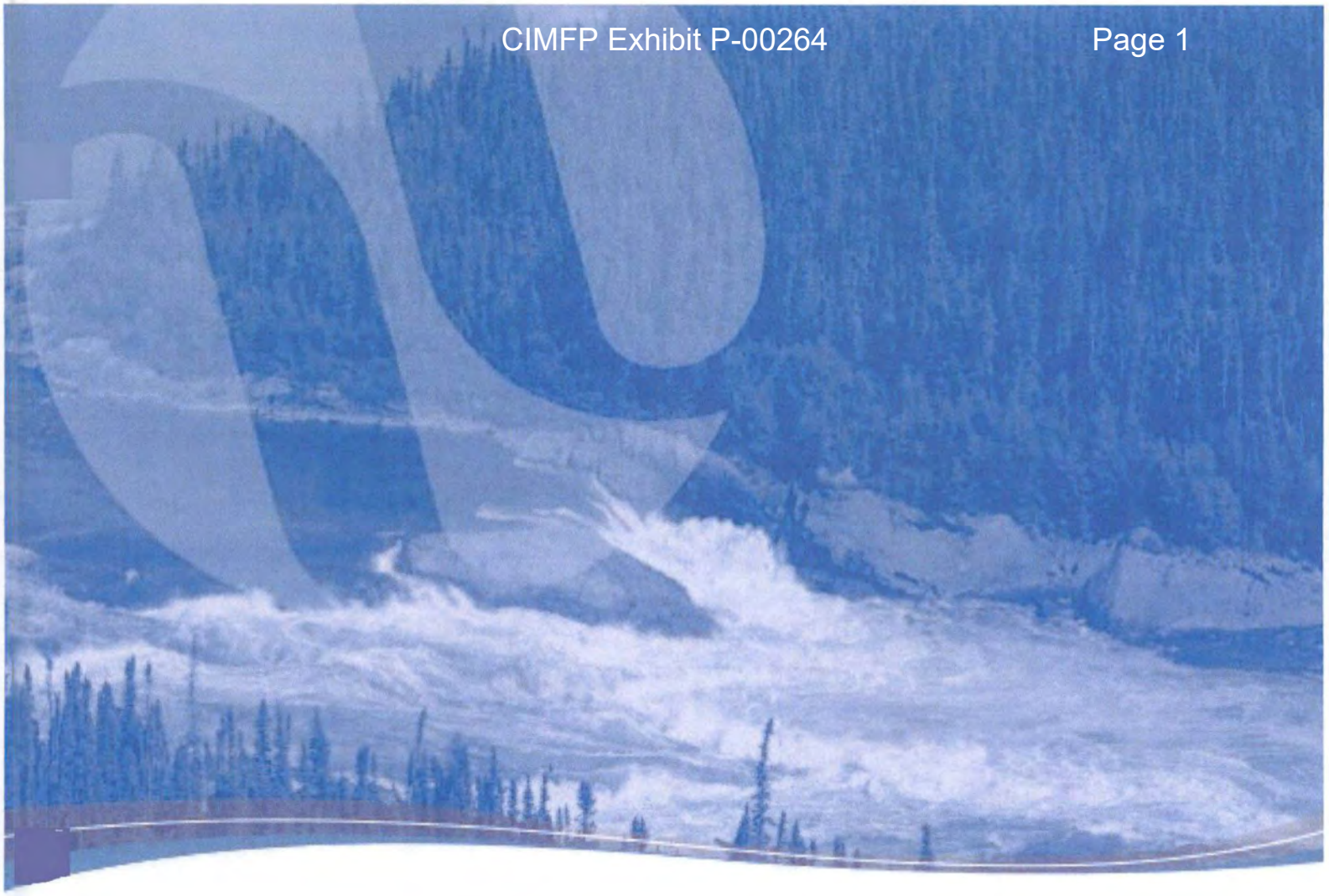

MUSKRAT FALLS PROJECT
SUMMARY OF PRE-SANCTION

Briefing Note as Requested by Nalcor Legal Counsel McInnes-Cooper

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muskratfalls.nalcorenergy.com

nalcor energy
LOWER CHURCHILL PROJECT

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THE LENGTHY AND UNCERTAIN ROAD TO SANCTION

Following the Government of Newfoundland and Labrador's (GNL) May 2006 decision that Newfoundland and Labrador Hydro (NLH) would lead the development of the lower Churchill River's vast resource potential, the nearly seven years of effort that followed was challenging. The way forward was far from straightforward and had to be adapted significantly to accommodate unexpected external events, including the considerable uncertainty as to which markets and where the power would be sold, NLH was guided by the 2007 GNL's Energy Plan to harness the potential of the lower Churchill River and that the profits from non-renewable energy would be used to develop renewable energy such as the Lower Churchill.

With the earliest mobilization of project development personnel occurring in mid-2006, the challenge of developing a plan to develop Gull Island (GI) by end of 2014 was seen as a business opportunity. Using the structure of a staged-gate delivery model, project planning began in order to create a common appreciation of what exactly was required to undertake this development. Arriving team members began to review the previous engineering studies which had been completed in the late 1990's in order to create a business case for the development, eventually leading to the passage through Decision Gate 1 (DG1) in February 2007. With DG1 achieved, the focus changed towards developing the lower Churchill River's resources to their fullest potential, with Gull Island proceeding first, followed by a 3-year delayed construction start of Muskrat Falls (MF). All transmission and power sales options were to be aggressively pursued, including moving power west through Quebec via application under the Open-Access Transmission Tariff (OATT), while a 3-point High-Voltage Direct Current (HVdc) link to the Island and onto the Maritimes were to be explored.

As 2007 progressed the groundwork for establishing the Project Management Team (PMT) continued and the nucleus of a team began to take shape, inclusive of functional expertise as required to develop what was referred to as the Lower Churchill Project (LCP or the Project). LCP included both generation sites at Gull Island and Muskrat Falls, as well as the transmission system required to enable power export to the Island, Quebec, and Maritimes. Engineering resources focussed on working with both Hatch and SNC-Lavalin (SLI) to update various feasibility studies and undertake an extensive field program at Gull Island. Experts in their fields were engaged in areas where required such as Statnett, a world leader in HVdc submarine cable designs. In addition, baseline surveys commenced to support the Generation Project (Gull Island + Muskrat Falls and their interconnecting transmission lines to Churchill Falls) environmental assessment.

Significant effort was made to define what deliverables were required to achieve Decision Gate 2 (DG2), with the over-riding objective of maximizing the amount of Front-End Loading (FEL), as a recognized best-practice initiative, and de-risking the decision to the maximum extent, while recognizing there were financial resource limitations that would limit the amount of effort expended before the business case was validated. However, as 2007 came to a close, it became clear that the deliverables required from a

power sales/market access perspective were not sufficiently aligned with the project development work stream to support a Decision Gate 2 passage by the end of 2007. Thus, a strategic decision was made to de-couple the work streams, with a target for Decision Gate 2a (DG2a) (project delivery deliverables) for early 2008 with Decision Gate 2b (DG2b) being the remaining deliverables, including market/finance deliverables, release from the Environmental Assessment (EA) and the completion of an Impact and Benefits Agreement (IBA) with Innu Nation. It was becoming clear that the achievement of a 2014 First Power date was becoming unlikely.

In early 2008, the PMT identified the need to ensure strategic alignment between the PMT and the Nalcor Executive on the requirements needed for passage through Decision Gate 2b as well as an updated schedule for development of Gull Island. Achieving DG2b by July 2008 would not be practical given the requirement to have Letters of Intent in place for anchor power sales loads, as well as an Impact and Benefits Agreement (IBA) with Innu Nation (inclusive of Upper Churchill Redress) being accepted by Innu Nation and a ratification plan in place. Combining this with an ever-lengthening schedule for the Generation Project Environmental Assessment (EA) process, including a delay in the issuance of EA guidelines from the Canadian Environmental Assessment Agency (CEAA), resulted in the target schedule for First Power from GI slipping into 2016, with full power expected in 2017.

When the Generation Project EA was registered under the Canadian Environmental Assessment Act in December 2006, it was expected to be a twenty-eight (28) month process (as shown in Figures 1 and 2). By March 2008 it became evident that the process was slipping due to a delay by the CEAA in issuing the Environmental Impact Statement (EIS) guidelines. These guidelines were needed before NLH could prepare a fully comprehensive EIS for submission.

Figure 1: Generation Project Environmental Assessment Update (May 2008)[1]

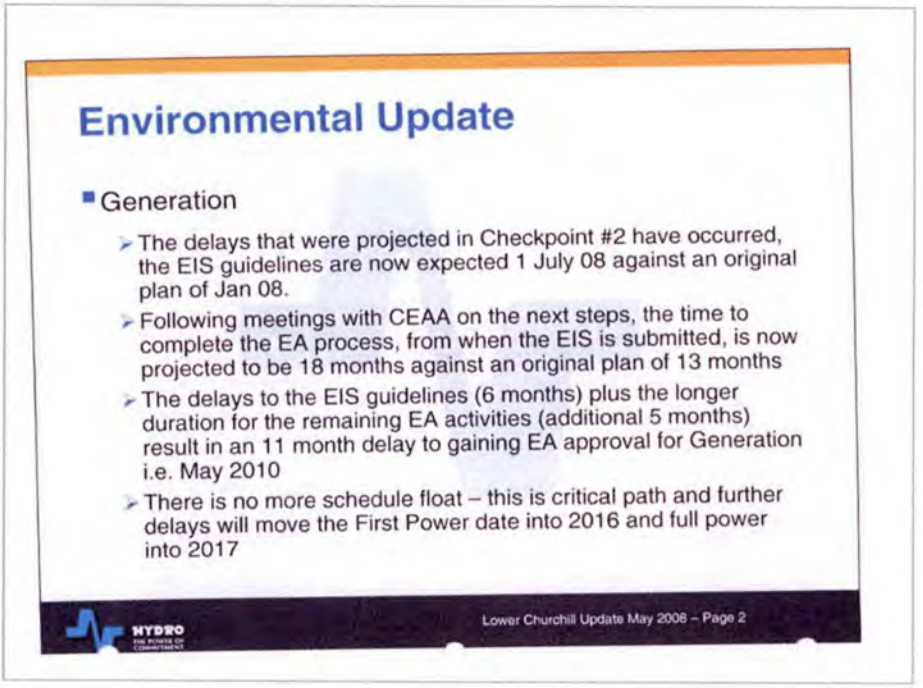
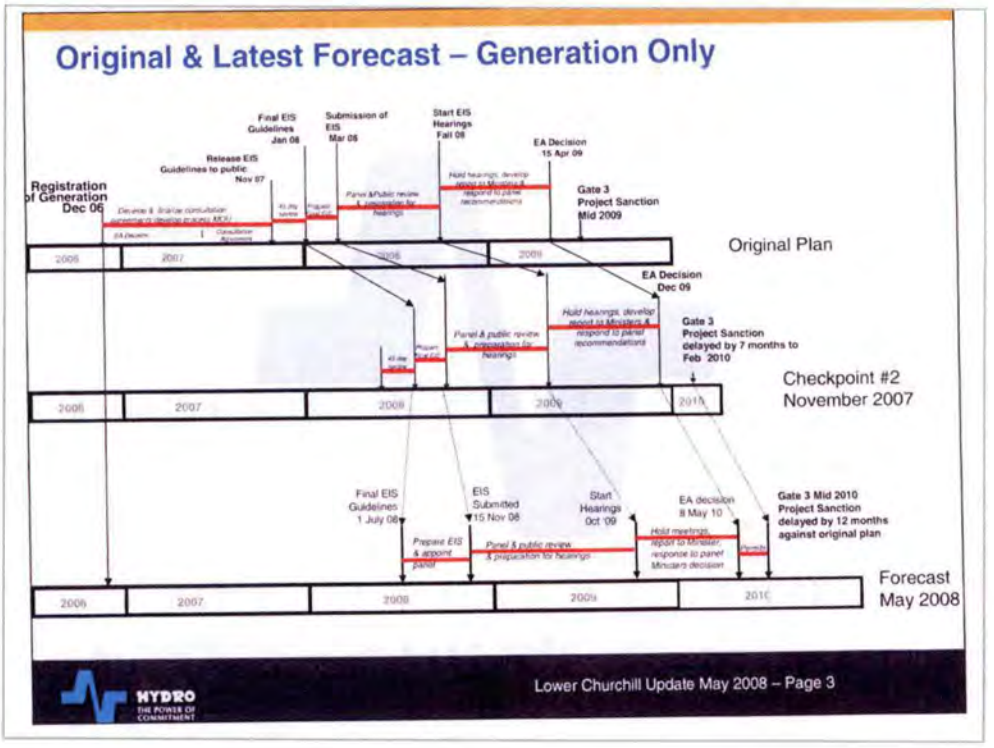


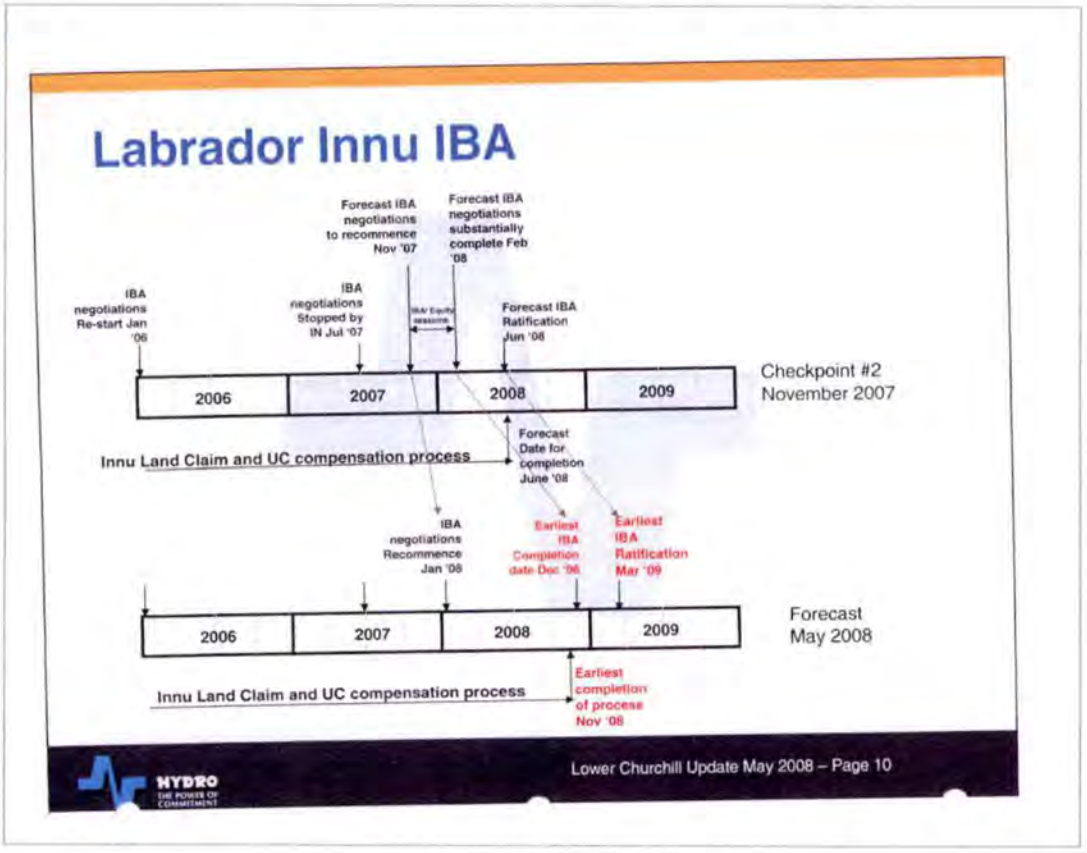
Figure 2: Generation Project Environmental Assessment Timeline (October 2008) [2]



[1] Extracted from Nalcor Executive briefing presentation Environmental and Aboriginal Update – May 2008, Slide 2.
[2] Ibid, Slide 3.

Not dissimilar to the delays experienced on the EA front, progress on achieving an IBA with Innu Nation was also facing challenges. Innu Nation's position was that they would not bring an IBA forward for a ratification vote until they had achieved clarity on three issues: 1) details on their commercial participation in the LCP; 2) positive movement on the Land Claims file; and 3) inclusion of Upper Churchill Redress. Innu Nation leadership wanted to have all three issues dealt with so they could be brought to the Innu people for ratification in one vote. Figure 3 illustrates how the schedule was slipping.

Figure 3: Labrador Innu IBA Negotiations Status (October 2008) [3]



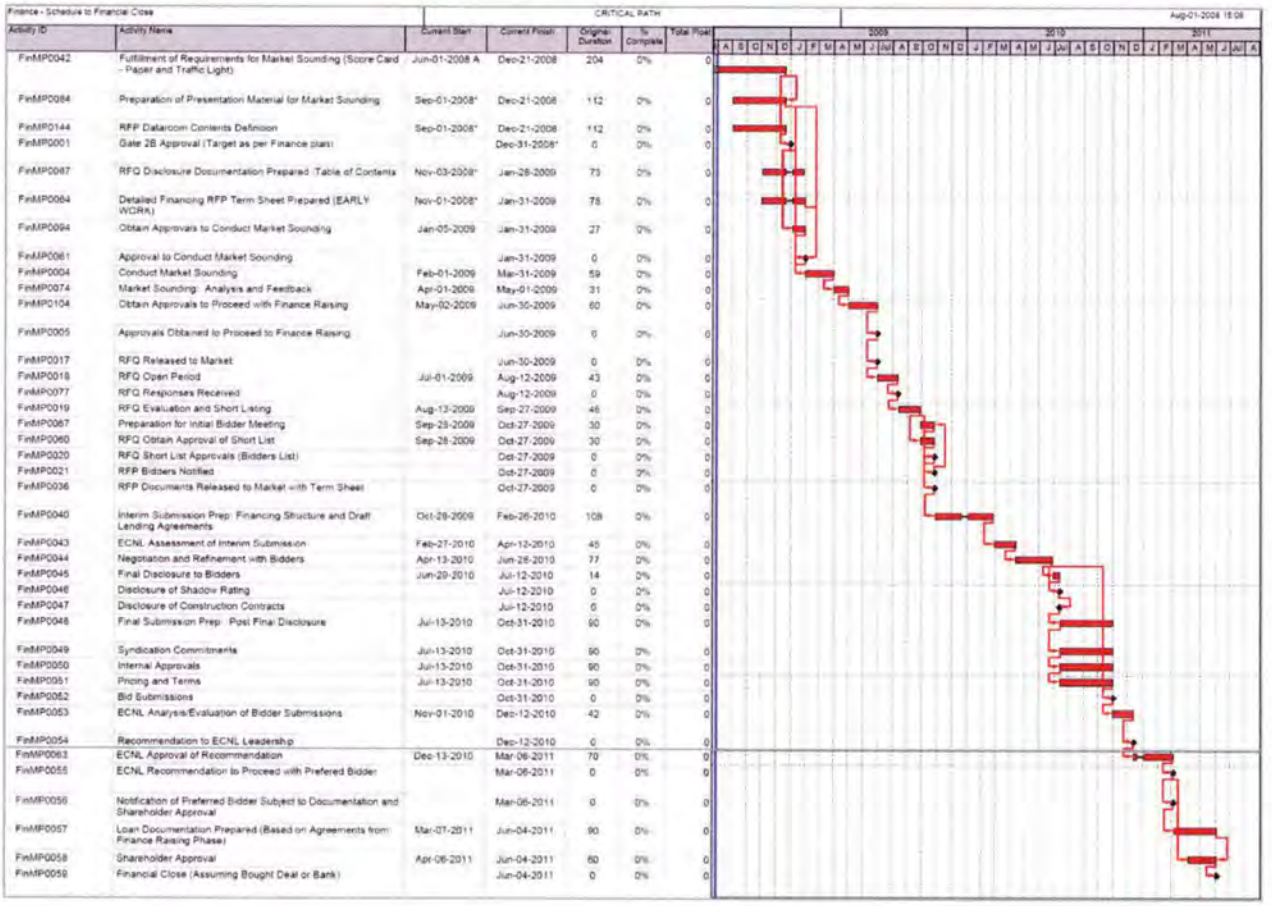
PricewaterhouseCoopers (PwC) were engaged in early 2008 by NLH to advise on the project financing activities under the umbrella of non-recourse project financing terms. As discussions and dialogue commenced with PwC on exactly what was required to achieve non-recourse project financing, a comprehensive list of pre-requisites was identified. At its core were power sales arrangements, secure market access, clear and stable regulatory environment, and a demonstration that the development would be able to "stand on its own two feet" From a financing perspective PwC also made it clear that financing would require a fully functional owner's project management team and supply and construction contracts with large, creditworthy international contractors. It was their strong

[3] Ibid, Slide 10.

recommendation that contract packages be structured as large as possible, with NLH looking to transfer as much risk to the contractor as possible via lump sum compensation terms.

