2016. LTA and LIL will have a targeted completion of mid-2017 in order to bring CF power in to offset Holyrood generation. This effectively becomes the schedule that is set for the next several years, until the June 2016 Update and overall re-baseline.</p> <p>PCN-0137 approved in March 2013 approving this schedule logic change.</p>	Yes	Schedule
25-Feb-2013	Schedule	<p>Integrated Project Schedule (IPS) Rev B1 issued (reference document no. LCP-PT-MD-PC-SH-0001-01) reaffirming target dates, including mid-2017 First Power from Muskrat Falls. At this point DG3 had occurred, while the schedule critical Bulk Evacuation Works had commenced under package C H 0 0 0 6 .</p>	No	



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3-Feb-2013	Scope Change	Approved PCN-0067 Soldiers Pond Synchronous Condensers Rating Change from 150 to 175 MVAR. With increased rating of 175 MVAR each for 3 HISC at Soldiers Pond, there is no need to convert the Holyrood Units 1&2 to Synchronous Condensers. Capital and O&M cost savings of not converting and operating Holyrood Units 1&2 as Synchronous Condensers more than offsets the increased cost of 175 MVAR units from 150 MVAR units. Net savings estimated at \$36.4 million which is added to LIL Contingency.	No	
21-Mar-2013	Procurement	Contract Award: Award of Commitment Package CT0341-001 "315 kV HVac Transmission Line ROW Clearing Sections 1 & 2" to Great Western Forestry Inc. PCN-0132 notes that due to market conditions and the received bid prices, the contract price was over budget. The bids received from the market, besides that of the bid received from the selected contractor, were 3- 5 times more expensive than the budget. The selected contractor did not adequately understand the scope of work outlined so multiple revisions and assessments were needed to reach the agreed contract value of approximately \$33 million, after escalation and growth costs were added.	No	
8-Mar-2013	Scope Change	Scope Change: PCN-0100 is approved selecting the final conductor for the HVdc line. Re-optimization of HVdc Conductor – Use of the 3633 kcmil 1841- A1/S1A- 110/7 ACSR conductor will result in tower height reduction of at least 1.5m as compared to the original ASC conductor.	Yes	Cost – Reliability, 2016 Conductor Prouding
13-Apr-2013	Construction Milestone	The Temporary Construction Camp was occupied by the first group IKC- ONE employees.	No	
16-Apr-2013	Procurement	Bid Receipt: RFP responses received for Commitment Package CH0007 – Construction of Intake, Powerhouse, Spillway and Transition Dams. Target award set at 29-July. Actual was September.	Yes	Cost
16-Apr-2013	Procurement	Bid Receipt: RFP responses received for Commitment Package CH0032 – Supply & Installation of Powerhouse Hydro-Mechanical.	Yes	Cost
23-Apr-2013	Project Financing	GNL News Release – Muskrat Falls Project Receives Triple A Rating from Credit Agency (Moody's). Project management, contingency strategy, risk management and project organization were all key considerations when rating agency awarded Triple A rating.	No	
8-May-2013	Independent Review	DG3 Cost Review: Presentation made to Lummus on DG3 Costs in support of Maritime Link's Nova Scotia Utility and Review Board (UARB) process. Largely the same presentation as provided to the Feds on 20-Aug- 2012.	No	



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24-May-2013	Procurement	Award Recommendation: Nalcor Executive provided with DSP for award of Package CH0005 – Site Utilities to Liannu recommended award value of \$38.8M. Recommended combined with CH0002 – Supply & Installation of Accommodations Complete, with net total \$149.5M.	No	
5-Jun-2013		Nalcor Energy 2013 AGM (www.nalcorenergy.com/?s=agm) – Long term (35+ years) for Nalcor and the Energy Warehouse driven by Energy Plan.	No	
17-Jun-2013	Collective Agreement	Collective Agreement: GNL News Release – Special Project Orders Issued for Muskrat Falls Project. PCN-0153 “Impact of MF Collective Agreement on Some Services Packages” approved on 18-Jun-2013, indicating that the direct cost impact of inclusion of unplanned trades within the Collective Agreement is estimated at \$16M.	No	
21-Jun-2013	EA	EA Release received from GNL for Labrador-Island Transmission Link. Release from Canada pending. LIL effectively 14 months delayed.	Yes	Schedule delay for LIL construction
26-Jun-2013	Procurement	RFP proposals – 3 off, were received for Package CD0501 “ Supply and Installation of Converter Stations and Transition Compounds. ” Bids were well beyond the DG3 budget (double), resulting in decision to complete a value-engineering exercise and “rebid” to the 3 RFP respondents with updated pricing being provided on 21-Nov-2013.	Yes	Cost
Jul-2013	Construction Milestone	1 million hours Lost Time Incident (LTI) free achieved	No	
8-Jul-2013	Construction Milestone	A forest fire near Gull Island began on 08- Jul- 2013 and burned approximately 2,400 hectares of land. The Trans Labrador Highway between Churchill Falls and Happy Valley was shut down. LCP Incident Command was implemented and a Helicopter has been provided to support activities executed by GNL – Natural Resources Department to control the fire. No physical loss occurred for LCP only some lost time on the part of Contractors. The incident Command was demobilized on 23-Jul-2013.	No	
16-Jul-2013	Procurement	RFP issued for package CD0502 “Construction of AC Switchyards.” Bids were received on 25-Nov-2013 and hence not available for Financial Close, but for consideration in AFE Rev 2.	No	
31-Jul-2013	Procurement	RFP issued for package CD0534 “Supply and Installation of Synchronous Condensers at Soldier’s Pond.” Bids were received on 30-Jan-2014 and hence not available for Financial Close, but for consideration in AFE Rev 2.	No	
10-Aug-2013	Construction Milestone	LCP first LTI occurs. Liannu worker was holding a piece of lumber while his co- worker used a circular saw to make a cut. The saw kicked/jumped, cutting the fingers on the hand of the worker holding the wood.	No	



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15-Aug-2013	Construction Milestone	Commenced forestry operations for ROW clearing for the HVac TL 315 kV (CT0341-001) with Great Western Forestry (GWF). Baseline plan was 26-Apr-2013.	No	
27-Aug-2013	Construction Milestone	Commenced forestry operations for Reservoir Clearing (CH0024) with Johnson Construction Ltd. (JCL)	No	
30-Aug-2013	Procurement	With consideration of the performance of SNC-Lavalin, including for the MF construction power scope, following extensive deliberation and analysis a final decision was made with the approval of PCN-0163 to adjust the contract strategy for AC Switchyards from EPCM to EPC – It is expected that by having the Alternating Current (AC) Switchyards scope under one EPC contractor the efficiency of the coordination effort will be enhanced by minimizing the level of interface between packages. Previously this scope was to be delivered through two packages: 1) PD0505, an equipment package covering pre-purchased switchgear, related equipment, and control buildings and 2) CD0502, a civil/electrical installation package which assumed SLI would be the designer of record (engineering) and covers building civil/structural/architectural, and yard civil. The materials supplied under the equipment package (PD0505) were to be provided free issue to the CD502 contractor. Net cost impact of this change was noted in the PCN as \$27M.	No	
3-Sep-2013	Procurement	Award Recommendation: Nalcor Executive provide with DSP for award of Package "CT0319 – Construction of 315 kV HVac Lines (MF to CF)" to Valard at estimated value of \$250 M to \$260 M.	Yes	Cost
24-Sep-2013	Procurement		Yes	Cost