It soon became evident that the effort to map out a coordinated plan to enable the sequential stages of financing to occur, supported by the input deliverables from the other work streams would be a planning challenge. After such a plan was laid out (see Figure 4), it became apparent that under the terms of non-recourse financing, financial close could extend to mid-2011, some 1+ years beyond the now target Decision Gate 3(DG3)/project sanction date. If this delay in obtaining financial close were to be the case, then either sanction would have to be delayed or a significant equity injection would be required from the shareholder to facilitate the extensive contractual commitments required to be made. At this time, therefore, the key question was centered on the Province's appetite to make such a significant equity investment prior to Sanction and Financial Close.

Figure 4: Extract of Project Financing Schedule to Financial Close Illustrating Critical Path (August 2008)



Activity ID	Activity Name	Current Start	Current Finish	Original Duration	% Complete	Total Float
FinMP0042	Fulfillment of Requirements for Market Sounding (Score Card - Paper and Traffic Light)	Jun-01-2008 A	Dec-21-2008	204	0%	0
FinMP0084	Preparation of Presentation Material for Market Sounding	Sep-01-2008*	Dec-21-2008	112	0%	0
FinMP0144	RFP Dataroom Contents Definition	Sep-01-2008*	Dec-21-2008	112	0%	0
FinMP0001	Gate 2B Approval (Target as per Finance plan)		Dec-31-2008*	0	0%	0
FinMP0087	RFQ Disclosure Documentation Prepared :Table of Contents	Nov-03-2008*	Jan-28-2009	73	0%	0
FinMP0084	Detailed Financing RFP Term Sheet Prepared (EARLY WORK)	Nov-01-2008*	Jan-31-2009	78	0%	0
FinMP0094	Obtain Approvals to Conduct Market Sounding	Jan-05-2009	Jan-31-2009	27	0%	0
FinMP0081	Approval to Conduct Market Sounding		Jan-31-2009	0	0%	0
FinMP0004	Conduct Market Sounding	Feb-01-2009	Mar-31-2009	59	0%	0
FinMP0074	Market Sounding: Analysis and Feedback	Apr-01-2009	May-01-2009	31	0%	0
FinMP0104	Obtain Approvals to Proceed with Finance Raising	May-02-2009	Jun-30-2009	60	0%	0
FinMP0005	Approvals Obtained to Proceed to Finance Raising		Jun-30-2009	0	0%	0
FinMP0017	RFQ Released to Market		Jun-30-2009	0	0%	0
FinMP0018	RFQ Open Period	Jul-01-2009	Aug-12-2009	43	0%	0
FinMP0077	RFQ Responses Received		Aug-12-2009	0	0%	0
FinMP0019	RFQ Evaluation and Short Listing	Aug-13-2009	Sep-27-2009	46	0%	0
FinMP0067	Preparation for Initial Bidder Meeting	Sep-23-2009	Oct-27-2009	30	0%	0
FinMP0060	RFQ Obtain Approval of Short List	Sep-28-2009	Oct-27-2009	30	0%	0
FinMP0020	RFQ Short List Approvals (Bidders List)		Oct-27-2009	0	0%	0
FinMP0021	RFP Bidders Notified		Oct-27-2009	0	0%	0
FinMP0036	RFP Documents Released to Market with Term Sheet		Oct-27-2009	0	0%	0
FinMP0040	Interim Submission Prep: Financing Structure and Draft Lending Agreements	Oct-28-2009	Feb-26-2010	108	0%	0
FinMP0043	ECNL Assessment of Interim Submission	Feb-27-2010	Apr-12-2010	45	0%	0
FinMP0044	Negotiation and Refinement with Bidders	Apr-13-2010	Jun-28-2010	77	0%	0
FinMP0045	Final Disclosure to Bidders	Jun-29-2010	Jul-12-2010	14	0%	0
FinMP0046	Disclosure of Shadow Rating		Jul-12-2010	0	0%	0
FinMP0047	Disclosure of Construction Contracts		Jul-12-2010	0	0%	0
FinMP0048	Final Submission Prep: Post Final Disclosure	Jul-13-2010	Oct-31-2010	90	0%	0
FinMP0049	Syndication Commitments	Jul-13-2010	Oct-31-2010	90	0%	0
FinMP0050	Internal Approvals	Jul-13-2010	Oct-31-2010	90	0%	0
FinMP0051	Pricing and Terms	Jul-13-2010	Oct-31-2010	90	0%	0
FinMP0052	Bid Submissions		Oct-31-2010	0	0%	0
FinMP0053	ECNL Analysis/Evaluation of Bidder Submissions	Nov-01-2010	Dec-12-2010	42	0%	0
FinMP0054	Recommendation to ECNL Leadership		Dec-12-2010	0	0%	0
FinMP0063	ECNL Approval of Recommendation	Dec-13-2010	Mar-06-2011	70	0%	0
FinMP0055	ECNL Recommendation to Proceed with Prefered Bidder		Mar-06-2011	0	0%	0
FinMP0056	Notification of Preferred Bidder Subject to Documentation and Shareholder Approval		Mar-06-2011	0	0%	0
FinMP0057	Loan Documentation Prepared (Based on Agreements from Finance Raising Phase)	Mar-07-2011	Jun-04-2011	90	0%	0
FinMP0058	Shareholder Approval	Apr-06-2011	Jun-04-2011	60	0%	0
FinMP0059	Financial Close (Assuming Bought Deal or Bank)		Jun-04-2011	0	0%	0

When the Project Team began to implement a risk management process in 2006 they realized that, given the magnitude of the Project and potential risks, specialized expertise would be required. To this end a Request for Proposals (RFP) was issued and after an extensive bid process, Westney Consulting Group LLC (Westney) of Houston, Texas were selected at the end of 2007. Westney is an internationally

recognized company and has been judged by the Kennedy Consulting Research & Advisory (KCRA) rating as one of the top four firms judged highest in terms of breadth and depth of capital project consulting capabilities. Regarding its views on Westney, KCRA stated in their March 2016 report that *"This firm is also distinctive for its risk specialist capabilities and laser like focus on helping its clients to understand the real sources of risk in their projects."*[4]

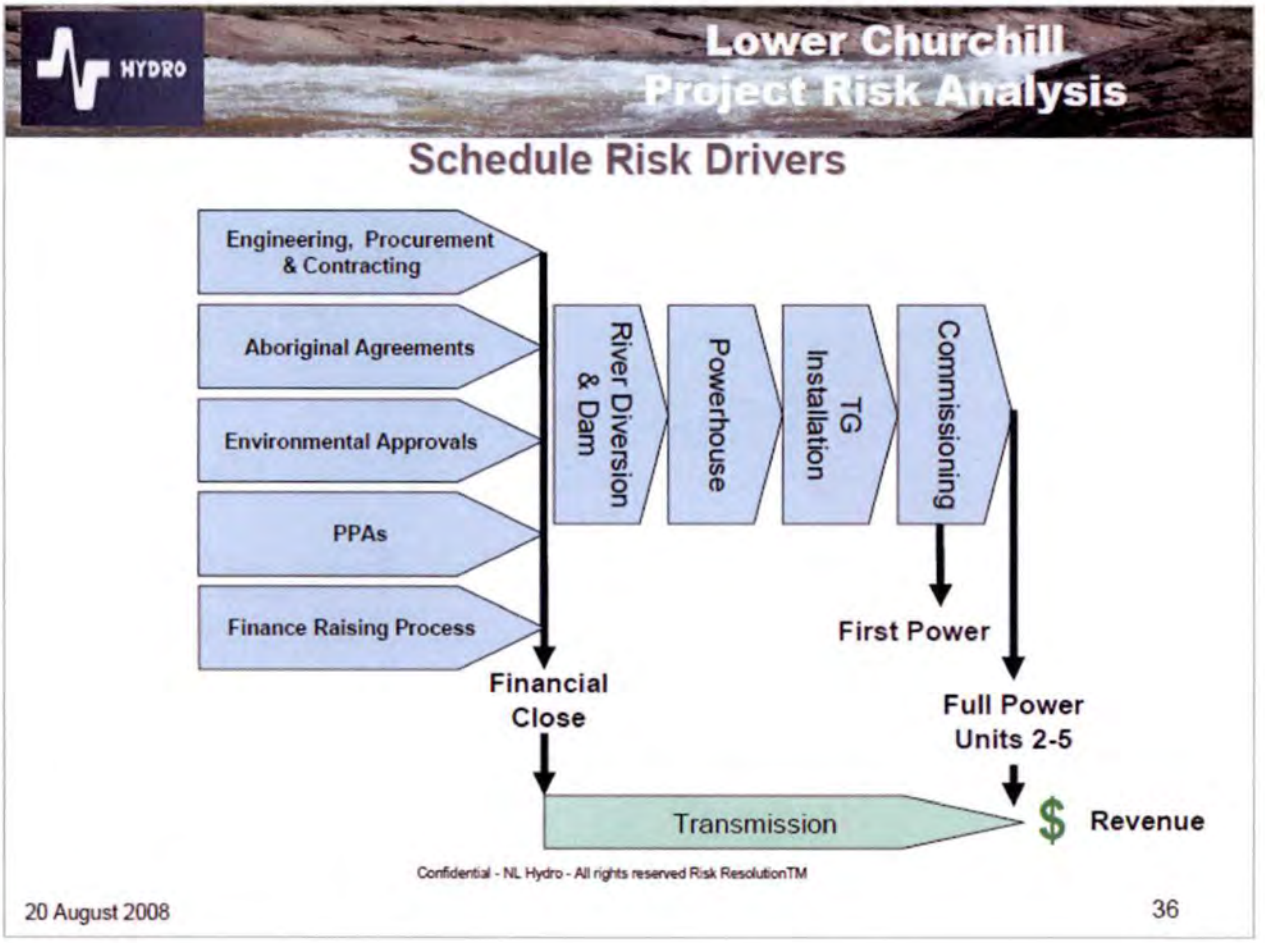
In early summer of 2008 Westney were engaged in order to complete a quantitative cost and schedule risk analysis (QRA) for Gull Island with an export option to the Maritimes. As the first QRA conducted on the Project, it introduced the classification of risk terminology that would continue on, through the life of the Project. In total, five (5) inclusive QRAs would be conducted on the Project between 2008 and 2017, with the primary QRAs occurring in early summer 2008 (DG2A), early summer 2010 (DG2), spring 2011 (DG3), spring 2016, and spring 2017. In addition to these, a separate QRA was undertaken by Westney on the Strait of Belle Isle (SOBI) Crossing in Nov-2010.

The risk management practices implemented by Nalcor, with Westney's guidance, and the resultant QRA findings would be reviewed and assessed by independent experts, each of which provided favourable commentary. These reviewers included Navigant (2011 Independent Supply Review), Manitoba Hydro International (MHI), MWH Canada Inc. as the Independent Engineer (IE), and Lummus International (who were engaged to conduct due diligence on behalf of Emera Inc.). These risk management practices continued to be applied through Project Execution.

Westney's 2008 QRA revealed that the LCP had significant schedule risk drivers; both pre-sanction and post sanction (see Figure 5). In addition to these schedule risk drivers, there was also considerable strategic risk exposure (then known as Gatekeeper Risk Exposure), which, for the configuration being explored (reference Figure 6) was in excess of $2.5 billion. It was acknowledged that the construction risk profile for the Muskrat Falls development concept was viewed as a scaled version of the Gull Island development concept and the pre-sanction risk drivers were largely the same and would similarly influence the schedule to Decision Gate 3/sanction. While the financial exposure due to strategic risks was envisioned to be less for Muskrat Falls Project, schedule and labor productivity would remain the predominant risk exposures post sanction, which, when combined, created a significant financial risk exposure.

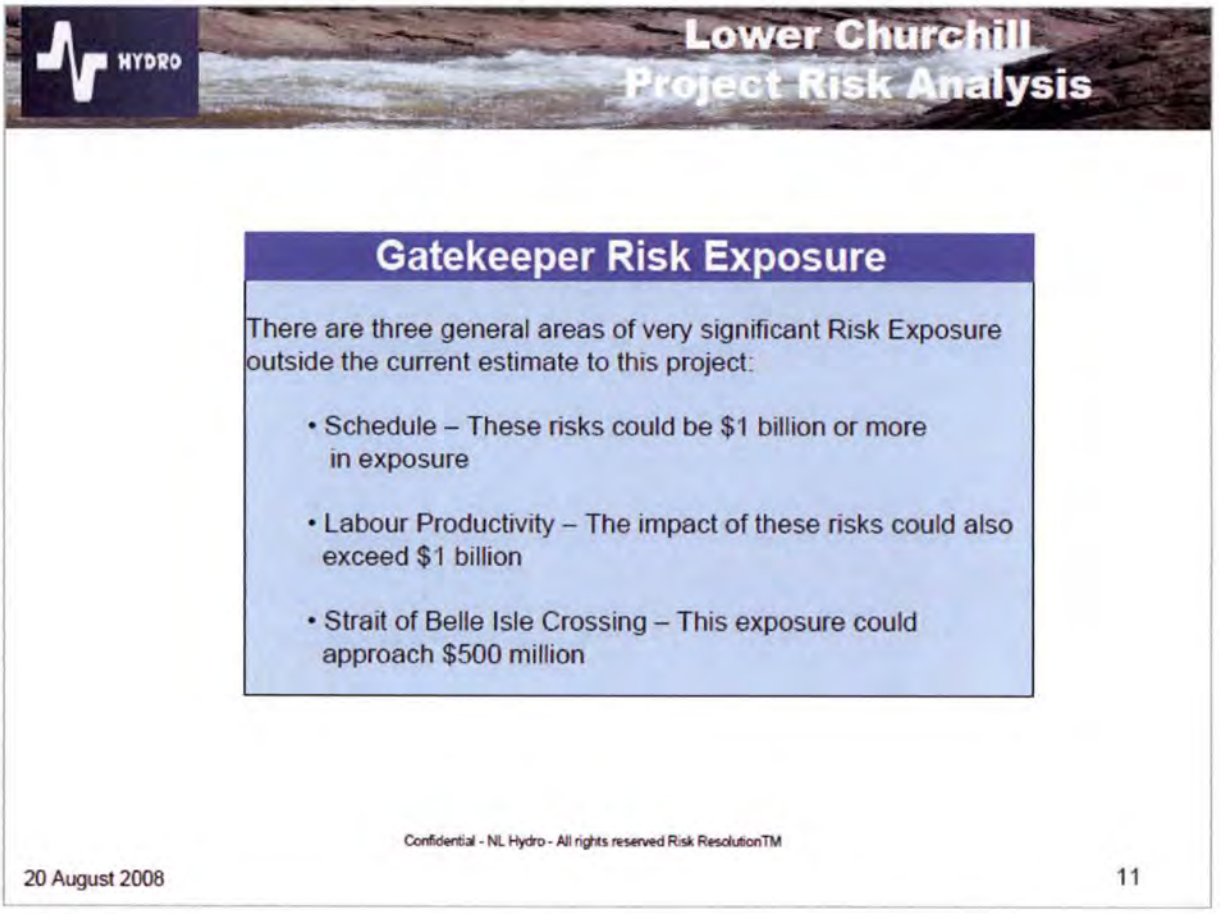
[4] Kennedy Vanguard are considered the leading consulting and research firm in their sector globally. Reference Oil and Gas Journal article "The challenges of project management" dated 22-Apr-2016 located at http://www.ogfj.com/articles/print/volume-13/issue-4/cover-story/the-challenges-of-project-management.html.

Figure 5: Gull Island Project Schedule Risk Drivers – 2008 QRA[5]



[5] Extracted DG2a QRA document Lower Churchill Project – Gate 2a Risk Management Plan, Nalcor document no. GEN-RI-001, Rev B1 dated 14-Oct-2008.

Figure 6: Westney's 2008 QRA view of risk exposure beyond the estimate contingency levels[6]



Having identified some thirty (30) separate strategic risks, the Project Team, with the support of its risk advisor Westney, developed a risk action plan that would focus on efforts to reduce, or otherwise mitigate, the overall exposure that these items may have on the Project. Eventually known as Key Risks,[7] the mitigation planning and activities for these risks would consume significant effort and largely shape the planning activities and strategic decision making up to Decision Gate 3. The 2008 listing of "Key Risks" as extracted from the Westney report are provided in Figure 7 below. For full context, refer to the Key Risk Frames document provided in Attachment 1.

[6] Ibid

[7] The Project Risk Management Plan describes the relationship of Key Risks to all risks identified within the Project.

Figure 7: Summary Listing of Strategic Risk from Westney's 2008 QRA [8]

Risk #	Description	Unmitigated Exposure ($M CDN)
1	Organizational experience and resources for a project of this size	$50 to $500
2	Time required under Crown Corporation rules to gain approval	$20 to $130
3	Changes in the financial market	$0 to $330
4	Foreign Exchange	-$200 to $200
5	Risk premium for obtaining lump sum contracts	$0 to $600
6	Extra year required to secure PPAs	$0 to $120
7	Federal Government support / facilitation	-$500 to $0
8	Changing power market requires changes in project scope	$0 to $300
9	Good HSE record is critical for project success	$0 to $100
10	Availability of resources for quality design	$0 to $500
11	Submarine crossing of Strait of Belle Isle	$0 to $100
12	Faults in submarine cable during commissioning and post installation	$0 to $60
13	Facility Reliability	$0 to $140
14	Securing EA's consistent with project schedule and financial close	$0 to $120
15	Environmental process impact on design	$0 to $150
16	Potential design impact on environmental process	$0 to $130
17	Schedule impact due to lack of IBA with Labrador Innu	$0 to $120
18	Problems with other Aboriginal groups	$0 to $120
19	Nonaligned or non-government organization protest	$0 to $50
20	Availability of experienced hydro contractors	$0 to $400
21	Ability to use Provincial / Labrador contractors due to creditworthiness	$10 to $50
22	Availability of qualified construction management / supervision	$0 to $500
23	Site conditions exceed geotechnical baseline	$0 to $150
24	Availability and retention of skilled construction labour	$0 to $100
25	Availability of unskilled labour	$0 to $25
26	Limited number of hydro turbine suppliers	$0 to $50
27	De-Escalation / Hyper-Inflation Risks	-$200 to $300
28	Availability of experienced high voltage contractors and skilled labour	$0 to $200
29	Limited number of HVdc experienced suppliers and installers	$0 to $50
30	Regulatory approval for sea-return electrodes	$0 to $10

By the end of 2008, it became apparent that neither the power sales, market access, nor the financing work streams, despite best efforts and largely outside of their control, were making the progress required to achieve the deliverables set as requirements for DG2b. Specifically, these requirements included non-binding Letters of Intent (LOI) for anchor loads with long-term customers and confidence that market access could be obtained. By June 2008, the project development team was ready to pass

[8] Summarized from DG2a QRA document Lower Churchill Project – Gate 2a Risk Management Plan, Nalcor document no. GEN-RI-001, Rev B1 dated 14-Oct-2008.

through DG2a and engaged Independent Project Analysis (IPA) to perform a Pacesetter Review, aimed at assessing the Project Management Team's readiness and measuring the degree of front-end loading. IPA, which is an internationally recognized consultancy specializing in project readiness and organizational structures for large capital projects provided favorable findings in its review.[9]

In Feb-2009 Nalcor submitted a comprehensive ~8,000 page EIS to the Joint Review Panel (JRP) established by CEAA to undertake the environmental assessment. A briefing on the status of the Generation EA was provided to the Nalcor Executive highlighting the risks to the EA schedule (see Figure 8), including:

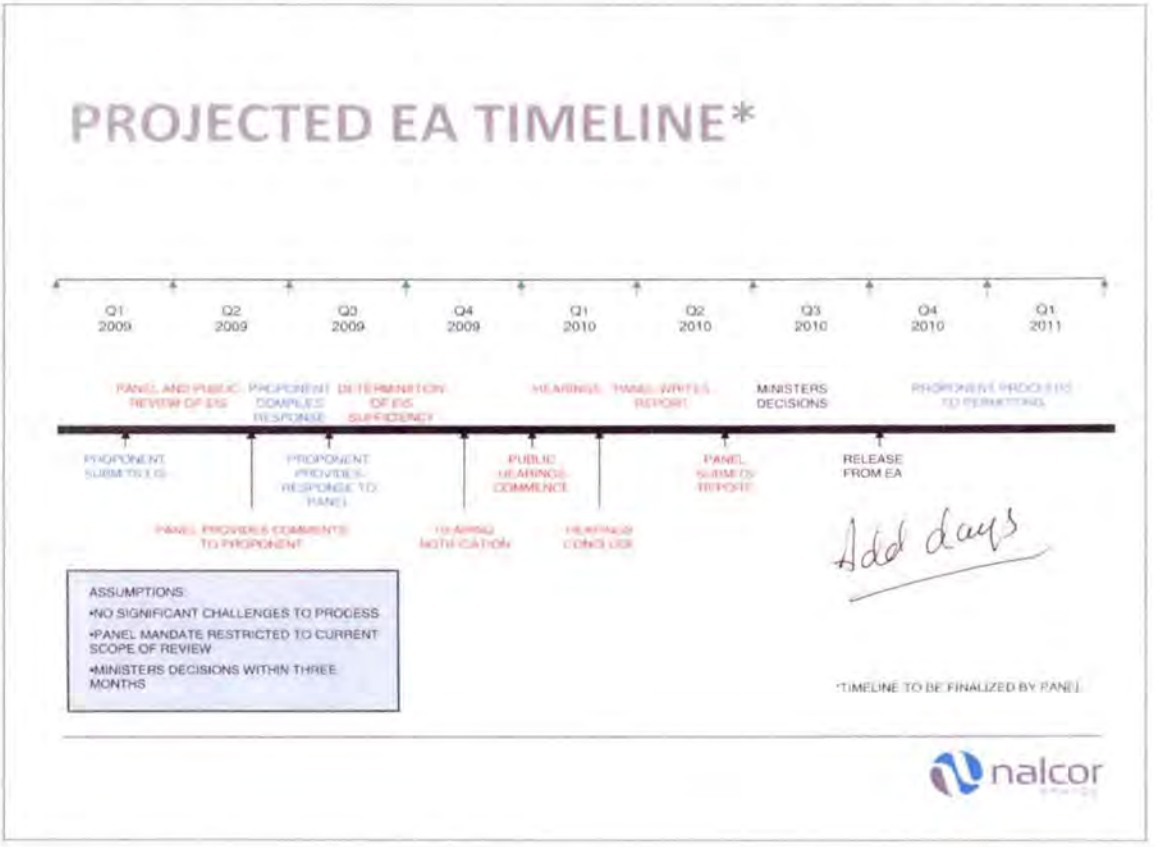
1. **Aboriginal Opposition** – Quebec Innu (comprised of six separate bands) and Labrador Metis Nation (LMN now referred to as NunatuKavut) claims of lack of recognition of their land use and traditional knowledge, which if realized could add one year to the EA schedule. Risk level was considered high, primarily because Nalcor had not been given the mandate by GNL to engage in consultation with these aboriginal groups as it did not recognize their land claims. It would take some months to bring GNL on board to the fact the Nalcor, as the proponent, had an obligation to perform such consultation and offered consultation funding to these groups.

2. **Project Splitting Challenge** – A decision to exclude the Labrador Island Transmission Link (LIL) from the Generation EA process increased the risk of those opposing the Project (e.g. Non-Governmental Organizations (NGOs) such as Sierra Club, Grand River Keepers, etc.) being successful in convincing the Generation Project EA JRP that project splitting had occurred. If this were successful, then Nalcor would have to redo the EA to include the EA for LIL within the Generation EA. The net result of this would have been up to a 12-month delay. The perceived risk level was characterized as medium to high. The key mitigating step would be early registration of the transmission project before the JRP Hearings.

The Generation EIS would be submitted on 19-Feb-2009, with an expectation that EA Release would occur by end of Q3-2010 (in reality it would not occur before March 2012).

[9] Independent Project Analysts, commonly referred to as "IPA," are a Virginia, USA based think-tank who specialize in project benchmarking and metrics. According to their marketing material, *"IPA examines the functioning of capital projects and project systems around the world to help our customers create and use capital assets more efficiently"*.

Figure 8: Generation Project Environmental Assessment Timeline (February 2009) [10]



In 2008, under the *2007 Energy Corporation Act*, Nalcor Energy was established as the Province's energy corporation that will lead the commitments and policy statements made with the Energy Plan, including the development of the hydro potential of the lower Churchill River. In future references to the project, Nalcor Energy would replace NLH as the proponent of the LCP.

Decision Gate 2b, which had been targeted for the end of 2008 still had not been achieved and it was becoming clear that it would slip by a further 6+ months. The dilemma now being faced was how to maintain the first power date while the power sales work stream progress was lagging considerably behind that of the balance of the Project Team activities. Without clarity on power sales and access, it was becoming increasingly difficult to progress project financing activities, thus leading to further delays. Significant effort had been expended on the OATT with the hope that routing power through Quebec would provide the most financially attractive option to access the export markets of Ontario, New Brunswick and the northeastern US. However, without certainty on the outcome of the OATT application, which would drive project financing needed for sanction, the timeline to First Power was at significant risk of slipping beyond 2015.

[10] Extracted briefing presentation EA Update and Next Steps dated 6-Feb-2009 presented to Nalcor Executive.

By the end of February 2009 agreement was reached between the Shareholder and Nalcor Executive that given the Province's healthy fiscal capacity and budget surplus from oil revenue and an agreement reached with Canada on the Atlantic Accord, the Shareholder had the capacity to make a deep equity injection into the Project in order to allow construction to commence immediately following Generation EA release which was anticipated at end of 2010. This represented a significant strategy shift from the 2008 construction schedule which was still being adhered to, as now it would be possible to start construction up to eighteen (18) months before Financial Close. At this junction, the plan encompassed both power sales in the domestic and Maritimes market, with Letters of Intent expected in June – August 2009.

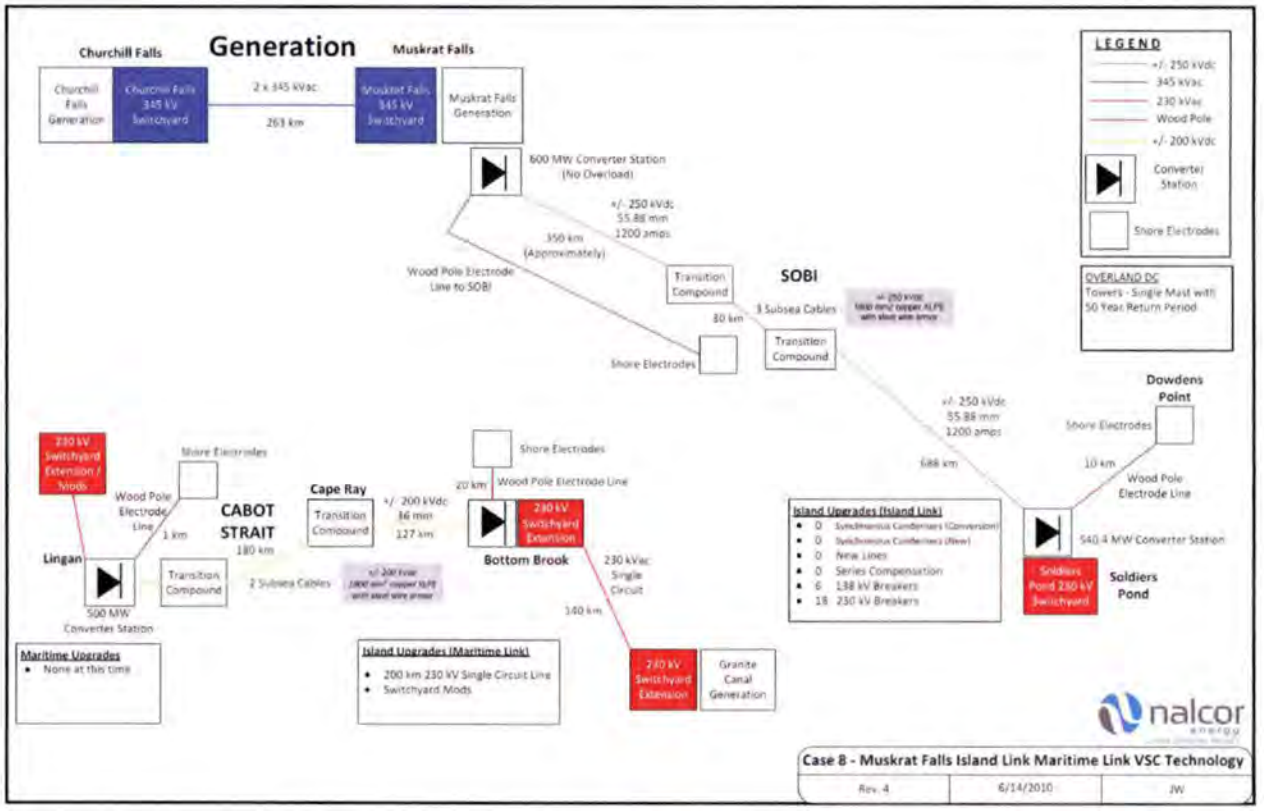
In February 2009 LCP issued an expression of interest (EOI) to the engineering and project management market to seek interest in participating in the LCP under the Engineering and Project Support Contractor (PSC) model. This market testing activity revealed that there was apprehension by the major engineering companies to this form of project support contract model, while the ongoing internal governance risk highlighted by Westney in its 2008 risk review supported the market's views. This resulted in the Project Management Team recommending Engineering, Procurement and Construction Management (EPCM) delivery option at the end of 2009. In addition to the market's acceptance of this model, it would place the EPCM's activities at arm's length from GNL and other influencers which were identified as a strategic risk (encompassed in Key Risk 1 – Governance).

With uncertainty surrounding market access, it was an ongoing struggle to seek capital to enable the Project to continue moving forward. Understandably, in early 2009 questions were asked regarding the Project shutdown process and ability to write-down the costs spent over the past three (3) years of project planning on site investigations, market access, financing and Project Team development. However, by November 2009, a renewed level of optimism began to take shape regarding reversing the development sequence, with Muskrat Falls first. This was considered to be a viable option for the provision of long-term energy supply to the Island given both the ageing power generation facility at Holyrood and the lack of long-term price certainty afforded by thermal-fired generation, while the capital outlay was seen as more manageable and likely not call for non-recourse financing. Under the MF first option, construction could start as early as 2010, with first power flowing in 2016 (i.e. a six-year build program). Nalcor Executive were cautioned that given the limited maturity of feasibility engineering on Muskrat Falls at that time, there was considerable uncertainty on the ability to achieve these dates; however, the Project Team would invest the effort to fully explore this development scenario.

The Muskrat Falls development option was then proposed with a much smaller HVdc link to the Island, having power flow capacity of some 600 MW, operating at 250 kV HVdc (see Figure 9), and without the offtake at Taylor's Brook under the 1,800 MW development scheme for Gull Island (i.e. a two-point HVdc scheme). Given that DG2b had not been achieved and that significant time had passed since DG2a had been achieved, the arrival of 2010 saw the re-amalgamation of deliverables into a refreshed DG2 decision that could be expected by end of 2010. A limited amount of work had been completed in the

2007 – 2009 period on Muskrat Falls, with those efforts limited to desktop studies only, including confirmation of design variant. In order to mature the basis of design, efforts were required to complete final feasibility studies, including further geotechnical drilling on the North Spur. This work was now given a high priority and was initiated.

Figure 9: Graphical Representation of Development Scenario / Case 8

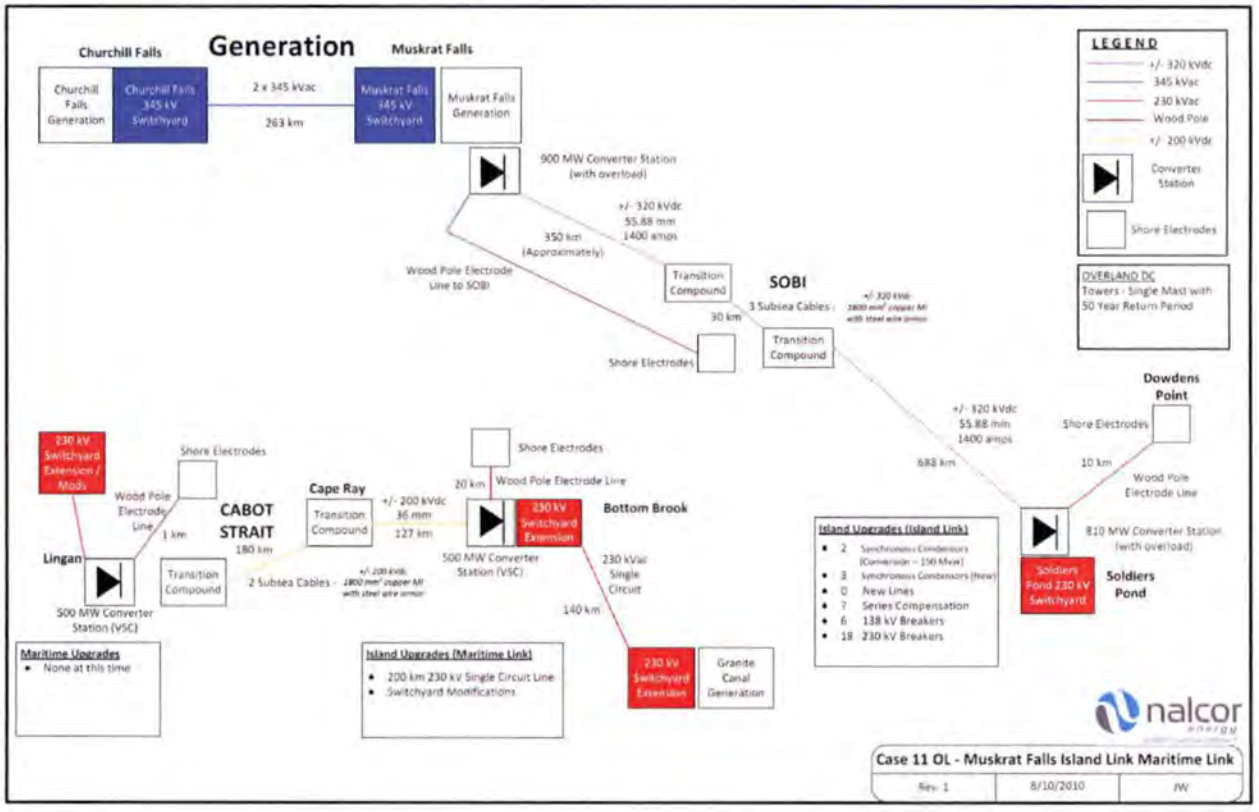


As 2010 commenced, the PMT's efforts were focused on three fronts: 1) maturing the Muskrat Falls development option including the necessary geotechnical and field investigations; 2) preparing for selection of an EPCM consultant; and 3) continuing to support numerous other activities required to ensure DG2 was achieved by year-end. During 2010, the Muskrat-first development option began to take shape, amongst a wide assortment of other development scenarios (internally referred as development cases); including GI via Maritime Link (ML), Labrador offtake, and Hydro Quebec (HQ) OATT export. This dynamic process eventually led to a total 18 development scenarios being presented for economic analysis, with Case 11OL having become the preferred option.