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12-Sep-2013	Cost	<p>Briefing to Nalcor Executive revealing that the FFC was now at \$7.0B. Growth largely attributed to market conditions (i.e. heated contractor market). This occurs ~9 months post Sanction.</p> <p><u>Key Messages:</u></p> <p><i>"We are forecasting the FFC to be the range of ~\$6.7 to \$6.95B (8 to 12% beyond the DG3 estimate).</i></p> <ul style="list-style-type: none"> • <i>High-side FFC includes some growth allowance</i> • <i>Low-side FFC assumes contract awards as per estimate and minimal post award changes</i> <p><i>Two key drivers for FFC increase:</i></p> <ul style="list-style-type: none"> • <i>View on labor performance and productivity achievable within the Province for civil works</i> • <i>Contracting market conditions driving margins"</i> <p><i>"Bid Prices incl. some amount of Strategic Risk Exposure"</i></p> <p>This presentation does not indicate that Project Costs could exceed \$7.0B, but could be as low as \$6.8B if planned mitigations are successful.</p>	Yes	Public Communications re Cost Growth
9-Oct-2013	Shareholder	<p>GNL Minister of Natural Resources: Derrick Dalley replaces Tom Marshall as Minister of Natural Resources. Marshall held the position for ~ 9 months (Jan 13, 2013 to Oct 9, 2013).</p>	No	
9-Oct-2013	Procurement	<p>Nalcor Media Release advises of the selection of the preferred bidder for CH0007 – Construction of Intake, Powerhouse, Spillway and Transition Dams – Astaldi Canada Inc. Focus now directed towards concluding final negotiations.</p>	No	
31-Oct-2013	Construction Milestone	<p>Riverside Cofferdam Completed – As scheduled. Key pivot point in order to reduce risk of powerhouse area being flooded during spring, thereby impeding construction.</p>	Yes	Positive – key milestone achieved
31-Oct-2013	Procurement	<p>Award recommendation approved for "CH0032 – Supply and Installation of Powerhouse Hydro-mechanical Equipment" with an forecasted total value approximately 50% greater than the DG3 estimate. PCN-0218 documents the requirement to contingency drawdown to support the award.</p>	Yes	Cost
11-Nov-2013	Cost	<p>Independent Engineer provided with update on the Project Costs and are advised that capital costs have increased by \$300 M (~5%), which is offset by financing savings. Advised that 2017 First Power is aggressive but still achievable. For the first time, overall cost growth is broken in 3 categories:</p> <ul style="list-style-type: none"> • <i>">2/3 of total cost growth used in investments related to Construction Productivity and Performance Enhancement in order to mitigate construction execution challenges</i> • <i>Significant investment in design enhancements to improve system reliability</i> • <i>Market Conditions reflective of current buoyant local / national market."</i> 	No	

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14-Nov-2013	Procurement	Non-Disclosure Agreement (NDA) executed with Quanta Services to explore options for HVdc TL	No	
19-Nov-2013	Construction Milestone	Start of HDD campaign at SOBI.	No	
25-Nov-2013	Procurement	RFP proposals received for package CD0502 "Construction of AC Switchyards." Analysis continued with a short-list being approved on 23-Apr-2014 and final award at the end of July 2014.	Yes	Cost
15-Nov-2013	Procurement	Great Western Forestry agreement CT0341-001 terminated following non-cure under default conditions. First notice of default issued on 7-Oct-2013 with second issued on 25-Oct-2013.	Yes	Cost
30-Nov-2013	Construction Milestone	Bulk excavation works for the powerhouse and spillway structures (CH0006) was completed; the contractor completing minor deficiencies and has commenced demobilization. The work was completed on budget and on schedule.	Yes	Positive – key milestone achieved
23-Nov-2013	Procurement	<p>Bids Received: Revised bid prices received for Package CD0501 "Supply and Installation of Converter Stations and Transition Compounds." Analysis continued through Q1-2014 wherein an award recommendation for Alstom was approved.</p> <p>Note that all three bidders used an international rule of thumb of two-thirds of the price for manufacture and installation and one-third for civil works. However this was flipped for this bid by all three bidders with the civil works accounting for two-thirds of the bid price. The reason cited by the civil sub-contractors was their experience of poor productivity on Long Harbour and other projects.</p> <p>Significant and creative measures were selected in order to reduce overall cost exposure beyond DG3, including an agreement that all civil works would be on Labrador-Island Link LP paper, thus not attacking Alstom's mark-up and profit. Alstom's price of \$463.7 M (excl. foreign exchange (fx) gains/losses) was the lowest of all three bidders.</p>	Yes	Cost