Case 11OL, illustrated in Figure 10, included the Muskrat Falls generating facility with a 900 MW Island Link (320 kV) with overload capacity (hence the reference to OL) using Line Commutated Conversion (LCC) HVdc technology, a 345 kV overhead connection to Churchill Falls, and a separate Maritime Link between Bottom Brook (near Stephenville, NL) and Lingan, Nova Scotia having a power capacity of 500 MW, operating at 200 kV HVdc and using Voltage-Source Conversion (VSC) HVdc technology. This basic

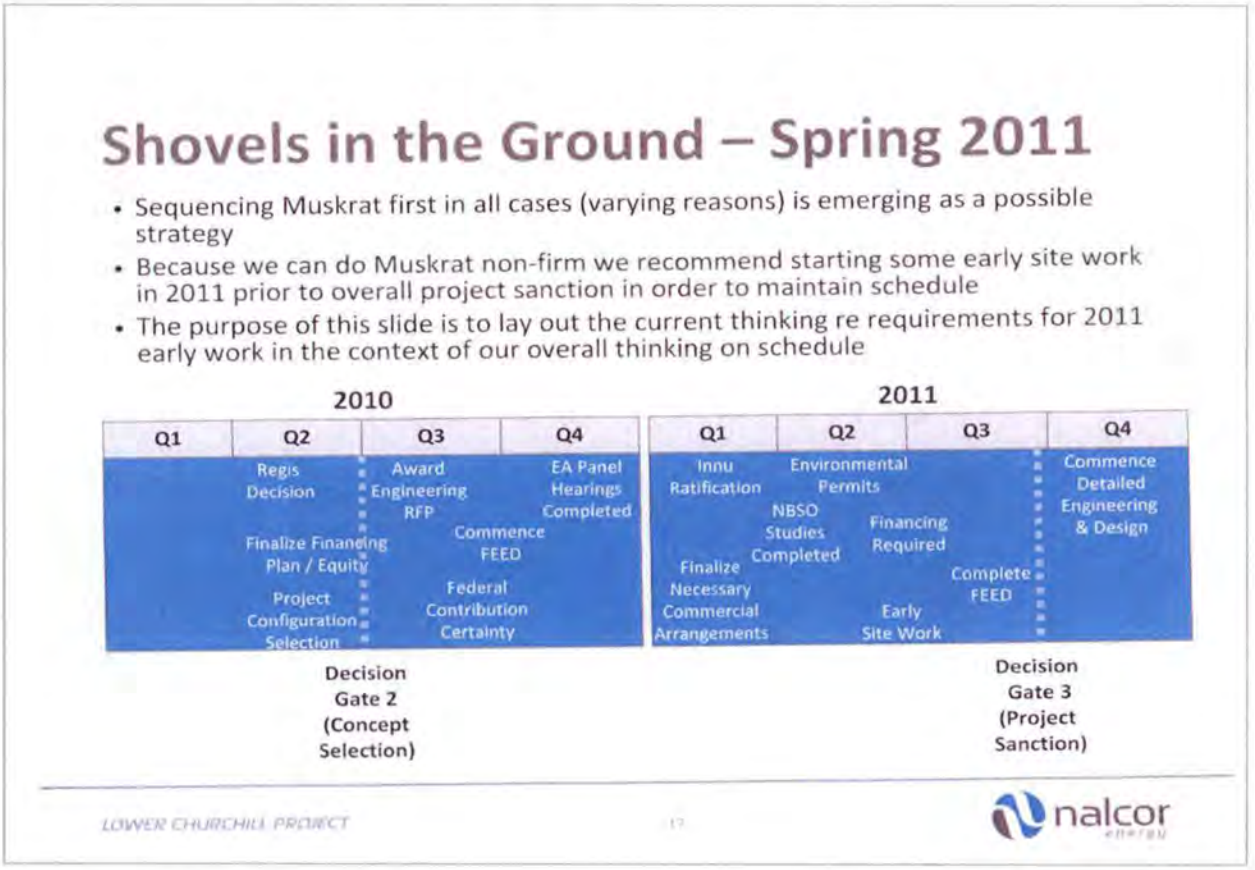
configuration would become the layout basis on which the Muskrat Falls Project would eventually be constructed.

Figure 10: Graphical Representation of Development Scenario / Case 11OL



By the spring of 2010, the Province's fiscal capacity was able to support the view that regardless of what decision was to be received from Quebec's Régie de l'énergie (Regie), Muskrat Falls with equity was considered feasible in either a non-firm Quebec export model or as a replacement for Holyrood. Figure 11, extracted from the Nalcor briefing on the Project to the Shareholder on 23-Apr-2010, suggests that Muskrat Falls first was likely a viable option and that with the Province's strong fiscal capacity, construction could begin prior to project sanction in Spring 2011.

Figure 11: Strategic Roadmap to Sanction (April 2010) [11]



On May 11, 2010 Nalcor received notice of an unfavourable ruling to Nalcor for OATT application made by the Régie. By end June 2010 Nalcor filed an Application for Administrative Revision with the Régie in response to this decision, hoping to receive a favourable ruling that would allow affordable access to power markets through HQ's existing transmission system utilizing unused capacity.

Following the approach adopted in negotiations with ExxonMobil and its partners for the Hebron Development, the Province mandated an increased commitment to local benefits for the Project. On 14-Jul-2010 the Province issued a news release reaffirming its commitment to maximize opportunities for local firms, thus creating heretofore unplanned commitments related to engineering being conducted in the Province, specifically stating:

- *"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."*

[11] Extracted from 9-Apr-2010 presentation entitled Lower Churchill Update – 2010 04 23 presented by Nalcor Executive to the Shareholder.

- *"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."*

Considering that securing a qualified and experienced engineering team was a key risk for the Project (Key Risk No. 10), and the limited expertise of hydro-engineering available, the commitments to perform engineering in Newfoundland and Labrador added increased residual risk beyond that previously considered.

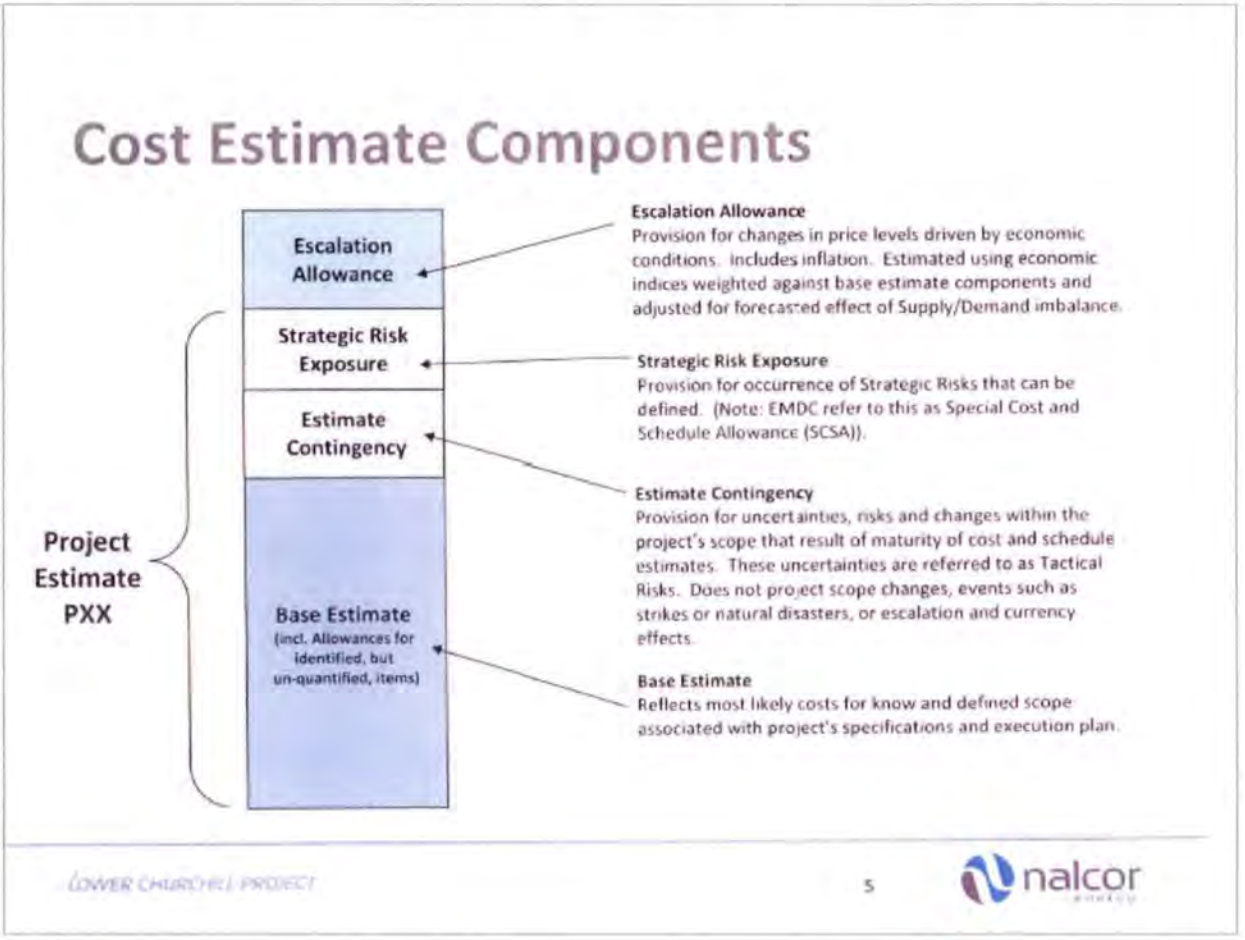
By August 2010 cost projections for the preferred development concept were released with a development cost estimated at $6.2 B inclusive of a $1.2 B estimate for the Maritime Link. In support of the estimate preparation, Westney were engaged to complete a QRA building upon the earlier analysis completed on the Gull Island development in 2009. With a smaller development, funded by an equity injection, as well as the efforts made to reduce strategic risk exposure, Westney characterized the residual strategic risk exposure for Muskrat Falls as much smaller than that of the planned Gull Island development scenario. The *"Gate 2 Project Risk Analysis, document no. LCP-PT-ED-0000-RI-RP-0001-01 Rev. B1"* summarized these results, including reaffirming Nalcor Executive's appetite for risk. This report states:

> *"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."*

At this business planning point, Nalcor Executive called for a P50 cost and schedule viewpoint for input into the project economics, thereby aligning with the other inputs into the economic model, including estimates for revenues. The existence and influence of strategic risk on any development scenario was believed by the Project Team to be understood. [It is noted that this P50 viewpoint as the premise upon which the overall economic analysis, conducted via a Cumulative Present Worth (CPW) evaluation, would carry forward through Decision Gate 3 and would not change until the QRA in 2016]. To ensure total clarity on cost estimating terminology and risk exposure, several working meetings were held with the Nalcor Executive in order to review the process adopted by the Project. Figure 12 summarizes this cost terminology.

The amount of contingent equity (i.e. management reserve) for the strategic risk identified by Westney was in the $300 to 600 million range.

Figure 12: Components of Capital Cost Estimate, Including the Requirement for Strategic Risk Allowance [12]



In the fall of 2010, negotiations with Emera Inc., parent of Nova Scotia Power, were progressing favorably and the parties were able to agree to a Term Sheet that would reflect the details of how they would cooperate to develop and transmit Muskrat Falls' energy resources over the Maritime Link. An announcement to that effect was made on 18-Nov-2010 by then Premier of Newfoundland and Labrador, Premier Williams.

During the negotiations that led to the Term Sheet with Emera, Nalcor Executive made a conscious decision to drop the provisional strategic risk allowance recommended in the DG2 QRA stating that it was required to respond to Emera's concern regarding its ability to sell the strategic risk concept to the Nova Scotia regulator, the Nova Scotia Utility and Review Board (UARB).

Nalcor further reaffirmed its position re risk allowances as part of the Newfoundland and Labrador Board of Commissioners of Public Utilities (PUB) Muskrat Falls Review, wherein it stated:

[12] Extracted from 9-Apr-2010 presentation entitled Gate 2 Estimate Confidence Assurance Package presented to Nalcor Executive

"With the extent of the mitigation activities undertaken and in progress, and probabilistic 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 strategic reserve amount at DG2. These factors were also considered in establishing Project tactical contingency at 15%." [13]

This step signified a shift in risk appetite. From this point forward, allowance for strategic risk exposure was not carried in capital cost inputs provided for CPW modelling, through to DG3. Rather it was believed to be understood that all such exposure, should it materialize, would be funded by contingent equity available from the Province. This is reaffirmed in the letter received by Nalcor's CEO from then Premier Dunderdale on 18-Oct-2011 wherein it reaffirms Shareholder's intentions regarding implementing the necessary measures to enable the Project, including to *"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."*[14]

The Decision Gate 2 QRA report goes on to provide further rational as to why this was the case. The following statements are extracted:

"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:

<u>R7 – Federal government support for generation and transmission investment</u>
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.

<u>R34 – Application of VSC technology on Island Link</u>
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. Eliminating this risk could reasonably be valued at -$100 million on a P50 basis.

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[13] Reference "Muskrat Falls Project - CE-52 Rev. 1 (Public)," *Muskrat Falls Review*, 2011.

[14] Reference letter from Premier Dunderdale to CEO Martin dated 18-Oct-2011.

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 DG 2. These factors were also considered in establishing Estimate Contingency at 15%.

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."

It should be noted that during the 2011-2012 PUB Muskrat Falls review, Nalcor reaffirmed the above statements regarding strategic risk exposure within Confidential Exhibit CE-52: Technical Note – Strategic Risk Analysis and Mitigation, which was made public (less the attachment showing Westney's analysis).

Concurrent to the finalization of cost estimates to support term sheet negotiations that were a predecessor for DG2 recommendation, other DG2 activities were being undertaken including

- The selection of a preferred EPCM consultant was underway with the objective of being ready to award a contract by year-end
- The evaluation of SOBI crossing methodology, long seen as one of the top three strategic risk exposures for the project, was clearly indicating a preference for the seabed option which was selected in September 2010 as the preferred way forward to cross the SOBI with HVdc subsea cables.
- The completion of a geotechnical investigation program at Muskrat Falls that was critical to the process for selecting layout variant that would move into the Front-end Engineering Design (FEED)/final feasibility phase.

By late November 2010, all requirements for Decision Gate 2 had been met as documented within the Decision Support Package. The document *"DG2 Decision Support Package – Summary Recommendation to Nalcor's Board of Directors"* issued on 17-Nov-2010 recommended a phased approach for development of the lower Churchill River resources. Phase 1 would be comprised of Muskrat Falls, HVac lines between MF and CF, a HVdc link to Island, and a separate Emera-led HVdc link to Maritimes, with Phase 2 as Gull Island. DG3 would be targeted for Q3-2011 and an additional $100 to $150 million of capital would be required to be spent before a final go/no-go sanction decision is made. The document

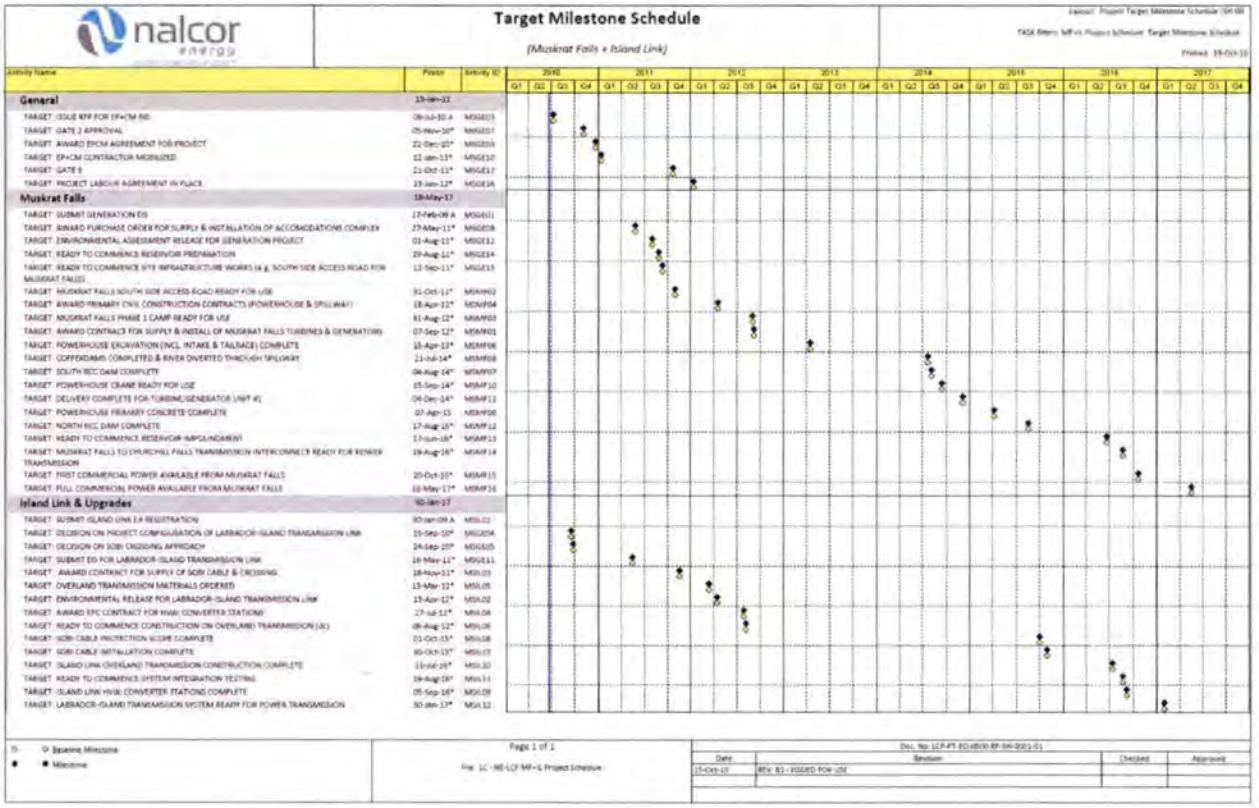
also includes the critical reference of the requirement for contingent equity stating: *"A contingent equity commitment of $300-600M from the Province is also considered prudent and necessary."*

The Shareholder announced publicly on 18-Nov-2010 that the Project was moving forward and that Sanction was targeted before the end of 2011. Shortly after this announcement, Premier Danny Williams resigned as Premier of Newfoundland and Labrador, with the Deputy Premier and Minister of Natural Resources, Honorable Kathy Dunderdale, becoming the first female premier of the Province. Shawn Skinner replaced Dunderdale as Minister of Natural Resources.

Before year-end 2010, two other notable achievements occurred: 1) SNC-Lavalin was selected as the EPCM consultant; and 2) the DG2 schedule baseline was issued (reference document *Target Milestone Schedule*, document no. LCP-PT-ED-0000-EP-SH-0001-01 Rev. B1) (illustrated in Figure 13) committing to First Power from Muskrat Falls by a target date of Oct-2016. Noteworthy assumptions on which the target dates contained in this schedule were predicated included:

- *"The EPCM consultant will be able to rapidly mobilize and prepare for the necessary levels of detailed design.*
- *The environmental process for the generation site will be concluded in Q3 2011.*
- *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.*
- *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.*
- *Early Site Infrastructure Works for Muskrat Falls (access, accommodations, communications, construction power) to commence following EA release and permitting in September 2011."*

Figure 13: Target Milestone Schedule Underpinning Decision Gate 2 (fall-2010)



Unfortunately, each of these key assumptions would not hold, thereby shifting the target dates out further in-time for reasons outside the control of Nalcor Energy or the Project Team. In particular the Generation Project EA duration far exceeded the outside view that was contemplated, stretching some 54 months from registration to EA release. Rather than the DG2 anticipated date of Aug-2011, EA release for the Generation Project slipped to March 2012, which resulted in a loss of the window for infrastructure works planned for Q4-2011 through winter of 2012 and ultimately resulting in a decision to shift the target First Power date to mid-2017.

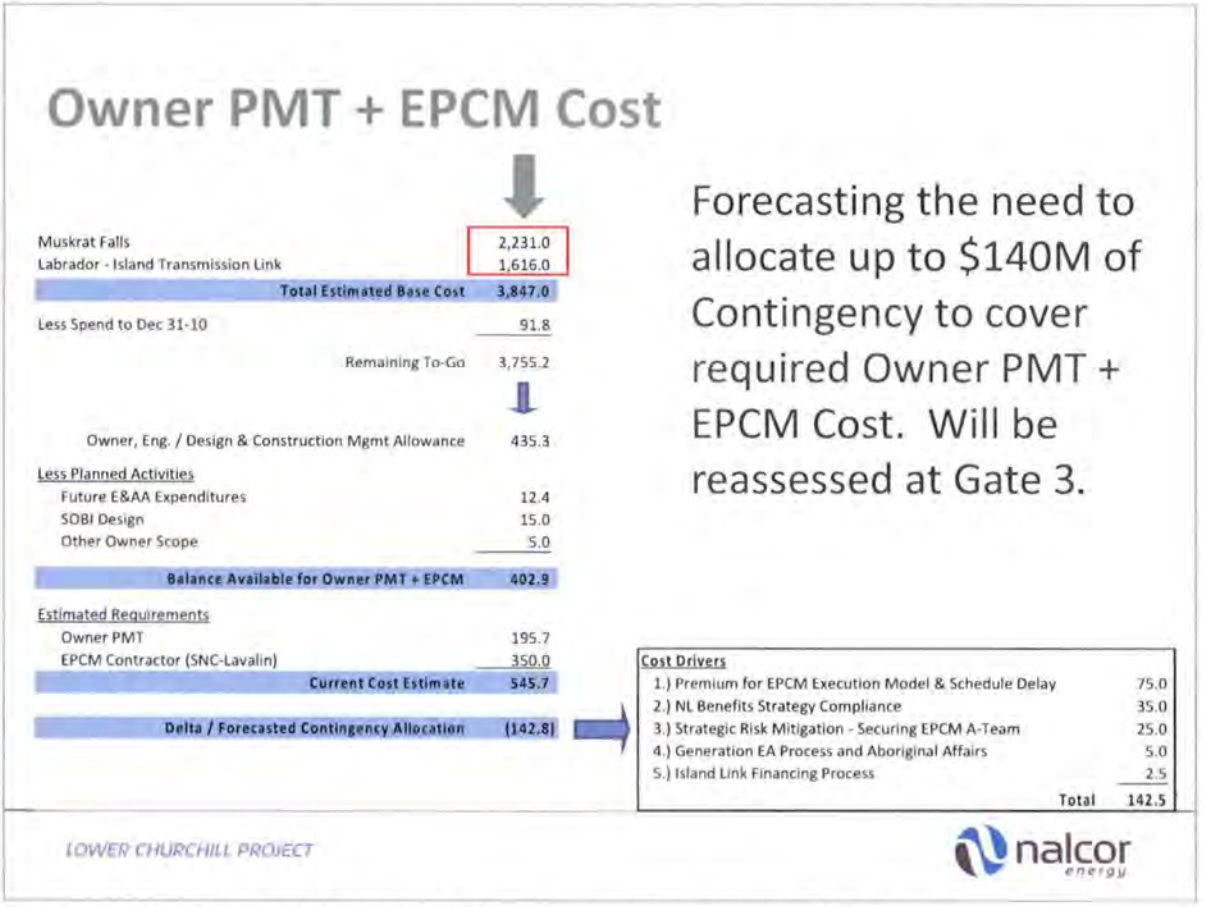
The Project Team established target planning dates which were recognized as being aggressive targets and did not include Schedule Reserve. Detailed deterministic or "un-risked" plans would be developed to support these targets. Within each issue of the Target Milestone Schedule, a key planning document for the Project, it was pointed out that that "*schedule reserve has not been included in the Target Milestone Schedule.*" In fact, as supported by the DG2 and DG3 QRA, the probability of achieving some of these target milestones was extremely low. While the Shareholder and Nalcor Executive were made aware that these targets were often times aggressive, but possible, the Project Team attempted to develop plans that were designed to maximize the probability of their achievement. This approach was focused on achieving the best possible outcome versus the best predictability and driving towards earliest dates.

In early February 2011, a contract for EPCM Services was awarded to SNC Lavalin with a value estimated at $350 M for some 2.5 million person-hours of effort. The contract included Engineering and Procurement Services with an option for Construction Management (CM) (the option was at Nalcor's discretion as Nalcor had concerns regarding SLI's construction management performance on other projects). Under the contract, SLI were responsible for all engineering with the exception of engineering for the SOBI crossing and any engineering work that was to be encompassed within an Engineering, Procurement and Construction (EPC) agreement (e.g. converter stations).

Getting the best engineering team on the ground with hydro-electric and transmission estimating and design expertise was considered a strategic risk reduction measure for the Project, while the Province's demands to have all engineering work done in the Province added a significant logistical challenge and cost premium to the work. A briefing presentation provided to the Nalcor Executive on 8-Feb-2011 explained that the budget for EPCM Services had exceeded the DG2 budget by some $140 M due to: (1) compensation, salaries and uplifts to secure SLI's engineers, estimators, planners and management; and (2) cost premium for NL Benefits Commitments, adding assignment conditions, office and infrastructure beyond the DG2 budgeting parameters.

With the milestone of selecting an EPCM contractor having been achieved, the focus shifted to onboarding the resources, bringing them up to speed on the Project, and the scope required for Decision Gate 3, due by 15-Dec-2011 (known as SLI Phase 2 Deliverables under the EPCM Services Agreement). Having been extensively involved in many aspects of the Project historically, including on-going studies since 2007, it was believed that SLI would have a smooth and easy ramp-up for engineering, providing the greatest opportunity for continuity of technical viewpoints. Unfortunately this proved not to be the case. A two-day kick-off meeting between SLI and LCP comprised of some 70 persons was held at the end of March, wherein detailed presentations of the execution and management approach for the work were presented by Nalcor. These sessions showcased the organization, breadth and depth of capability within the Nalcor Project Team, and the value of ensuring EPCM readiness.

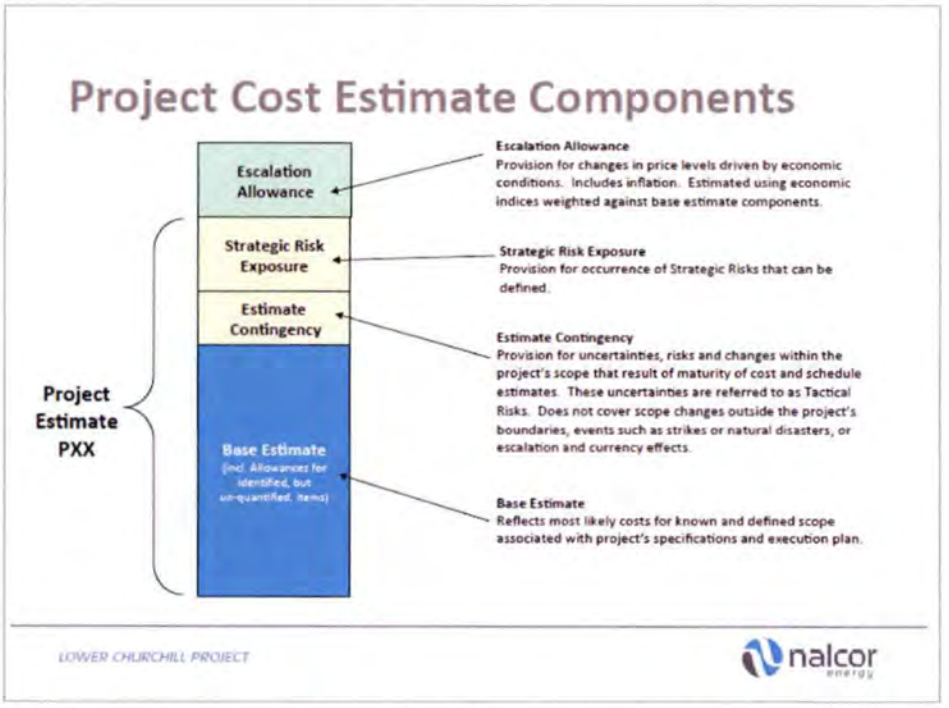
Figure 14: Owner's PMT and EPCM Costs



Note: Extracted from 8-Feb-2011 Nalcor Executive briefing presentation entitled EPCM Cost Review

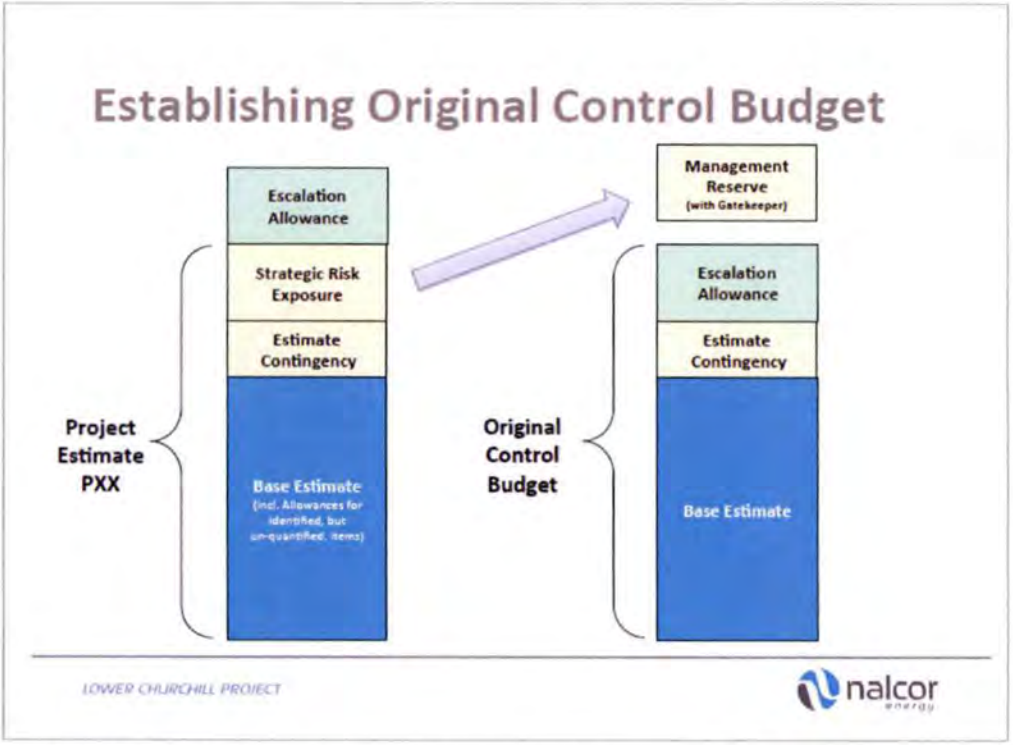
Coinciding with the onboarding of SLI, several working meetings were held with the Nalcor Executive to ensure clear alignment on the estimate basis for the DG2 decision. In particular Nalcor Executive were reminded that although the strategic risk allowance had been removed during Term Sheet negotiations with Emera, the risk exposure remained and still needed to be accounted for. For instance, on 4-March 2011 a Nalcor Executive briefing on estimate contingency occurred, with a focus of anchoring back to terminology for cost estimate components, including contingency and management reserve and how the quantification of both tactical and strategic risks had been used to form a view on the valuation of both cost categories (reference Figures 15 through 18). In this discussion, it was emphasized that a strategic risk allowance of 10% had been removed from the DG2 cost estimate, with the understanding that it was covered by a $600 M contingent equity available from the Shareholder.

Figure 15: Components of Project Cost Estimate



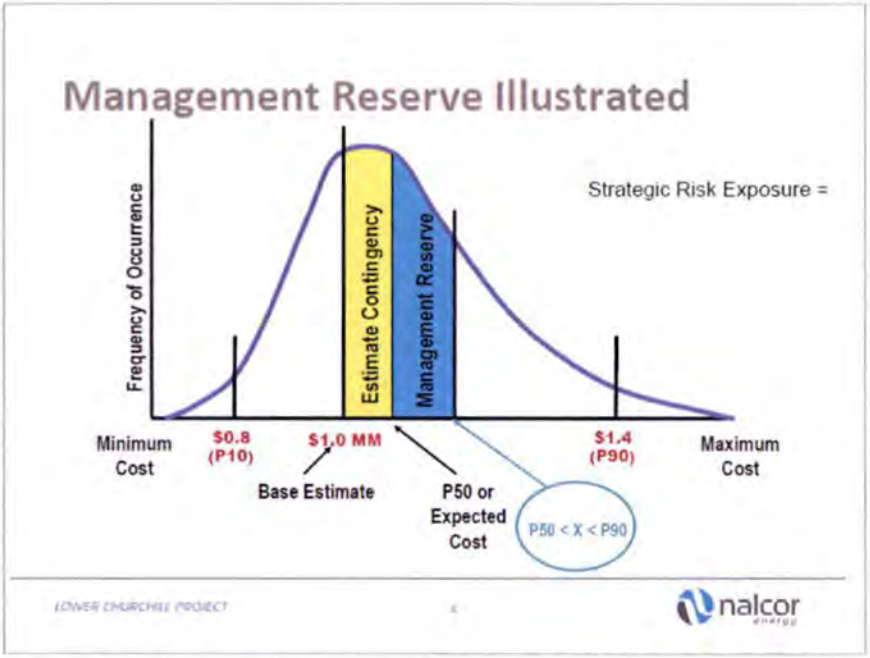
Note: Extracted from 3-Mar-2011 presentation entitled Estimate Contingency Discussion presented to Nalcor Executive – slide used to reaffirm position taken re strategic risk allowance.

Figure 16: Establishing Original Control Budget



Note: Extracted from 3-Mar-2011 presentation entitled Estimate Contingency Discussion presented to Nalcor Executive – slide used to communicate the aspect of calculated strategic risk exposure being set aside as a Management Reserve

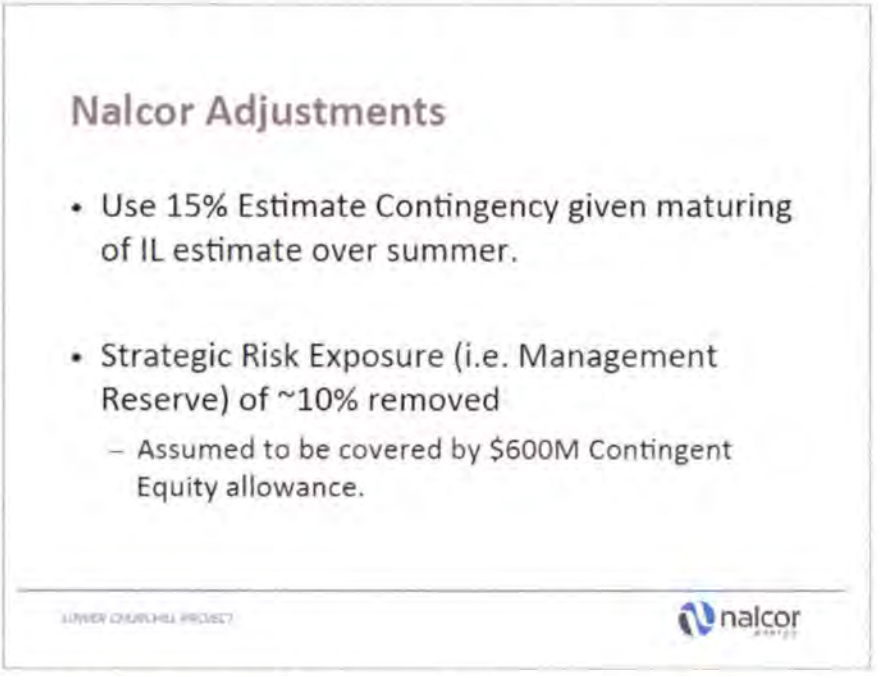
Figure 17: Management Reserve



Note: Slide used to communicate the aspect of Management Reserve intention to provide a higher level of confidence in the estimate, with a decision to be made by Nalcor Executive at what confidence level (i.e. PXX) the Management Reserve should be established. Note that no decision was ever taken by Nalcor Executive or Shareholder as to what confidence level management reserve should be set, only that the Shareholder will backstop the residual risk exposure that cannot be mitigated.[15]

[15] Extracted from 3-Mar-2011 presentation entitled Estimate Contingency Discussion presented to Nalcor Executive.

Figure 18: Contingent Equity and Strategic Risk Exposure



Note: Slide used to remind Nalcor Executive of the decision made to remove strategic risk exposure from the economic analysis used to aid Term Sheet negotiations with Emera in 2010, but it remains the understanding of the Project Team that all such exposure is covered by Contingent Equity available from the Shareholder.[16]

In the face of negative publicity and comments from critics regarding its decision to not have the PUB undertake a supplemental review of the process used to determine that the Interconnected Island Option represented the least cost option for the long-term supply of power to Island electricity customers versus the Isolated Island Option scenario, the GNL mandated the PUB to review the Muskrat Falls Project. Over the next year, the PUB's *Muskrat Falls Review* consumed extensive resources within the Project and distracted from the primary focus on advancing project planning and engineering so as to improve the overall confidence of the Decision Gate 3 decision.