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
26-Nov-2013	EA	<p>EA Release: Environmental Assessment Release received from Government of Canada for Labrador-Island Transmission Link.</p> <p>Note that registration occurred in Jan 2009, thus process has taken 54 months as compared to DG3 assumption that EA release would occur no later than April 2013.</p> <p>Note that this represented a significant delay in release from that originally planned at DG2 and prior to DG3 which impacting the start of work for LIL ROW Clearing, effectively losing the 2013 construction season, thereby providing only 3 years rather than the envisioned 4 years to construct the HVdc TL. This compressed time period resulted in the need to make strategic choices of how to best undertake the construction of the HVdc line. Mitigation strategies were being considered, including partnering with Quanta under an alternate-form contract.</p>	Yes	Significant schedule slippage
29-Nov-2013	Procurement	<p>Contract Award: Full release of Agreement CH0007 – Construction of the Intakes, Powerhouse, Spillway and Transition Dams to Astaldi Canada Inc. The Contractor has been working on front end planning, procurement and other work preparations under a Limited Notice to Proceed since 24-Sep-2013. PCN-0209 was approved in early January 2014 releasing \$323 million of project contingency to support the package award.</p>	No	
9-Dec-2013	Procurement	<p>TL Strategy: Nalcor Executive briefed on the status of CT0319-001 award and ongoing discussions with Quanta related to the HVdc line</p>	No	
10-Dec-2013	Project Financing	<p>FLG: GNL News Release – Premier Announces Completion of Federal Loan Guarantee and Financing</p>	No	
16-Dec-2013	Procurement	<p>Contract Award: Package CT0319-001 Construction of 315kV HVac Lines (MF to CF) between LIL and Valard Construction LP with a forecasted value approximately 30% greater than the DG3 estimate. Major construction activities are planned to start in May with mobilization for camps and access activities planned to start in late January or early February. PCN-0222 (dated 13-Dec-2013) was approved to facilitate the availability of funding to support the award.</p>	Yes	Cost
19-Dec-2013	Procurement	<p>Contract Award: Execution of Agreement CH0032-001 Supply and Install of Powerhouse and Spillway Hydro-Mechanical Equipment between Muskrat Falls Corporation (MFC) and Andritz Hydro Canada. The contract award was approximately 50% greater than the DG3 estimate. PCN-0209 (dated 12-Dec-2013) releases \$52.6 million to facilitate award of the package.</p>	Yes	Cost
Dec-2013	Construction Milestone	<p>Muskrat Falls Switchyard Earthworks was completed in December-2013; site access by EPC contractor not required until at least September 2014.</p>	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT?	COMMENTS
Dec-2013	Project Financing	Financial Close occurs at \$6.53B , which is consistent with briefings provided to IE and Canada in November 2013. The \$6.5 B was established as the threshold to determine cost overruns going forward and application of pre-funded equity payments to be made by the GNL.	Yes	Financing level
31-Dec-2013	Strategy	<p>Strategy Changes: From the LCP December 2013 Monthly Progress Report, the following are listed as key priorities:</p> <ul style="list-style-type: none"> • <i>"Management is continuing to evaluate both contracting/delivery models and risk transfer strategies in an effort to minimize cost exposure to the Project as a result of the exceedingly high Market price conditions for construction works."</i> • <i>"Value engineering efforts are underway in an effort to reduce construction complexity where possible."</i> <p>It should be noted that at this point the key HVdc Specialties RFP responses were under review, including: CD0501 - Supply and Install of Converters and Cable Transition Compounds, and CD0502 - Construction of AC Substations & Synchronous Condensers Facilities.</p>	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
4-Jan-2014	Independent Review	<p>Dark NL: Major power outages occur on the Island of NL due to a lack of supply available to NF Power from NL Hydro. PUB launches Liberty Review as a result of 'DarkNL.'</p> <p>From Liberty's 2016 Report (page 1): <i>"The IIS experienced significant outages in 2013 and 2014. In January 2013 a series of events on the system of Newfoundland and Labrador Hydro ("Hydro") caused extensive outages primarily for customers on the Avalon Peninsula. The following year in January 2014, conditions on Hydro's system caused two series of outages from January 2 - 8 with the first due to a shortage in availability of Hydro's generating resources and the second due to transmission equipment failures. Rotating power outages were implemented commencing on January 2 to address the generation deficit and as the utilities were recovering from these outages, equipment failures on Hydro's transmission system caused additional widespread uncontrolled outages and another series of rotating outages."</i></p>	Yes	TL Reliability
20-Jan-2014	Organizational Effectiveness	First 90 Days Action Plan reviewed with LCP organization. Key focus (i) safety, (ii) controlling costs and seizing all opportunities, (iii) organizational effectiveness.	No	
24-Jan-2014	Shareholder	Leadership Change: End of Premier Kathy Dunderdale Term as Premier of Newfoundland and Labrador. Incoming Premier Tom Marshall.	No	
28-Jan-2014	Construction Milestone	Horizontal directional drilling of the first hole at Shoal Cove, the Newfoundland side of the SOBI crossing successfully completed.	No	
26-Feb-2014	Cost	Briefing deck on Capital Cost Drivers reaffirms \$7.0B FFC. Includes key message <i>"The Project has been very aggressive in controlling costs. DG3 contingencies were deliberately aggressive to ensure the team and contractors maintained a strong cost focus."</i>	No	
Jan to Mar-2014	Cost	Both the Soldiers Pond Switchyard and Churchill Falls Switchyard are currently undergoing the process of reengineering in order to optimize design of the area and reduce cost. CD0502 RFP respondents are provided with updated designs / layouts from value engineering in order to produce new pricing.	No	




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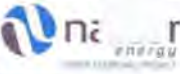
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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
4-Feb-2014	Procurement	<p>Nalcor Executive briefing on the contracting strategy for HVdc TL. Available options and recommended way-forward. Recommends the following to Nalcor Executive:</p> <ul style="list-style-type: none"> • <i>"Sole-source negotiations with Quanta for entire TL construction scope</i> <ul style="list-style-type: none"> ○ <i>Least total risk exposure for Nalcor</i> • <i>Optimize framework for ROW and Access construction</i> <ul style="list-style-type: none"> ○ <i>EOI for ROW with Valard managing</i> ○ <i>Access – Valard self-perform + EOI for portions</i> • <i>Explore commercial models with Quanta</i> <ul style="list-style-type: none"> ○ <i>Opportunities on switchyards</i> ○ <i>Opportunity sharing on productivity</i> ○ <i>Strategic alliance with Quanta's for comm. and start-up"</i> <p>Nalcor Executive concurs with recommendation.</p>	No	
20-Feb-2014	Procurement	RFP issued for package CH0008 "North Spur Stabilization Works" and closed on 12-Jun-2014 with three (3) proposals being submitted.	No	
28-Feb-2014	Astaldi	<p>Astaldi's Performance: Astaldi's slow ramp-up is referenced in the LCP February Monthly Progress Report, flagging the earlier challenges being experienced.</p> <p><i>"The slow ramp-up of CH0007 Contractor Astaldi Canada Inc. due to the availability of key personnel and other issues continued to cause delays in construction during the period, however, the Contractor has committed to address the issues and have agreed with the LCP Team to maintain regular dialogue at the Senior Management and Steering Committee level to ensure progress is being made."</i></p>	No	
Mar-2014	Construction	<p>Mackenzie River Bridge Overtops – Due to the unusual ice conditions in the Churchill River and the subsequent high-water levels, construction of an emergency water crossing at the Muskrat Falls Site access road was imminent following submerge of the McKenzie River Bridge. Construction of a new temporary bridge is underway to avoid risk of site access disruption that could occur during spring snowmelt conditions. Design of the permanent river crossing planned for construction in 2014 is being re-evaluated in light of these unanticipated environmental conditions, and use of the new temporary bridge as the permanent river crossing is under evaluation (from LCP March 2014 Monthly Progress Report).</p>	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
20-Mar-2014	Procurement	LITP Board of Directors: Presentation made on HVdc TL contracting strategy prior to meetings scheduled with Quanta on 28-March. Includes a recommendation of <i>“Continue with Negotiated Agreement with Quanta – Valard with the intention of Awarding a contract for the entire HVdc TL.”</i>	Yes	
28-Mar-2014	Procurement	TL Strategy: MOU executed between LCMC, Quanta Services, and Valard re HVdc TL . Price for construction of the HVdc line expected to be ~\$820 million exclusive of ROW Clearing and Access which collectively an estimate of \$273.3 million, but endeavor to work together in order to reduce.	Yes	
31-Mar-2014	Procurement	LNTP Issued: In order to maintain a 2017 First Power, a Limited Notice to Proceed issued for Package CD0501 “Supply and Installation of Converter Stations and Transition Compounds” to Alstom Grid. Total package estimated value, inclusive of the civil works scope that would be contracted directly by LITP, but managed by Alstom Grid (reference PCN-0307), and all forecasted growth allowances.	Yes	
15-Apr-2014	Project Financing	First IE Report: Nalcor Energy publicly released the independent engineer’s report on the Muskrat Falls generation station, the Labrador Transmission Assets and the Labrador-Island Link (Muskrat Falls Project), prepared by MWH Canada Inc. (MWH) for the Government of Canada in November 2013. Note that this is first IE report released.	No	
Apr-2014	Construction	Churchill Falls Camp ready for occupation. Initial occupation by JCL under CT0341-002.	No	
Apr-2014	Construction	Soldier’s Pond site development commences with HJ O’Connell.	No	
05-May-2014	Construction	MF KDR opens for business.	No	
May-2014	Procurement	PT-0330 – HVdc Tower Supply – In order to reduce risk of non-availability of material, an agreement is reached between Jyoti Americas and its parent Jyoti Structures to move significant amounts of tower steel production from Conroe, TX to Dubai under Gulf Jyoti.	No	
23-May-2014	Cost	AFE Rev 1 and Management Outlook on project cost provided to Nalcor Executive. Indicates that while the requested AFE is \$6.99B, the short-term management outlook is \$7.27B, while the longer-term outlook expected to be realized at the end of 2016 is \$7.501B (to account for Owner’s Team costs driven by schedule delays). At this point in-time, Astaldi are still expected to complete the scope within the labour maximum (LMax) amount, while no additional provisions made to costs to cover exposure.	Yes	
27-May-2014	Construction	First Tower Assembled on HVac Line under CT0319-001.	No	
4-Jun-2014	Shareholder	Nalcor Energy 2014 AGM (www.nalcorenergy.com/?s=agm)	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
10-Jun-2014	Procurement	RFP Issued: RFP for package “CH0031 – Supply & Installation of Mechanical and Electrical Auxiliaries (MF)” issued. Award would not occur for 3 years in July 2017 which is an outlier for the overall project procurement process. Three (3) Bids were received on 22- Jan- 2015.	No	
26-Jun-2014	Cost	Nalcor Briefing to the public on LCP Progress and advise that costs have grown to \$6.99B. This is the first rebaseline since DG3 Sanction (~18 months earlier) when costs were announced at \$6.2 B. Note that this same number was provided to Nalcor Executive in briefing made 9 months earlier in Sep-2013. \$214 M contingency is included in the \$6.99 B. <i>“External market pressures, combined with strategic investments to enhance system reliability, operation and productivity throughout construction, have resulted in an updated capital cost forecast for the project of \$6.99 billion.”</i>	Yes	
Jun-2014		AFE Rev 1 approved at \$6.99 B (~10 months following notification that FFC was at \$7B) and IPS was re-baselined (Rev 2). The LCP June Monthly Progress Report (p. 20) notes the following re progress and schedule: <ul style="list-style-type: none"> • “Planned progress = earned progress, Planned dates = forecast dates • Period planned dates and period progress reflect the result of the re-baseline not the period results • Current forecast for the availability of the LTA for power transmission is 18-May 2017, 2 days earlier from last month. • Current forecast for the availability of the LIL for power transmission is 03-Oct-2017, a 30 day delay from last month. • Current forecast for the availability of first power from Muskrat Falls remains 10-Dec-2017, 20 days earlier than rebaseline, and no change from last month. • There are no delays impacting the overall project critical path. • The critical paths for the three projects (MF, LTA and LIL) remain unchanged and the forecast completion for First Power is still maintained for December 2017. • Overall project construction progress is 17.4%” 	No	
Jun-2014	Procurement	Contract Award: Full award of Contract “CD0501 – Supply and Installation of Converters and Cable Transition Compounds” was awarded, following a Limited Notice to Proceed (LNTP) which had been previously entered into March 2014. PCN-0258 approved in June 2014 to release contingency to facilitate the full award.	Yes	Cost

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
Jun-2014	Construction	Commenced HVdc ROW Clearing and Access Works on the first 30 km of the HVdc Transmission Line under CT0327-006 with SFR.	No	
10-Jul-2014	Project Change	Strategy Change: PCN-0148 recommending the change from an EPCM to an EPC package strategy for synchronous condensers was approved.	No	
31-Jul-2014	Procurement	<p>LNTF Issued: Limited Notices to Proceed (LNTF) issue for CD0502 (Construction of AC Substations), and CD0534 (Soldiers Pond Synchronous Condensers).</p> <p>Package CD0502 was awarded at \$270.2 M, while the AFE Rev 2 budget was \$287 M (DG3 package value of \$252 M).</p> <p>Package CD0534 was awarded at \$164.5 M, while AFE Rev 2 budget was \$164.5 M (DG3 package value of \$80.7 M).</p>	Yes	Cost
31-Jul-2014	Shareholder	GNL News Release – GNL’s MF Oversight Committee (OC) Releases First Report on the Muskrat Falls Project (up to the period ending 30-Jun-2014). The report includes extensive details on the oversight / governance framework for the Project, including the mandate of GNL’s Oversight Committee.	No	
1-Aug-2014	Procurement	RFP issued for package “CH0009 – Construction of North and South Dams” with bids received on 22-Oct-2014. While award was planned for Dec-2014, it was delayed due to schedule uncertainty related to river diversion due to Astaldi’s lagging performance, as well as to provide opportunity to complete a value engineering / cost optimization exercise given that bid prices were ~50% greater than available budget. Final award recommendation would not be available until July 2015.	No	
8-Aug-2014	Procurement	<p>Contract Award of Package “CT0327-001 – Construction of 350kV HVdc TL (MF to SP)” to Valard with an award value of \$809 million. Per the Recommendation for Award, total estimated value of the \$1,057 million inclusive of a targeted value of \$200M for ROW Clearing and Access Works. At the point in time clearing had been completed for the first 30km and the balance to km140 was being executed by SFR under CT0327-010. No other awards.</p> <p>Concurrently PCN-0094 (Rev 2) – Budget Revision on 350 kV HVdc Lines Construction was approved drawing down a contingency of \$123.8 million, and PCN-0317 – HVdc TL ROW Clearing and Access Execution Strategy Change were approved.</p>	Yes	Cost
17-Aug-2014	Construction	First structural concrete placed at Muskrat Falls Spillway.	No	
28-Aug-2014	Construction	Completion of 6 and final HDD borehole for Strait of Belle Isle marine cable crossing.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
Sep-2014	Construction	Completion of LTA ROW Clearing under CT0341-002 (JCL).	No	
26-Sep-2014	Shareholder	Leadership Change: End of Premier Tom Marshall Term as Premier of Newfoundland and Labrador. Incoming Premier Paul Davis.	No	
14-Oct-2014	Construction	First HVac Tower Erected by Valard under Agreement CT0319-001.	No	
Oct-2014	Construction	CD0503-002 - Construction of Earthworks- Soldiers Pond: All construction complete.	No	
07-Nov-2014	Procurement	Contact Award: Award of Commitment Package CD0502 – AC Switchyards to Alstom Grid.	No	
11-Nov-2014	Project Financing	IE Update: Project Update presentations provided to Independent Engineer	No	
14-Nov-2014	Procurement	Contact Award: Award of Commitment Package “CD0534 – Supply & Installation of Synchronous Condensers at Soldier’s Pond” to Alstom Power. PCN-0321 (approved 15-Oct-2014) provides details of the budget reconciliation to support the award of this package.	No	
18-Nov-2014	Project Change	Project Change: After some two years of discussion and analysis, PCN-0080 – SOBI Route Reduction was approved reducing the overall cable length by some 3km per cable, offering a savings of ~11.5M.	No	
Dec-2014	Construction	First HVdc Tower Erected by Valard under Agreement CT0327-001	No	