Despite terms of reference that stated a goal of completing the *Muskrat Falls Review* by the end of 2011, a time-extension, public hearings, and the support of Manitoba Hydro International experts, the PUB rendered its decision at the end of March 2012 that it did not have sufficient information to answer the reference question asked by the Province. However, in contrast, both the Consumer Advocate (supported by their engineering consultant Knight Piesold) and Manitoba Hydro International concluded that Muskrat Falls was the least cost option to meet future power requirements of the Province.

As final feasibility studies progressed under the EPCM Services Agreement the joint SLI/Nalcor team moved into its new offices on Torbay Road. During this time some project basis of design changes began

[16] Ibid

to surface through the Project's Management of Change Process.[17] Several key design changes tabled during this period included:

- PCN-0015: Increase in LIL Operating Voltage from 320kV to 350 kV – cost impact ~$100M
- 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: Intake structure design change – cost impact $70 to $90M
- PCN-0033: Increase in HVdc Overland Transmission distance from MF to SOBI – cost impact $11M

Nalcor Executive were concerned by these changes, wondering if they were a sign of things to come, however the Project Team emphasized that these changes were required and that they should be expected given the maturing definition of the Project through final feasibility engineering. As intended, a substantial amount of engineering would have been completed prior to DG3, thereby identifying any major scope changes and confirming the viability of the design; hence the push for front-end loading.

By early September 2011 Navigant Consulting Ltd. released its report *"Independent Supply Decision Review."* The focus of this review was to assess the quality of the DG2 decision. Key observations made by Navigant in its report related to cost and schedule included:

- Key Finding No. 25: *"Nalcor's risk assessment analysis for Muskrat Falls and the Labrador-Island Link project was thorough and comprehensive."*

- Key Finding No. 26: *"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."*

  "Based on the identified best practices, a methodology for estimating cost escalation linking estimated capital costs with project scheduling was developed." (p. 40)

The findings once again provided the Project Team with validation that their work practices and processes were consistent with that expected for a mega-project and if continued to be adhered to, should provide sound inputs for Decision Gate 3.

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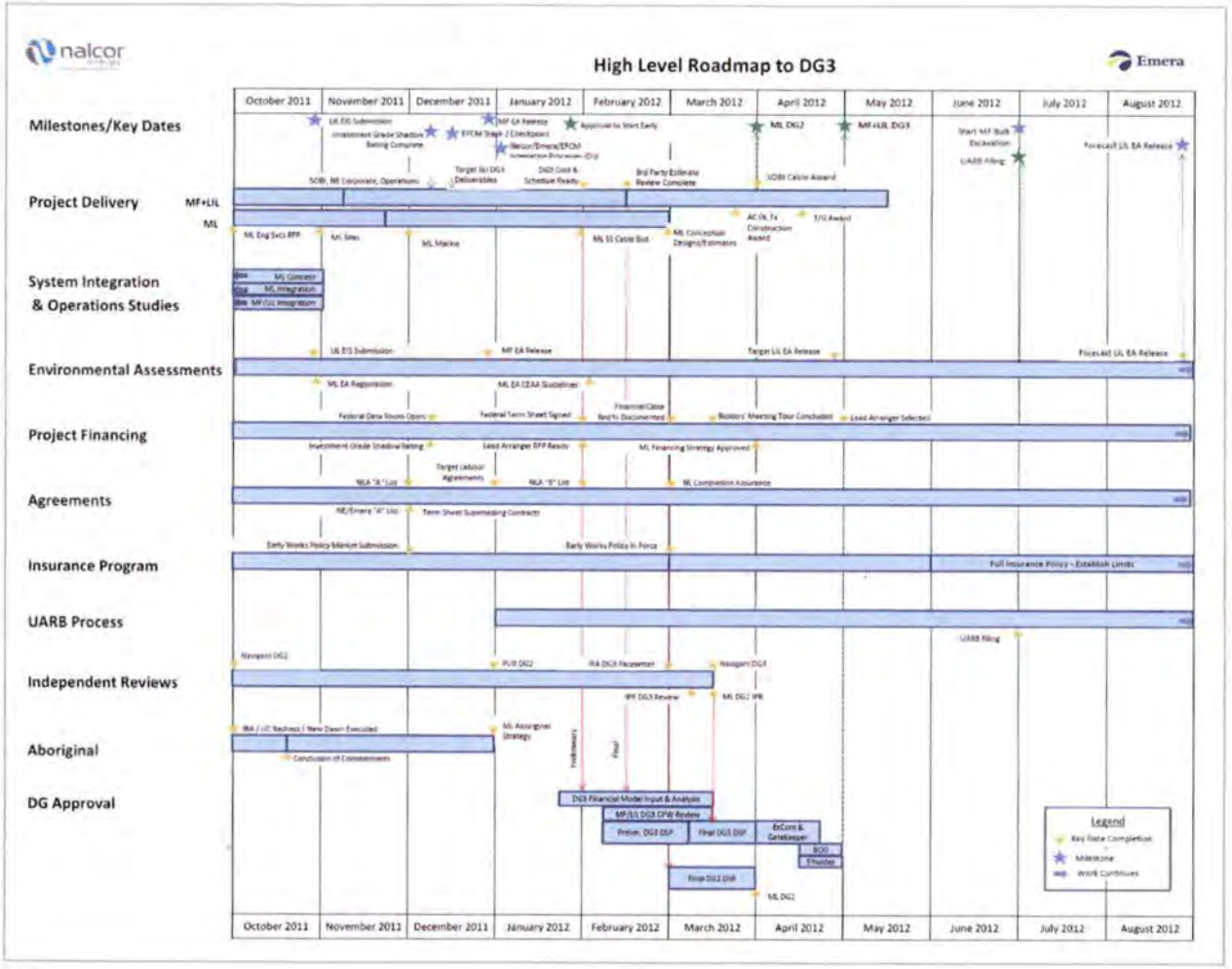
[17] The process, criteria, and approvals for project change are detailed within LCMC's document Change Management Plan, Nalcor Doc. No. LCP-PT-MD-0000-PM-PL-0002-01. Under this Plan, Project Change is defined as *"a deviation which represents a change or departure from the Project baseline scope, estimate, schedule, intended quality, HSE targets, project policy, or execution plan that results in an addition to or reduction in the Original Control Budget or baseline Project Control Schedule including correction for scope / estimate omissions."* Similarly, a Project Change Notice ("PCN") is defined *"as the mechanism used to facilitate the processing of Project Changes. A Project Change Notice (PCN) is represented by both a form and a record which are generated in the LCP Change Management Database. Project Change Notices must be reviewed by the Change Control Board for approval or rejection."*

The ratification of the New Dawn Agreement by Innu Nation, which occurred at the end of June 2011 was seen as a very positive step in advancing the Project, while providing clarity as to Innu Nation's role in the Project moving forward, inclusive of employment and business opportunities. The achievement of this milestone helped to retire a significant strategic risk as well as achieve a key deliverable required for DG3.

As the summer of 2011 drew to a close, the status of events reaffirmed the QRA viewpoint that there was a low probability of achieving DG3 in October 2011, as had been the target at DG2 some nine months earlier. All work streams (engineering, EA, financing, aboriginal, power sales, and market access) were making positive progress, however achieving the DG3 Key Deliverables would take additional time. A high-level roadmap to DG3 (see Figure 19) was produced in order to provide clarity on the various work streams that had to progress, coming together to support a Project Sanction/DG3 decision by 1-May-2012, representing a seven-month delay versus the DG2-envisioned sanction date of Oct-2011, with no change in the First Power date.

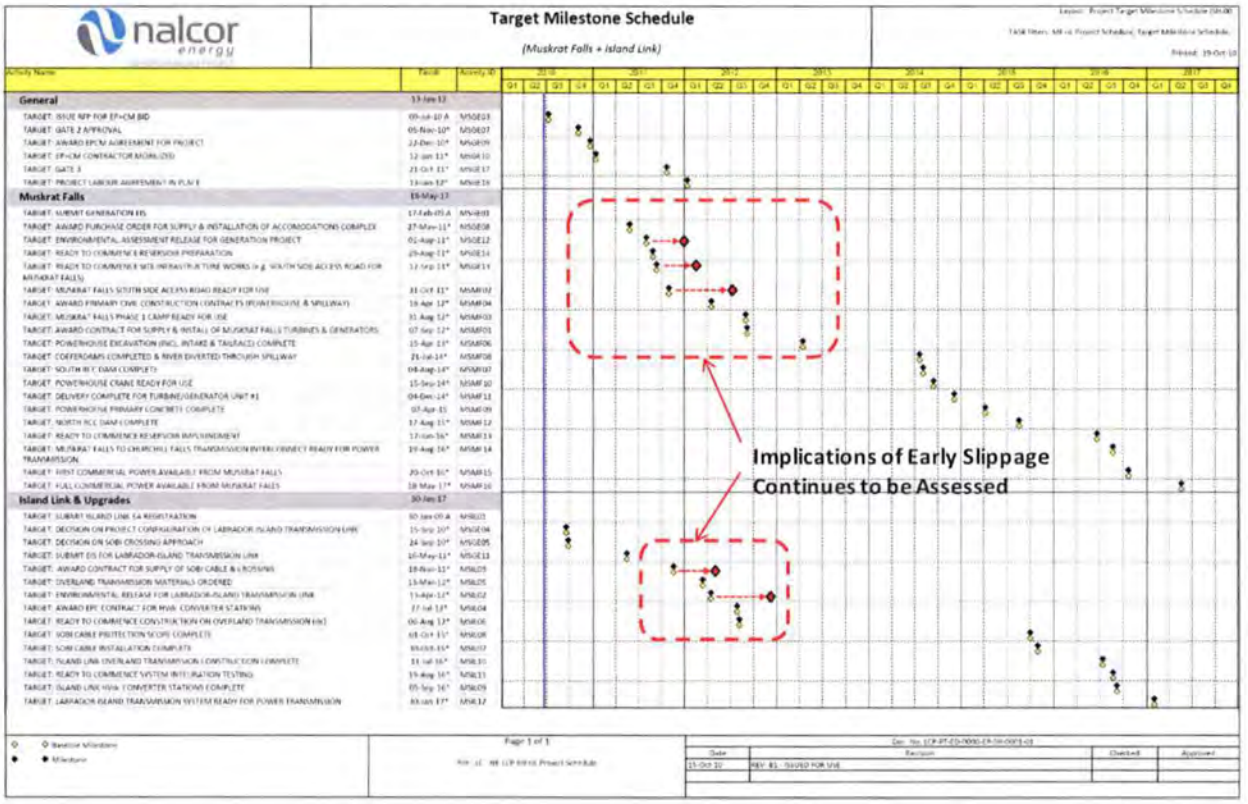
Positive news was beginning to surface regarding a commitment from the Government of Canada to back the project via a Federal Loan Guarantee (FLG). The Government of Canada was beginning to view the Muskrat Falls Project in positive light, viewing it as an Atlantic Canadian regional solution to meeting its greenhouse gas targets. By the end of November 2011, a Memorandum of Understanding (MOU) had been signed between the governments of Canada, Newfoundland and Labrador, and Nova Scotia reaffirming Canada's commitment to a loan guarantee for the LCP.

Figure 19: Roadmap to Decision Gate 3 (Fall 2011)



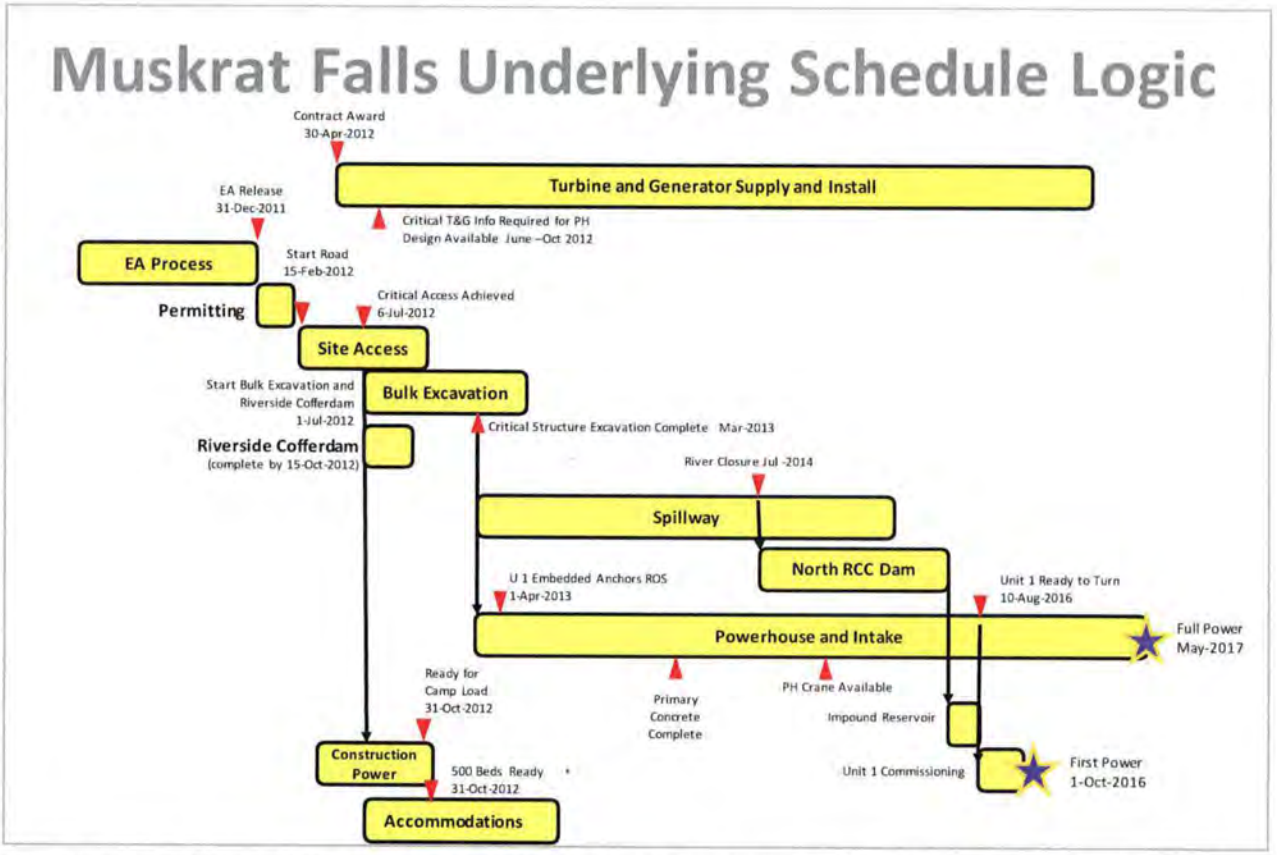
With the PUB's *Muskrat Falls Review* underway in the background, and uncertainty remaining surrounding the timing for EA release of the Generation Project, or GNL's willingness to funding strategic early works construction at Muskrat Falls to preserve a First Power date as early as possible, a presentation was made to Nalcor Executive on 8-Dec-2011 reaffirming the project commitments associated with early works construction that must be made in order to have any chance of 2016 First Power. In short, regardless of a delayed decision on DG3, the achievement of First Power in 2016 hinged upon a critical path sequence of activities, moving forward with infrastructure works by February 2012, starting with the MF access road, followed thereafter by the start of Bulk Excavation in June 2012, thereby allowing the riverside cofferdam to be completed by the weather cut-off date of 15-Oct-2012. Delay of the access road start beyond February 2012 would result in a shift of First Power by no less than six months. Figure 20 illustrates the risk of delay and Figure 21 illustrates this core schedule logic.

Figure 20: Target Milestone Schedule Illustrating Risk of Critical Milestone Delay (Winter-2011)[18]



[18] Extracted from 8-Dec-2011 briefing presentation to Nalcor Executive entitled "Early Works Procurement & Construction – Status Update to LCP Executive.