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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
19-Dec-2014	Shareholder	<p>GNL's MF Oversight Committee Report #2 issued for the period ending 30-Sep-2014. References Project Forecast Costs at \$6.99B and introduces public stakeholders to Project Forecast Cost which it defines "<i>the projected cost based on current incurred costs and schedule performance.</i>"</p> <p>With respect to Contingency the Oversight Committee expresses that the contingency appears low, specifically stating:</p> <p><i>"The Committee notes that the contingency budget for the Project of \$224.5 million³ has been established by Nalcor at the lower range of the industry standard⁴ used. Nalcor advises that the lower range was appropriate as the engineering was 98 per cent complete, with 90 per cent of contract values awarded, and therefore, there is a high degree of confidence in the maturity level of the Project estimate. Nalcor acknowledges that this is an aggressive approach to the contingency budget and it is driving its efforts to keep within that contingency. As of September 2014, the contingency budget has not been drawn upon and current forecast for contingency has increased to \$235.5 million."</i> (p. 10) Reference (4) is made to AACE International's Recommend Practice 69R-12.</p> <p>The report also includes detailed references to actions being taken by Nalcor to mitigate schedule slippage by Astaldi, however does so while reaffirming a Dec-2017 First Power will be maintained.</p>	Yes	
31-Dec-2014	Procurement	<p>LNTP issued to Gilbert Construction NL for Commitment Package "CH0008 – North Spur Stabilization Works". The total estimated package value of \$162.1 M (as compared to a DG3 estimate of \$66.4 M). PCN-0399 notes that the main drivers in cost increase are due to the bidder's perspective on geotechnical and labor productivity risk.</p>	Yes	Cost

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
13-Jan-2015	Construction	Commenced HVdc ROW Clearing on the Island (reference Nalcor News Release)	No	
8-Mar-2015	Cost	Internal briefings on FFC which is now forecasted at \$7.65B and assumes that Astaldi contract reaches LMax, but is able to recover to the original contract milestone dates. It is noted that \$7.65 B will cover forecasted project commitments to mid-2016 and has several major exclusions. Outlines key threats to cost going forward.	No	
11-Mar-2015	Construction	Commence HVac line stringing from North Spur moving westward	No	
13-Mar-2015	Shareholder	<p>GNL's MF Oversight Committee Report #3 issued for the period ending 31-Dec-2014. Project Forecasted Cost noted at \$6.99B.</p> <p>GNL News Release includes statement by NR Minister Daley: <i>"As indicated in the last oversight report, scheduling pressures are being experienced, and production improvements will be required at the Muskrat Falls Generating Facility in order to maintain the critical path and milestone schedule. Nalcor and the contractor have implemented actions to address the current pressures and the Provincial Government will be monitoring the progress. The project capital budget of \$6.99 billion and the critical path to first power for December 2017 both remain unchanged."</i></p> <p>Comments re Schedule clearly state Nalcor's public view of First Power being achieved in 2017.</p> <ul style="list-style-type: none"> <i>"There have been no changes reported to the planned Milestone Schedule or the forecast Milestone Dates since the September 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 as planned."</i> (p.8) <i>"Nalcor and the civil contractor for the Muskrat Falls Generating Facility are actively undertaking mitigation measures to implement production improvements in order to address this slippage on schedule progress at the Muskrat Falls site. Nalcor has advised that although the timelines may change for the individual work within the project, the slippage on schedule progress to date does not impact the key Project milestones or the critical path for first power in December 2017."</i> (p.8) 	No	
25-Mar-2015	Shareholder	Nalcor Energy 2015 AGM (www.nalcorenergy.com/?s=agm)	No	




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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
March-2015	External	Power Outages From Liberty's 2016 Report (page 2): <i>"In 2015 Liberty also reported to the Board on two additional matters concerning Hydro and the IIS. The first addressed the causes of a March 2015 outage on Hydro's system and recommended a number of remedial actions ("Liberty's March 2015 Outage Report"). The second dated July 6, 2015, concerned the prudence of certain actions by Hydro ("Liberty's Prudence Report") which were primarily related to the 2013 and 2014 outages and their associated costs which Hydro was seeking to include in its revenue requirements in its general rate application proceeding. The work Liberty completed in these matters contributed to its knowledge and understanding of Hydro's management philosophies, its asset management practices, and its approach to reliability, operations and supply planning and assisted in the work Liberty completed for this report."</i>		
Spring-2015	Astaldi	Astaldi first expresses concern over its commercial state. And ability to complete the Project.	Yes	Astaldi Deal
8-Jun-2015	Shareholder	Newfoundland and Labrador Premier Paul Davis announced Monday the date for the next provincial election is set for Monday, Nov. 30.	No	
3-Jul-2015	Shareholder	GNL's MF Oversight Committee Report #4 issued for the period ending 31-Mar-2015.	No	
July-2015	Astaldi	Westney Consulting are engaged to complete an independent review of Astaldi's performance to-date and present to Nalcor forecasts-to-complete, options for work execution, etc.		
5-Aug-2015	Procurement	Award recommendation presented for " CH0009 – Construction of North and South Dams " indicates a total estimated package value of \$288.8 M, representing a significant delta over the DG3 budget of \$128M, largely due to total estimated labour cost. This cost exposure was a driver in AFE Rev 2.	Yes	Cost
25-Sep-2015	Cost	HVdc ROW: LCMC places Valard on-notice regarding Part B performance (LTR- CT0327001-0069). Cost exposure for LITP has increased significantly beyond the \$200M established as a target, with forecasts that could double this amount (or more).	Yes	Cost
Summer-Fall 2015	Astaldi	Exploratory discussions with Astaldi commence to understand their commercial situation and the resultant risk to Muskrat Falls Corporation.		

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29-Sep-2015	Cost	<p>GNL's MF Oversight Committee Report #5 issued for the period ending 31-Aug-2015.</p> <p>Regarding LIL cost and schedule, includes comment: <i>"Nalcor advised that the increased slippage in schedule performance is mainly due to challenging geotechnical conditions being experienced, particularly in Central Labrador affecting clearing, access, and tower foundations works."</i> (p. 19)</p> <p>Regarding LCP cost, includes the statement (emphasis added): <i>"Nalcor noted that the Contingency of \$186.8 million is designed to cover these potential risks and has been estimated in accordance with the low range advised by the Association for the Advancement of Cost Engineering International (AACEI) standard.</i></p> <p><i>Nalcor further advises that the AACEI standard for the hydropower industry states that the accuracy of the capital cost at this stage of a project is between -3 to +3 per cent. Nalcor has used 4 per cent on the remaining scope of the project. Nalcor advises that it sets aggressive contingency amounts in order to drive costs as low as possible."</i></p> <p><i>"The Committee notes that significant schedule pressures with respect to the Muskrat Falls Generating Facility remain. The performance of the civil contractor for the Muskrat Falls Generating Facility, while recently improved remains an ongoing area of focus given the schedule slippage already incurred. It will be critical for the civil contractor to sustain the production improvements to avoid further schedule slippage and may require additional efforts from certain Project contractors. This could impact costs beyond the Project execution risk contingency that has been established."</i></p> <p>With reference to the \$7.65B cost estimate the foregoing acknowledges that further cost pressure is likely and that the contingency is on the low range.</p>	Yes	
29-Sep-2015	Cost	<p>Nalcor Briefing to the public on LCP Progress and advise that costs have grown to \$7.65B. This occurs at ~32 months post DG3 / Project Sanction and 15 months from when the costs were announced to be \$6.99B. Note six (6) months have passed since similar briefing was provided to Nalcor Executive.</p>	Yes	

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Sep-2015	Cost	AFE Rev 2 approved at \$7.65B (~6 months post FFC update made in March), reflecting an increase of \$633M from AFE Rev 1. Breakdown of growth: MF = \$314M, LIL = \$303M, LTA = \$46M. Major cost drivers noted as: <ul style="list-style-type: none"> General - \$100 M allowance against Owner's Project Management Team (PMT) MFC - \$100 M allowance for CH0009 price adjustment, \$60 M for open DANs on CH0007, \$80 M provision for CH0031 bid price growth, balance for site services LIL – HVdc clearing and access accounting for 90% of cost growth, Fx exposure 	No	
2-Nov-2015	Project Financing	Project Update presentations provided to IE. Forecasted completion of HVdc TL is indicated as Jun-2017, while MF First Power is indicated as Dec-2017.	No	
2-Nov-2015	Organization	Acquisition of Alstom Energy by General Electric Power is finalized.	No	
30-Nov-2015	Shareholder	Newfoundland and Labrador election day 2015. Liberals win majority government.	Yes	
Dec-2015	Independent Review	Independent Review: Nalcor releases Mid-Execution Assessment recently completed by Independent Project Analysts. Results were positive	No	
14-Dec-2015	Shareholder	Leadership Change: End of Premier Paul Davis term as Premier of Newfoundland and Labrador. Incoming Premier Dwight Ball. Siobhan Coady succeeds Derrick Dalley as Minister of Natural Resources. Dalley held the position for ~26 months, becomes the longest serving minister in the portfolio during the period of LCP planning and development.	No	
Dec-2015	Astaldi	LCMC seconds key Construction Management leadership to Astaldi. Re-organization and recruitment of production resources begins. This is seen as a key turning point for Astaldi and production.	No	
21-Dec-2015	Independent Review	GNL News Release – Oversight Committee Releases Review of Muskrat Falls Project Cost and Schedule Management Processes and Controls. Minister Coady states: <i>"The Oversight Committee, comprised of senior government officials and formed in 2014, conducted a review of the Muskrat Falls Project cost and schedule management processes and controls. The consultant, Ernst & Young (EY), indicated that Nalcor has core project management and control processes and an appropriate organizational structure in place with key roles staffed by individuals experienced in cost and schedule management. They also noted that Nalcor did not have all of their contractor schedule updates in the integrated project schedule and the fully quantified risks are not documented for certain challenges with the project."</i>	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
21-Dec-2015	Independent Review	GNL News Release – Announcement of EY review that will open the books on Project's cost and schedule. Review to be completed by 31-Mar-2016.	Yes	




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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
29-Jan-2016	Cost	<p>TL Update to GNL Oversight Committee in response to concerns raised re concrete quality and overall schedule slippage. Key messages include:</p> <ul style="list-style-type: none"> 1-Jul-2017 HVdc Completion Date is under threat. Working with contractor to develop a recovery plan. Geotechnical conditions south of Muskrat Falls has hampered foundation progress Significant seasonality risk remains This is not another Astaldi issue. Quanta has the capability and capacity to get the job completed. 	No	
Jan-2016	Astaldi	[REDACTED]	Yes	Schedule delay
Jan-2016	Astaldi	Meetings held with Shareholder to explain need to negotiate with Astaldi. LCMC directed not to engage with Astaldi.	Yes	Schedule delay
6-Feb-2016	Astaldi	GNL Cabinet Briefing by Westney on available options surrounding Astaldi	Yes	Schedule delay
Jan-Feb 2016	Astaldi	[REDACTED]	No	
Jan to Mar 2016	Astaldi	EY Review of Project and Astaldi approach commissioned by GNL. EY are requested to review available options with respect to Astaldi, including LCMC's analysis of options.	Yes	Schedule delay
3-Mar-2016	Cost	<p>Nalcor Executive briefing on the QRA findings for LIL – LTA. Key messages:</p> <ul style="list-style-type: none"> LIL Risk exposure beyond the AFE Rev.2 is C\$150-300 million. Driven by TL access costs and carrying costs associated LTA can be delivered within AFE Rev 2 Low probability of achieving First Power in 2017, with P75 forecast of Apr-2018 	No	
Mar-2016	Astaldi	Westney's 2015 analysis of Astaldi's performance is updated which confirms the need to negotiate with Astaldi.	No	
Mar-2016	Cost	2016 Cost and Schedule QRA: QRA Update which results in forecasted completion cost at \$9.1B, predicated upon a \$500M settlement to Astaldi but does not include the as yet unknown claims by contractors affected by the Astaldi delay.	Yes	
24-Mar-2016	Shareholder	Nalcor Energy 2016 AGM (www.nalcorenergy.com/?s=agm)	No	
30-Mar-2016	Cost	Presentation provided to LCP Change Control Board regarding the geotechnical risk exposure remaining for the HVdc TL.	No	