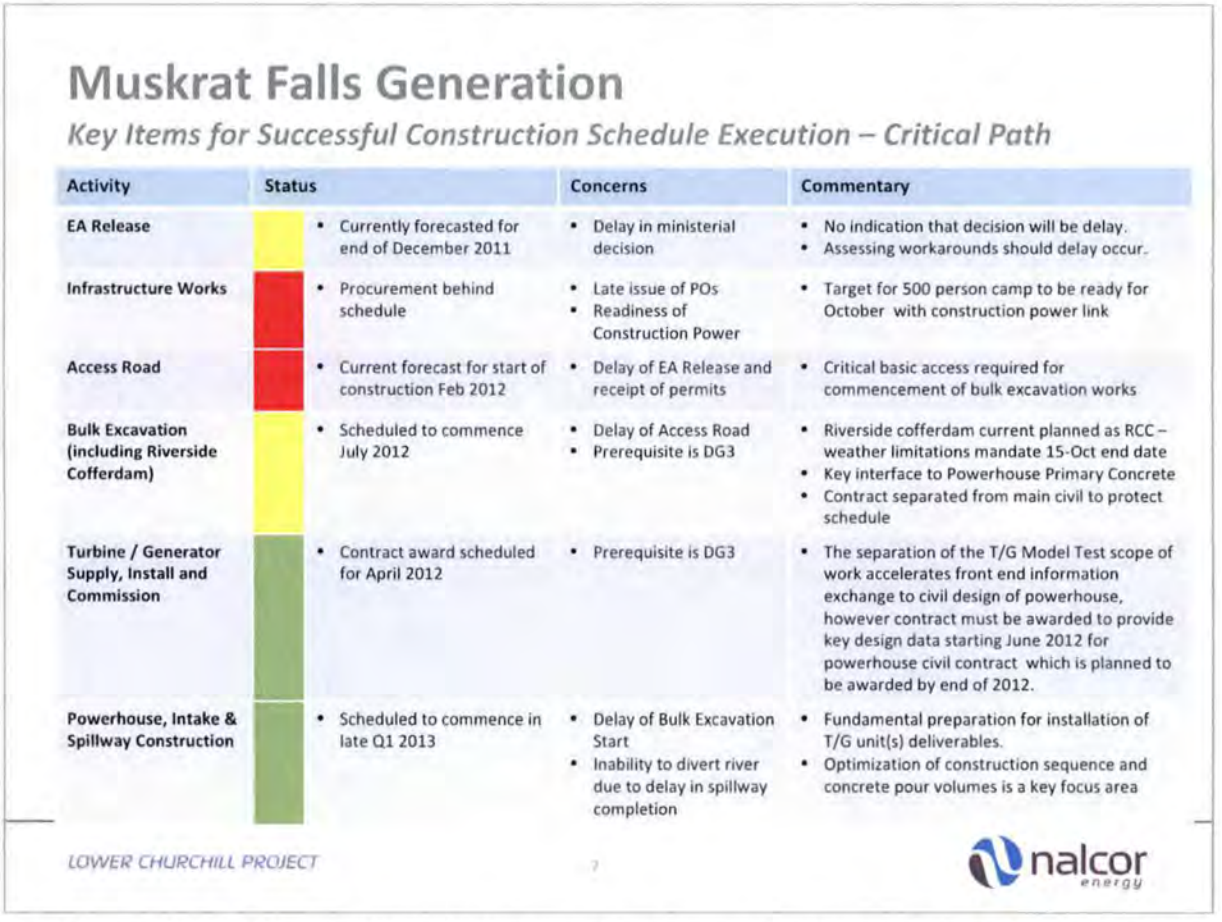
Figure 21: Muskrat Falls Construction / Sequence (Winter 2011)



Note: The key challenge at this juncture related to the challenge of maintaining a 2016 First Power with a sliding date for EA Release and start of Early Infrastructure at Muskrat Falls.[19]

[19] Ibid

Figure 22: Muskrat Falls Construction / Sequence – Key Concerns (Winter 2011)



Muskrat Falls Generation

Key Items for Successful Construction Schedule Execution – Critical Path

Activity	Status	Concerns	Commentary
EA Release	• Currently forecasted for end of December 2011	• Delay in ministerial decision	• No indication that decision will be delay. • Assessing workarounds should delay occur.
Infrastructure Works	• Procurement behind schedule	• Late issue of POs • Readiness of Construction Power	• Target for 500 person camp to be ready for October with construction power link
Access Road	• Current forecast for start of construction Feb 2012	• Delay of EA Release and receipt of permits	• Critical basic access required for commencement of bulk excavation works
Bulk Excavation (including Riverside Cofferdam)	• Scheduled to commence July 2012	• Delay of Access Road • Prerequisite is DG3	• Riverside cofferdam current planned as RCC – weather limitations mandate 15-Oct end date • Key interface to Powerhouse Primary Concrete • Contract separated from main civil to protect schedule
Turbine / Generator Supply, Install and Commission	• Contract award scheduled for April 2012	• Prerequisite is DG3	• The separation of the T/G Model Test scope of work accelerates front end information exchange to civil design of powerhouse, however contract must be awarded to provide key design data starting June 2012 for powerhouse civil contract which is planned to be awarded by end of 2012.
Powerhouse, Intake & Spillway Construction	• Scheduled to commence in late Q1 2013	• Delay of Bulk Excavation Start • Inability to divert river due to delay in spillway completion	• Fundamental preparation for installation of T/G unit(s) deliverables. • Optimization of construction sequence and concrete pour volumes is a key focus area

LOWER CHURCHILL PROJECT

nalcor energy

Note: Slide intended to reaffirm that EA schedule continues to slip, however release expected in December, but would not occur until May resulting in a delay of infrastructure works and loss of 2016 First Power.[20]

Culminating with Project Sanction in December, 2012 would prove to be an important year for the Lower Churchill Project with numerous milestones having been reached, including:

- EA release for the Generation Project
- Commencement of infrastructure works at Muskrat Falls
- Completion of PUB review
- Re-engagement of MHI to review DG3 costs and schedule
- Finalization of DG3 estimate
- Change in SLI's EPCM model
- Submission of the LIL EIS
- Contract award for the first large packages
- Finalization of the Federal Loan Guarantee

[20] Ibid

Project costs and their resultant impact on the Project's business case as demonstrated via CPW modelling would command significant attention throughout 2012. The year started out advising the Nalcor Executive that costs had risen from the DG2 estimate of $5 B to more than $6 B, with final studies and analysis ongoing to try to validate a number that met the stated intentions of a Class 3 estimate.

In January 2012 MHI issued its report under the PUB's Muskrat Falls Review. MHI's report "***Report on Two Generation Expansion Alternatives for the Island Interconnected Electrical System***" included relevant observations from their review of the Decision Gate 2 cost estimate. Of particular note were the following comments:

- *"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)

- 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."*

- *"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)

Regarding **estimate accuracy**, MHI noted that the Class 4 estimate can swing by up to 50% in its statement: *"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%."* (p. 88)

On the subject of reliability of the overhead transmission lines, an area that was subject to much debate and discussion during the PUB Muskrat Falls Review, MHI stated (**emphasis added**):

> *"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."*

Given the amount of scrutiny on the reliability of the overhead transmission system, Nalcor made a concerted effort to increase line reliability in high-loading areas. An earlier 2009 effort to re-route the transmission line through Gros Morne National Park in order to avoid the high-alpine risk zones of the Long Range Mountains, thereby increasing reliability for a much lower cost, had been met with a significant outcry from opposed stakeholders, eventually leading Nalcor to drop the alternative routing.

This reliability review would be the first of two efforts made to reduce perception regarding potential weakness in the overhead transmission system; the second would come following the PUB's *Liberty Review* of 2014 – 2016. While this first phase of optimizations was underway in winter – summer 2012, there was little opportunity to fully assess the impact on the broader capital cost of the Project given limitations of time available to support the July 2012 cut-off of cash flows to support economic evaluations. For the towers and foundations, themselves, the true cost impact would not be understood until the open-book negotiations with Quanta – Valard in 2014.

By early March 2012 the PUB Public Hearings under the *Muskrat Falls Review* had concluded and Nalcor made its final submission to the PUB. By the end of March, 2012 the PUB issued its report.

On 15-Mar-2012, 54 months after registration, Nalcor received release from EA for the Generation Project from both the governments of Newfoundland and Labrador and Canada. The milestone paved the way for filing applications for critical permits required to legally commence early works infrastructure at Muskrat Falls. On 25-Apr-2012 work commenced with the start of snow removal from south side access road to prepare for clearing ahead of the access road construction. The April 2012

monthly progress report includes the statement *"Delay in start of South Side Access Road construction is having a 'knock on effect' for other early works packages"* which is reflective of the amount of uncertainty around key dates moving forward, challenging the Project schedule being presented. Within one month the first major construction contract is awarded – Package CH0004 – South Side Access Road Construction to Liannu Limited Partnership (an Innu Nation joint venture company).

The mobilization and performance of SLI occupied significant management attention throughout 2011; a trend that would worsen in 2012. By the 15-Dec-2011 SLI were contractually required to submit their deliverables for DG3 (referred to as Phase 2 Deliverables under the EPCM Services Agreement). A significant number of these deliverables had not been completed, including the cost estimate input which required significant work to meet Nalcor's expectations. As a result, all SLI estimating resources were re-organized under Nalcor's direction in order to work towards finalization of an acceptable Class 3 estimate as soon as practicable, which was realized in July 2012.

As 2011 ended and the LCP team's readiness for DG3 passage would be tested, the gap in SLI's performance was becoming an increasing concern. It was obvious there was a lack of adequate resources and management capability, while basic processes and systems had not been fully implemented. In an effort to validate the level of readiness for DG3, in February 2012 Nalcor commissioned, with SLI's participation via a senior project manager from its Mines and Metallurgy Division, a cold-eyes assurance review with the mandate of assessing the readiness of SLI's people, processes and systems for DG3 and the likelihood of SLI having produced all of the prerequisite deliverables for DG3 to an acceptable level of quality and completeness. The results of this review were alarming with major deficiencies identified in SLI's performance, the lack of adequate systems and tools (including basic engineering systems such as document control), inadequate resources in senior positions, and a complete lack of alignment with the Shareholder.[21]

By April 2012, Project team moral and performance was severely challenged. Nalcor was gravely concerned about SLI's ability to provide the contracted services, without posing significant risk to the Project. Project progress was suffering as a consequence of SLI's corporate and management challenges, including:

1) During the Engineering and Procurement phase of the Project SLI struggled to provide the resources required with a succession of Project Managers and Functional Managers assigned to the Project.

2) The quality of management and field personnel who SLI were bringing forward consistently resulted in less than optimal delivery of the EPCM Services, manifesting itself as poor readiness for the engineering, procurement or early work construction phases.

[21] SLI Pre-DG3 IPR Readiness Check provided an independent assurance review of SLI readiness for DG3. Review completed by Derek Owen (independent), Stan Genega (Independent via Westney), and Paul Gendreau (SLI).

3) A lack of implementation of the committed SLI process, tools and systems (e.g. PM+) resulting in poor controls and the need for Lower Churchill Management Corporation (LCMC) to step-in on numerous occasions to fill critical gaps (people and processes). This observation was reaffirmed by a cold-eyes review conducted in March 2012, which included SLI Corporate.

4) The lack of working interfaces between engineering deliverables and procurement, resulted in missed deadlines for the issuance of Requests for Proposals for commitment packages. Nalcor had to recruit and assign engineering deliverables coordinators in order to bridge this interface, working to ensure the correct deliverables were available to support the RFP release date and subsequent award.

5) The growing ideology gap between what Nalcor understood from the bid phase to that ideology currently being presented by SLI; in particular for construction management, which was transcending itself as a huge estimated person-hour gap in the EPCM Services. For example there were statements being made by senior SLI management to having 500-700 construction management personnel at the Muskrat Falls site alone.

6) SLI's reputation issues on international contracts and accusations of corruptions at senior SLI leadership resulted in major changes to the SLI Corporate Senior Leadership and became a significant distraction for SLI leadership accountable for the EPCM Services Agreement.

7) It became apparent that the contract strategy ideas being put forward by SLI were based upon the HQ model and were incompatible with the contracting strategy approved by Nalcor Executive and deemed essential for project financing.

Following extensive internal deliberation, it was becoming increasingly clear that the only viable approach to reduce the exposure of a lack of project management capability was to switch from an EPCM to an integrated delivery model, with SLI and Nalcor jointly contributing resources to the project team. This approach made sense as skill sets within each organization augmented the capability of each, while Nalcor believed that it could access the necessary resources to bolster the joint team from other consultants and providers (e.g. Hatch) as required. This joint team eventually was referred to as the Project Delivery Team (PDT), a joint Nalcor-SLI integrated organization led by Nalcor's senior resources under the umbrella of the newly founded Lower Churchill Management Corporation (LCMC). Under the planned project financing structure, LCMC would exist for the sole purposes of managing the capital phase of the Project's corporate entities (e.g. Muskrat Falls Corporation (MFC)).

In an effort to align viewpoints of how construction management would be handled on the Project, a construction management workshop was hosted by Nalcor on 26-Mar-2012, from which Nalcor set forth key execution philosophies that it expected SLI representatives to adhere to going forward. This was one of many such workshops that Nalcor had initiated post the March 2011 EPCM kick-off meeting. The

outcome of the construction management workshops became the guiding inputs to the Project's *Construction Management Plan*, document no. LCP-PT-MD-0000-CS-PL-0001-01, Rev. B1 as issued for use in May 2102.

In a similar manner, in order to improve team moral and the functionality of the Nalcor-SLI relationship, a decision was made to engage Deloitte & Touche LLP in May 2012 to implement a team effectiveness program. Over the course of May through December 2012 Deloitte were tasked with implementing its strategic team effectiveness roadmap, which included management working sessions, team surveys, feedback sessions, and group exercises. While Deloitte's roadmap to team effectiveness proved to have good value, it did not change the broader issue with SLI's performance gap.

By June 2012, SLI's poor performance on the relatively small construction power scope caused Nalcor to re-think the integration risk created by SLI's proposed packaging strategy for the switchyards with SLI performing engineering and construction management. These concerns led Nalcor to engage Power Advocate. Power Advocate, based in of Boston, MA, were engaged by LCMC to re-assess the proposed contracting strategy for the combined Churchill Falls, Muskrat Falls and Soldier's Pond switchyard scope. Power Advocate endorsed LCMC's preferred contracting strategy of an EPC contract format by one of the three major international credit-worthy suppliers of HVdc and switchyard equipment (Alstom, ABB and Siemens), which was eventually implemented for these package scopes.

In April 2012, LCMC submitted the EIS for the LIL to both the provincial and federal governments under the EA process. The process had generally been delayed due to the absence of a decision from CEAA on the type and level of federal EA required. The 2010 Supreme Court of Canada decision (January 21, 2010, Red Chris Mine) had caused CEAA to re-evaluate its previous simpler and much more expedient EA track decision for the SOBI crossing. As a result of this court decision the level of federal EA increased significantly, thereby extending the EA process for several months.

At the time of the LIL EIS submittal, Nalcor's view based upon EA experience to date, was that the EIS review process would take a further 12+ months (i.e. April 2013). This extended beyond the DG2 plan that relied on full construction of the HVdc transmission line beginning in 2013. It is noted that LIL finally received EA Release from Canada in November 2013, or some ~18 months after the EIS was submitted, which resulted in loss of the planned 2013 construction season for the HVdc transmission line (TL). This realization resulted in a situation whereby the generation and transmission projects become somewhat out-of-sequence from a timing of completion perspective. In light of this, the PMT considered options for how to best complete the transmission line, considering the identified limited availability of capable contractors.

In June 2012 Nalcor Energy held its Annual General Meeting (AGM) which was used to provide an update on the Project, including the Project's costs. In this particular meeting Nalcor CEO Ed Martin used the opportunity to discuss the investment in the Project and the layout changes that had occurred at

Muskrat Falls following final engineering. These comments laid the groundwork for the rationale for cost changes that would become public at year-end with the DG3 announcement.

After months of data review and analysis, reorganization and updates, on 16-July 2012 the DG3 cost estimate was completed, resulting in a capital cost estimate of $6.2 B for 1-May-2012 going forward. This estimate was a P50 value coming out of the QRA and it excluded financing costs. The cost basis relied on construction at MF starting site early works by June 2012 to be able to have a chance at achieving a target First Power date of mid-2017, with Full Power in December 2017, as indicated by the key dates shown in Figure 23 below.

Figure 23: Listing of Key Project Milestones as envisioned Q3-2012 [22]

[22] Extracted from briefing deck to Government of Canada entitled Nalcor Energy – Lower Churchill Federal Loan Guarantee DG3 Capital Costs Overview, 20-August-2012

In the summer of 2012, the GNL's Department of Natural Resources engaged MHI to review the Project. MHI reviewed the work done since DG2 including the DG3 cost estimates and construction schedules. By the end of October 2012, MHI's review was complete and the GNL issued MHI's report entitled Review of the Muskrat Falls and Labrador Island HVdc Link and the Isolated Island Option. MHI's findings included supporting the recommendation of the Interconnected Island Option as the preferred option to meet the long-term power needs of the Island.

With the DG3 estimate completed, the second half of 2012 had a two-fold focus: (i) complete readiness to recommend passage through DG3 by end of year; (ii) maintain infrastructure works and progression for main civil works (e.g. following sanction).

In 2012, bidding for some of the first big packages began, starting with Package CH0006 – Bulk Excavation Works which occurred in the summer of 2012. In total three competitive bids were received, with a final decision to award to IKC-ONE in November at award value of $111 M, which was $29 M less than the cost contained in the DG3 estimate, thus leaving room for package growth and risk exposure. IKC-ONE were granted approval to mobilize prior to Sanction, which at that time was anticipated to be provided within weeks. As with the turbine and generator and SOBI Cable bids, the CH0006 bid result provided a level of optimism in the Project Team that the values carried in the DG3 estimate were indeed reasonable. By early January 2013, LCMC, on behalf of Muskrat Falls Corporation, would award Package CH0030 – Supply and Installation of Turbines and Generators to Andritz Hydro Canada Inc. The contract value at award was ~$188 M, which was well within the DG3 estimate of $205 M.

However, in counterpoint the same could not be said for the second and largest IBA package for which bids would be received – CH0002 Supply and Installation of Accommodations Complex (the first was Package CH0004 – South Side Road Construction). By the time the bids were received and analyzed the DG3 numbers of mid-July had been finalized. With a budget estimate of some $65.9 M ($43,800 per room), an award recommendation made on 11-October estimated the package at $110.8 M ($68,500 per room), therein wiping away $45 M or 12% of the total Estimate Contingency being carried for DG3. As stated in the DG3 Decision Support Package presented on 15-Oct-2012, cost growth could be partially explained due to the limited competitiveness of the bid – only 2 qualified Innu-partnerships existed, with neither partner being a Tier 1 provider, and neither price being competitive. The lack of competition and high prices would prove challenging for many of the Innu-first packages on the Project, far exceeding the budgetary prices and perceived price risk assessed as part of the DG3 QRA. This was the first real manifestation of strategic risk and impact on the DG3 estimate costs.

The fourth quarter of 2012 largely centered on finalization of readiness to recommend a DG3 decision by year-end. The Project Team focussed on ensuring all DG3 Key Deliverables were completed to support the Declaration of Readiness required by the Gateway Process. By the end of November, the Province and Government of Canada issued a news release advising that the terms of a Federal Loan Guarantee for the Project had been concluded. The FLG would reduce the cost of financing for the Project through reduced interest rates, resulting in stabilized electricity rates for consumers in the Province, however,

the FLG did not reduce the project's capital costs. With this milestone, one of the few positive strategic risks that had been identified in 2008 came to fruition, supporting the position taken by Nalcor Executive prior to DG2 in the removal of the strategic risk exposure allowance.

The Project Management Team continued efforts to address the performance short-fall within SLI, including a further integration of project management functions and resources and continuing the shift to the Integrated-Delivery Model (coincidentally the same as the Engineering and Project Support Contractor model market-tested in 2008). The LCP December 2012 Monthly Progress Report included the following statements regarding this organizational shift:

- *"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."*

The regular turnover of management within SLI, as illustrated in Figure 24, was becoming overwhelming; Nalcor understood that the risk exposure to continue with the status quo was unacceptable and that post-Sanction it would only increase. This resulted in a renewed drive to make the integrated team a key priority. During briefings with the Independent Engineer (IE), it became apparent that the IE both appreciated the SLI performance gap and supported Nalcor's risk reduction plans of moving to the integrated team model. In order to reduce delivery risk during this period, Nalcor executed a services agreement with Hatch (the other key contender for the EPCM Services Agreement), for the provision of technical expertise to supplement the capacity of both the Integrated Project Delivery Team and SLI engineering.

Figure 24: Turnover of Key SLI Positions (First 18 Months Post Contract Award: January 2011 to June 2012)

With the Integrated Project Delivery Team, SLI's engineering responsibility would not be integrated and would remain with SLI as the Engineer of Record. By the end of 2016, the integrated Project Delivery Team would include approximately 90 SLI personnel (equating to ~20% of total) in various functions at almost all Project offices and site locations, including, engineering, procurement, quality, safety, environment, construction management and project management. LCMC leadership met continuously with SLI Corporate leadership throughout the transition to the integrated model in order to maintain alignment and support. In its fall 2015 assessment, Independent Project Analysis would acknowledge the integrated team model as being an effective means of providing project management to a complex mega project. While this risk reduction measure was successful and has been acknowledged by external stakeholders and reviewers, its implementation occupied significant management resources during a critical period of the Project.