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
1-Apr-2016	Cost	<p>Nalcor Executive briefing on value of SNC-Lavalin agreement and overall PMT costs. Key messages:</p> <ul style="list-style-type: none"> Forecasted value of SLI Agreement will be \$80 million less than estimated at DG3. A result of the shift to an Integrated Project Delivery Team ("PDT"). Monthly operating cost for PDT stable at approx. \$10 million Based upon current expenditures, we are forecasting to exceed AFE Rev 2 in Q2 to Q3 2017. Forecasting Engineering + PMT cost at \$862M up to completion, while AFE Rev 2 has \$741M provision. 	No	
12-Apr-2016	Independent Review	GNL News Release – Government Releases EY's Interim Report on the Muskrat Falls Project	No	
20-Apr-2016	Project Change	Leadership Change: Ed Martin steps down as CEO of Nalcor Energy.	Yes	
21-Apr-2016	Project Change	Leadership Change: Stan Marshall named as new CEO of Nalcor Energy.	Yes	
27-Apr-2016	Shareholder	Briefing deck for GNL Oversight Committee on the status of QRA. Reaffirms that resolution of Astaldi file is the key input into the MF QRA.	No	
11-May-2016	Cost	<p>Holistic briefing on the scope, status and issues of the LCP provided to incoming CEO Stan Marshall by LCP Project Leadership Team. All Nalcor and NLH VPs in attendance as requested by Marshall. Key messages include:</p> <ul style="list-style-type: none"> MF First Power – Aug 2019 (P75) MF Full Power – May 2020 (P75) Budgeting for the P75 cost exposure of C\$8.55 billion plus Astaldi deal provides a level of certainty to LCP Current "likely deal range" with Astaldi is between C\$250-450M 	Yes	
May-2016	Astaldi	CEO Marshall instructs LCMC to re-engage with Astaldi following a 4-month hiatus dictated by the GNL for the purposes of negotiating an acceptable outcome that will see Astaldi finish the job. Fear of losing 2016 summer construction season means that a bridging agreement will be required.	Yes	Cost
29-May-2016	Construction	Draft Tube #2 Formwork Collapse	No	
31-May-2016	Project Change	Leadership: Detailed briefing on LTA-LIL provided to John MacIsaac, incoming VP, as requested by Gilbert Bennett.	Yes	
1-Jun-2016	Construction	HVAc TL Stringing Complete	No	
3-Jun-2016	Construction	DC Conductor: Valard line stringing operations suspending while investigation into conducting proud stranding continues.	Yes	

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
Jun-2016	Cost	2016 QRA: Document “Muskrat Falls Generation Quantitative Cost and Schedule Risk Analysis (Q1-2016), document no. MFA-PT-MD-0000-RI-RP-0001-01 Rev B1” issued detailing the process and findings of the 2016 QRA update.	No	
15-Jun-2016	Project Change	Bifurcation begins: Stan Marshall announces that the Muskrat Falls Project will be divided into two separate components – Power Supply and Power Development. VP Power Supply – John MacIsaac initiates the bifurcation process, creating a separate management team for Power Supply, while functional roles are split with two reporting lines.	Yes	
17-Jun-2016	IE	2016 QRA Briefing for LTA-LIL provided to Independent Engineer.	No	
24-Jun-2016	Cost	<p>Nalcor Briefing to the public on LCP Progress and advise that costs have grown to \$9.1. This occurs at ~42 months post DG3 / Project Sanction and 9 months from when the costs were announced to be \$7.65B.</p> <p>Schedule is stated as:</p> <ul style="list-style-type: none"> • MF First Power: Q3 2019; MF Full Power: Q2 2020 • LTA / LIL: Q2 2018 <p>In the news release CEO Marshall states “the original capital cost estimate and schedule was very aggressive and overly optimistic and the risks of the project were underestimated”.</p>	Yes	
Jun-2016	Cost	<p>AFE Rev 3 approved at \$9.1B, reflecting an increase in the total approved capital by \$1,473M (MF = \$1,115M; LIL = \$358M). PCN-0661 (dated Aug 2016) documents the basis of budget allowance across the various packages.</p> <p>Negativity attacks on Project now creating significant execution risk, highlighted in LCP Monthly Progress Reports.</p>	No	
11-Jul-2016	Shareholder	TL Update to IE and GNL Oversight Committee members. Indicates that forecasted completion date for HVdc line slipped to Q1-2018.	No	
14-Jul-2016	Cost	Valard’s Performance: Briefing to Nalcor CEO (Marshall) and VP Power Supply (J. MacIsaac) of issues surround Valard. Recommended way forward includes reset with LDs turned into an incentive.	No	
4-Aug-2016	Astaldi	CH0007 Bridging Agreement: Nalcor and Astaldi signing bridging agreement. Under this agreement, MFC agreements to fund Astaldi an additional \$150M and commits to on-going dialogue and process to resolve the broader issue.	Yes	Cost

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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
19-Aug-2016	DarkNL	Dark NL: Liberty Consulting Group presents its final report "Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls Final Report" to the PUB. Reports highlights that stated that the Interconnected Island Muskrat Falls and the Maritime Link <i>"can represent a state-of-the-art electrical system whose reliability is improved over today's circumstances."</i>	No	
19-Oct-2016	Shareholder	Methylmercury Protest: Following aboriginal stakeholder protests re the level of methylmercury following reservoir impoundment, the Provinces advises Nalcor that it must implement additional mitigation measures, including additional clearing and water survey. GNL advises that an expert independent panel will be convened to assess the methylmercury risk and make recommendations regarding measures that must be implemented by Nalcor. Unlike prior protests, it is viewed that the general negativity surrounding the Project has fostered / enabled this protest to escalate.	Yes	Cost, Schedule and Risk
26-Oct-2016	Shareholder	GNL commits to lower the reservoir water levels in Spring 2017 to their natural levels in order to facilitate further reservoir clearing (including potential soil removal).	Yes	Cost, Schedule and Risk
18-Nov-2016	Construction	Early on November 18, Nalcor Energy took precautionary measures to lower water levels in the Muskrat Falls reservoir following increased water seepage through the temporary cofferdam. Nalcor opened the spillway gates, thereby increasing the flow of water and reducing the water level in the reservoir.	Yes	Cost, Schedule and Risk
1-Dec-2016	Astaldi	CH0007 Completion Agreement executed at \$1.83B adding \$270M to the \$9.1B forecast announced in June 2016.	Yes	Cost



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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
30-Mar-2017	Shareholder	Nalcor Energy 2017 AGM (www.nalcorenergy.com/?s=agm)	No	
5-Apr-2017	Project Change	Project Change: PCN-0712 “Phased Delivery of the HVdc System” approved following which an Amending Agreement was concluded with Alstom Grid with a cost impact of \$57.5M. With this change, Alstom will focus on the energization of a single pole (mono-pole) by 31- Dec-2017, and bi-pole by 31-Jan-2019.	Yes	
23-Jun-2017	Cost	<p>Nalcor Briefing to the public on LCP Progress and advise that costs have grown to \$10.1B. This occurs at ~54 months post DG3 / Project Sanction and 12 months from when the costs were announced to be \$9.1B. No specific references to updated schedule dates.</p> <p><u>From the Nalcor News Release:</u></p> <p><i>“Since we finalized the agreement with Astaldi we have been engaged in settling claims with all other contractors for all delays and changes which have occurred since the beginning of the project. We are currently finalizing a settlement with the primary contractor for the overland transmission project for \$140 million,” said Marshall. “In this year’s update we allowed an additional \$400 million in our estimate to settle all remaining claims.”</i></p> <p><i>“With these additional costs the forecasted capital cost for the Muskrat Falls Project is \$10.1 billion.”</i></p> <p><i>“Nalcor is on target to bring power from Churchill Falls to the island by this time next year.”</i></p>	Yes	
7-Jun-2017	Procurement	Award Recommendation circulated for package “CH0031 – Supply and Installation of Mechanical and Electrical Auxiliaries – MF” at a forecasted value more than double the DG3 estimate. Effectively package is based upon a reimbursable framework.	Yes	
12-Jul-2017	Independent Review	EY Review – Follow-up sessions held with Project Team wherein presentations of actions taken against recommendations in EY’s 2016 Report were provided.	No	
19-Jul-2017	Project Change	PCN-0740 “Global Settlement with Valard” approved. Includes amending agreement with resolution of all open issues.	Yes	
10-Jul-2017	Astaldi	Settlement with Andritz on the impact of Astaldi’s performance on its scope under Commitment Package CH0030 – Turbines and Generators. Settlement is within the provisional allowance contained within AFE Rev 5.	No	
25-Sep-2017	Cost	PCN-0736 approved reflecting budgetary changes with approval AFE Rev 4 (LTA and LIL) and AFE Rev 5 (MF) as well to ensure alignment with the findings of the 2017 QRA.	No	



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DATE	TOPIC	EVENT	TRIGGERING EVENT	COMMENTS
Oct-2017	Schedule	HVdc TL: Valard concludes stringing of the HVdc TL.	No	
3-Nov-2017	Astaldi	Settlement with Andritz on the impact of Astaldi's performance on its scope under Commitment Package CH0032 – Gates and Hydro-Mechanical. Settlement following third party mediation is within the provisional allowance contained within AFE Rev 5. Open filing to Supreme Court of NL is now dropped.	No	



Acronyms

Acronym	Meaning
AACE	Association for the Advancement of Cost Engineering
ac	Alternating Current
AFE	Authorization for Expenditure
AGM	Annual General Meeting
B	Billions
BOD	Board of Directors
CDN	Canadian
CF	Churchill Falls
CFO	Chief Financial Officer
CM	Construction Management
CPW	Cumulative Present Worth
CSA	Canadian Standards Association
C1	Component 1 (MF Generation)
C3	Component 3 (HVdc Specialities)
C4	Component 4 (Overland Transmission)
DG1	Decision Gate 1
DG2	Decision Gate 2
DG2a	Decision Gate 2a
DG2b	Decision Gate 2b
DG3	Decision Gate 3
DSP	Decision Support Package
EA	Environmental Assessment
EAC	Estimate at Completion
ECPA	Electrical Control Power Act
EIS	Environmental Impact Statement
EOI	Expression of Interest
EPC	Engineering, Procurement and Construction
EPCM	Engineering, Procurement and Construction Management
EY	Ernst and Young
FEL	Front-end Loading
FFC	Final Forecast Cost
FLG	Federal Loan Guarantee



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Acronym	Meaning
fx	Foreign Exchange
GI	Gull Island
GNL	Government of Newfoundland and Labrador
GWF	Great Western Forestry
HDD	Horizontal Directional Drilling
HVac	High Voltage Alternating Current
HVdc	High Voltage Direct Current
HVGB	Hapy Valley-Goose Bay
IBA	Impact and Benefits Agreement
IBEW	International Brotherhood of Electrical Workers
IE	Independent Engineer
IEC	International Electrotechnical Commission
IIS	Interconnected Island System
IPA	Independent Project Analysis
IPR	Independent Project Review
IPS	Integrated Project Schedule
JCL	Johnson's Construction Ltd.
JRP	Joint Review Panel
kV	Kilovolts
LCC	Line Commutated Conversion
LCMC	Lower Churchill Management Corporation
LCP	Lower Churchill Project
LIL	Labrador Island Transmission Link
LMax	Labour Maximum (re package CH0007)
LNTP	Limited Notice to Proceed
LOI	Letters of Intent
LTA	Labrador Transmission Assets
LTi	Lost Time Incident
M	Millions
MF	Muskrat Falls
MFC	Muskrat Falls Corporation
MHI	Manitoba Hydro International
ML	Maritime Link
MOU	Memorandum of Understanding



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Acronym	Meaning
MVAR	Mega Volt Amps (reactive)
MW	Megawatts
MWH	MWH Canada Inc.
M&M	Mines and Metallurgy
NB	New Brunswick
NDA	Non-Disclosure Agreement
NLH	Newfoundland and Labrador Hydro
NS	Nova Scotia
OATT	Open-Access Transmission Tariff
OC	Oversight Committee
PCN	Project Change Notice
PDT	Project Delivery Team
PMT	Project Management Team
PUB	Newfoundland and Labrador Board of Commissioners of Public Utilities
PwC	Pricewaterhouse Coopers
QRA	Quantitative Cost and Schedule Risk Analysis
RDTC	Resource Trades Development Council
Régie	Régie de l'énergie
RFP	Request for Proposal
ROW	Right of Way
SLI	SNC-Lavalin
SOBI	Strait of Belle Isle
SPO	Special Project Order
TG	Turbines and Generators
TL	Transmission Line
UARB	Nova Scotia Utility and Review Board
VSC	Voltage Source Conversion