The Province embarked on a major communications campaign throughout the fourth quarter of 2012, under the theme of "*Power in our Hands*." Numerous news releases with references to third party studies were issued with an objective of ensuring that stakeholders were provided with key facts surrounding options for the long-term energy supply for the Island. Muskrat Falls was promoted as the solution that will ensure long term stable rates.

On 17-Dec-2012, Premier Kathy Dunderdale announced that the Government of Newfoundland and Labrador *"has granted Nalcor the authority to sanction the development of Muskrat Falls"* With First Power expected to flow in 2017. On the subject of capital cost, the Province's news release included the following statement:

> *"In October 2012, the province released the project's Decision Gate 3 cost estimate and the findings of a report conducted by MHI. The report confirmed the engineering, costs, and project planning completed by Nalcor and affirmed Muskrat Falls as the least-cost option for electricity generation in the province. The report included the most up-to-date information on load forecasts and cost estimates including capital costs, operating costs, financing costs, fuel and interest."*

SELECTION OF THE PROJECT EXECUTION APPROACH AND CONTRACTING STRATEGY

During the development of the Project's contracting strategy Nalcor also had concerns regarding the availability of experienced hydro contractors. As a result of the strong demand for new hydro, industry consolidation, and, with the exception of Quebec, a relative lack of hydro development in North America over the past 20 years, there was limited availability of experienced hydro contractors, which could result in less than expected number of qualified contractors being interested. An additional challenge for those contractors who may have been capable of performing the job was to convince them the Project was real. Doing so required Senior and Executive Leadership to engage directly, visiting each contractor in order to provide a convincing presentation that this time, contrary to other attempts in the past, the Project would materialize and that their involvement was required. Similar approaches were also taken for other key components and scopes, including submarine cable, converter stations, turbines and generators, and transmission line contractors. There was a pervasive belief among suppliers and contractors that the Project would not go ahead and therefore there was reluctance from their risk committees to invest time and costs into responses to RFPs. The meetings by senior Project management were successful in overcome their reluctance and ultimately the Project attracted a competitive number of bidders for key contracts.

For the transmission line construction, the sheer scale of overland transmission line to be constructed, including for the Maritime Link, was shaping up to be the largest transmission line program undertaken in North America over the past twenty years. With nearly 2,000 km of transmission to build, and a limited number of high-voltage contractors and linespersons within Eastern Canada, the options for execution were limited and considered high-risk. In the United States, the growing demand for such capability was being compounded by the surge of renewable energy developments located in geographically remote locations (i.e. west Texas), combined with intensive capital programs to renew the aging US electrical grid. With such strong demand south of the border, it was recognized that the Project may have challenges securing qualified contractors, leading to cost growth and schedule slippage. Once again senior project leadership met with the transmission suppliers and contractors to

ensure a competitive set of bids for goods, services and construction was obtained, however the availability of internationally recognized, credit-worthy transmission contractors was very limited.

As the Project Team endeavoured to develop the optimum contracting and delivery strategy for the Project, the restrictions and requirements mandated to meet the threshold requirements for non-recourse project financing were shaping the execution-phase risk profile. For instance, PwC, as Nalcor's financial advisors, were cautioning Nalcor that to meet the threshold of acceptable risk under non-recourse financing, all selected contractors would be required to be creditworthy or "bankable," while lenders would have a strong preference for larger, lump-sum EPC-type contracts wherein execution risk could be packaged-up and contracted and interfaces minimized. Nalcor acknowledged that while this may be possible, the price for risk transfer arrangements would have to be carefully assessed. This was particularly relevant since LCP was being developed with cost as the principal driver, with Nalcor selecting execution strategies that struck an overall balance of total cost against cost predictability.

The selected execution approach for the Project was finalized in March 2011 within the document Project Management Approach and Contracting Strategy (Post Gate 2), Nalcor document no. LCP-PT-MD-0000-PM-ST-0001-01, Rev. B1. Another critical contracting strategy document was completed for DG3 planning purposes and documented in Overarching Contracting Strategy, Nalcor document no. LCP-PT-MD-0000-PM-ST-0001-01, Rev. B1. Figures 25 and 26 summarize the delivery model for the Project.

Figure 25: Execution Model for Optimal Project Delivery

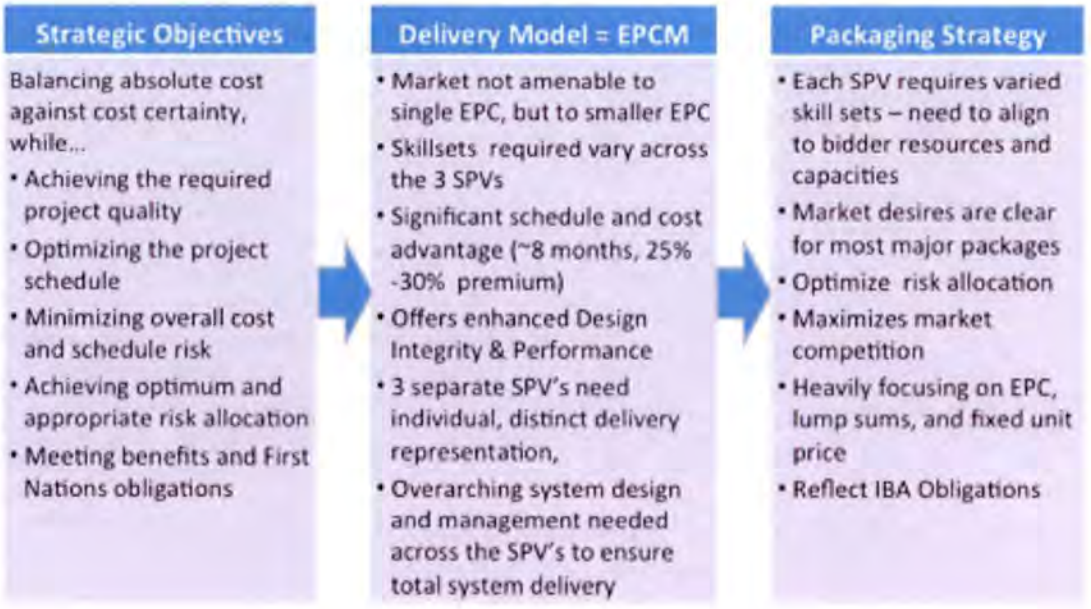
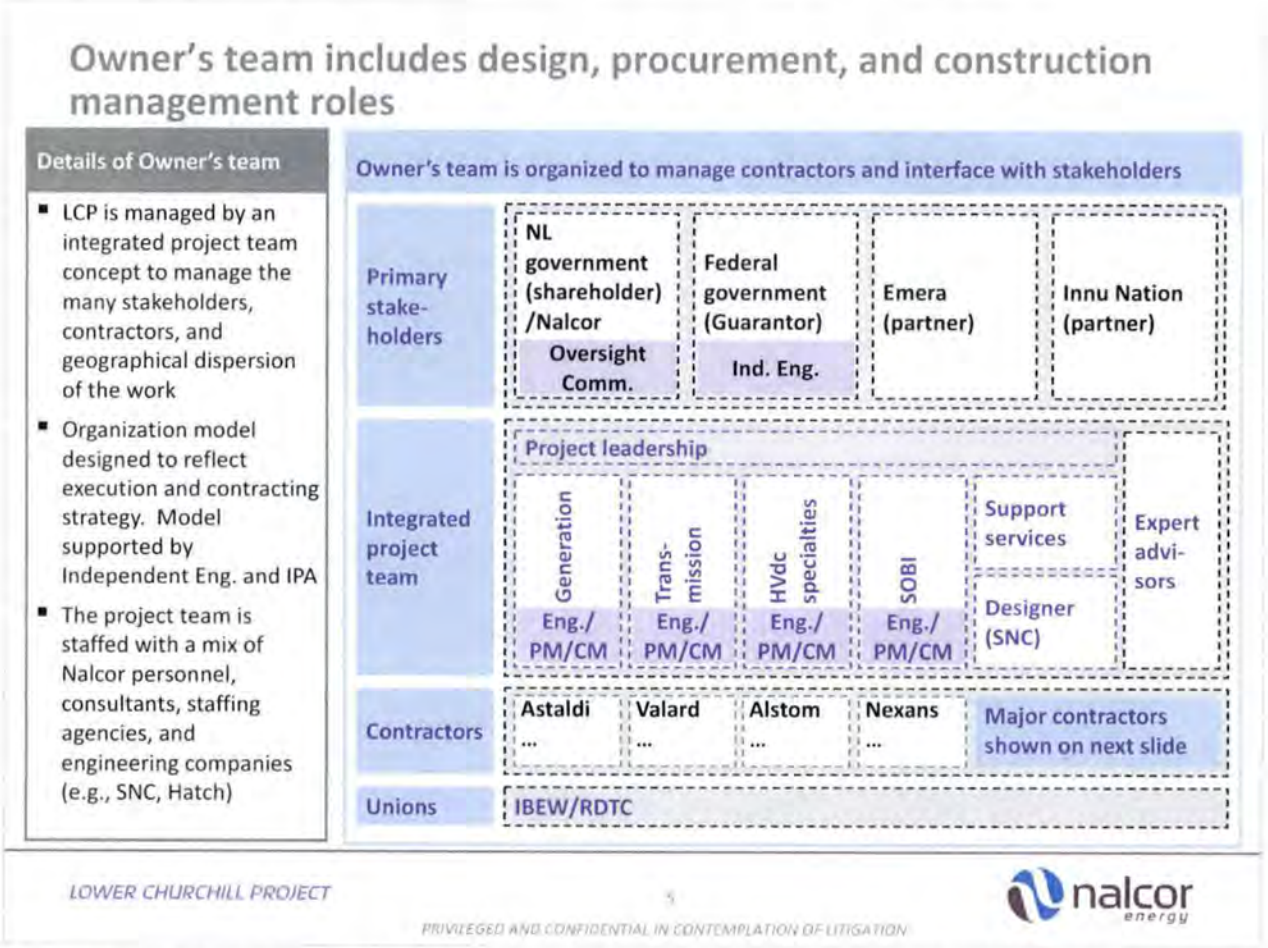


Figure 26: Final Project Model Switch to Integrated Delivery Team Model in 2013



Note: Note that the subdivision of the Project into each of Generation, Overland Transmission, HVdc Specialities, and SOBI had occurred by 2009. The selected execution approach for the Project would eventually be published in March 2011 within the document Project Management Approach and Contracting Strategy (Post Gate 2).[23]

As a further step to ensure an optimal risk strategy for Nalcor and the Shareholder, all large contracts were assessed individually to ensure each contract strategy was appropriately considered with scope definition, commercial structure and risk transfer accounted for. These decisions were made at a project management level for each scope and signed off at appropriate levels considering the drivers for the project. However, once sent to the market, either during the pre-qualification stage or RFP evaluation and contract negotiation, the contract strategies could be adjusted to fit the market conditions. As time would show, there were several instances of this strategy at work including:

1) The EPCM Services LC-G-002 contract awarded to SLI in December 2010, originally an Integrated Team model that was adjusted to an EPCM with the CM as optional to meet market desires and evolving project risk (adjusted to try and mitigate shareholder interruption and bureaucracy risk).

[23] Slide extracted from Nalcor Executive Briefing Presentation Lower Churchill Project – CEO Briefing Document, May 2016

2) Commitment Package CH00008 – North Spur Stabilization Works contract was converted from Lump Sum to Reimbursable to reflect both the design stage at award (high degree of propensity for change) and market desire for large premiums (tens of millions were saved by going reimbursable).

3) Commitment Package CH0031 – Supply and Installation of Mechanical and Electrical Auxiliaries (i.e. balance of plant) contract was converted from Lump Sum/Unit Rates to predominantly reimbursable to reflect both propensity for change in this scope of work and more importantly the market's refusal to accept labour risk. This perception of labour risk increased after contractor performance to date and was not helped by the lack of project support and negativity presented to the public in 2016.

The topic of contracting strategies has been one of interest for the Shareholder, which has been led to believe that the strategies selected are not transferring appropriate risk. As referenced previously the bulk of the large contracts have been of a fixed price nature, either lump sums (e.g. CH0002 – Supply and Installation of MF Accommodation Complex), unit rate (only quantity risk with the owner, i.e. CH0006 Bulk Excavation, CT0319 – Construction of 315 kV HVac Transmission Line MF to CF) or fixed price with a target gain share/pain share (CH0007 – Astaldi). The scopes have been of a size compatible with the market capacity and done to minimize interfaces to reduce risk and meet advised financing requirements. Figure 27 depicts the strategies for material contracts.

Figure 27: Muskrat Falls Project – Listing of Major Contracts and Respective Contract Types

Commitment Package / Scope	Contractor	Contract Type
CH0002 - Supply & Installation of MF Accommodations Complex and Utilities	Liannu	~85% Lump Sum / ~15% Reimbursable
CH0004 - Construction of Southside Access Road	Liannu	Combination Lump Sum and Unit Rate
CH0006 - Bulk Excavation	IKC-ONE	Combination Lump Sum and Unit Rate
CH0007 - Construction of Intake, Powerhouse, Spillway & Transition Dams	Astaldi	Labor Capped Target Price / Non Labor Unit Price
CH0008 - Construction of North Spur Stabilization Works	Gilbert	Reimbursable Target Price
CH0009 - Construction of North and South Dams	Barnard - Pennecon	Non-Labor Unit Rate / Reimbursable Labor Target Price
CH0024 - Reservoir Clearing (North and South Banks)	Johnson's	Lump Sum
CH0030 - Supply & Installation of Turbines and Generators	Andritz	Lump Sum EPC
CH0031 - Supply & Installation of Mechanical and Electrical Auxillaries	Cahill - Ganotec	Non-Labor Unit Rate / Reimbursable Labor
CH0032 - Supply & Installation Hydro-Mechanical Equipment	Andritz	Lump Sum EPC
CD0501 - Supply and Installation of HVdc Converters	GE/Alstom	Lump Sum EPC
CD0502 - Construction of AC Switchyards (MF, CF & SP)	GE/Alstom	Lump Sum EPC
CD0504 - Civil Works and Buildings at Converter Station and Switchyards	GE/Alstom	Lump Sum EPC
CD0534 - Supply & Installation of Synchronous Condensers	GE/Alstom	Lump Sum EPC
LC-SB-003 - SOBI Submarine Cable Design, Supply & Installation	Nexans	Lump Sum EPC
CT0319 - Construction of HVac Transmission Line (MF to CF)	Valard	Unit-rate Installation Contract
CT0327-001 - Construction of HVdc Transmission Line (MF to SP)	Valard	Unit-rate Installation Contract
CT0327-XXX - Clearing and Access Works - HVdc Transmission Line (MF to SP)	Multiple	~50% unit-rate/lump sum ~50% reimbursable
LC-G-002 - EPCM Services	SNC-Lavalin	~90% unit-rate/lump sum ~10% reimbursable

SLI's internal 2013 risk assessment (which was not made available to LCMC until 2017) expressed concerns over the contracting strategies selected by LCMC, specifically stating that SLI viewed the size of the construction contract packages to be too large. Considering the SLI position, it is important to note that SLI and their senior management assigned to the Project predominantly brought their experience from Hydro Quebec Projects recently executed in Quebec. The contracting strategy that was favoured by HQ was to have many small contracts which required large Owners teams to manage and best fit the Quebec supply chain. This was not aligned at all with the LCMC financial advisors who recommended the contracts to be large which would minimize interfaces (thereby reducing risk) and attract international creditworthy contractors capable of handing the associated completion risk and able to provide the

financial securities required by the Financiers. It was also recognized that smaller contracts requiring larger management teams would be very beneficial financially to SLI as an EPCM service provider operating under a reimbursable unit rate contract form. A point that would have seen additional risk put on the Project as the market was very hot from a resource perspective in the early stages of construction and would have added to the SLI performance challenges.

The strategy of sufficiently large contracts which minimized interfaces was also stipulated as a preference of the three rating agencies that assessed the Project as meeting financing requirements with and without the Federal Loan Guarantee. SLI's scope of work did not include the financing and therefore they were not involved in the financing effort. As such, SLI were unaware of the financing details and as such they did not properly consider this financing/rating agency requirement as it pertained to contracting strategy.

It is important to note that in Q4-2011, Nalcor was successful in achieving the required indicative credit rating for Muskrat Falls Project without the Federal Loan Guarantee in part because they supported the contracting strategy being proposed with an emphasis on sufficiently large contracts, reduced interfaces, international/creditworthy bidders and security provisions to reduce overall risk to the Project. Contained in Attachment 3 is Nalcor's presentation provided to the rating agencies during 2012 to update the indicative credit ratings.

The requirements of the Rating Agencies and the Financiers also contributed to the previously referenced EPC lump sum, unit rate contracts as preferred contract models where contract scopes and market conditions support this approach. LCMC selected unit price contract forms extensively for the transmission contracts, mass excavation contract and EPC lump sum contracts where practical and when market conditions allowed without a significant risk premium.

SPOTLIGHT ON THE ASTALDI CONTRACT STRATEGY

There has been specific reference to the contracting strategy for Astaldi and a misconception that the contract was of a reimbursable nature. Although quite common in the market in recent years (e.g. Manitoba Hydro's Keeyask powerhouse contract was reimbursable and the Muskrat Falls North Spur contract was very successfully executed in this manner), the Astaldi Powerhouse and Spillway agreement was, however, NOT reimbursable.

[redacted] Astaldi, [redacted] were willing to fix their labour price with a cap, subject only to adjustment with large quantity change (which has been extremely limited). The materials portion of the price (concrete, rebar, etc.) was based upon unit rates (again, adjustment has been extremely limited).

Although the lowest bid, Astaldi's price was considerably over the DG3 estimate (~$300 M) largely due to Astaldi's viewpoint on achievable construction productivity. To reach an agreement, negotiations led to a Pain Share/Gain Share target model that saw the Capped Labour price remain in full effect. In other words, the maximum price paid remained in effect but if the productivity was better than expected, which was considered a strong possibility when compared to the SLI estimate, the savings would be shared with Nalcor. This approach also saw the payment mechanism in the contract negotiated on a pay as you go basis up to the cap, referred to as the LMAX, after which Astaldi would be responsible to pay all labour costs.

This payment mechanism has been confused with the contracting strategy and has led to the misconception that the agreement was reimbursable. The lead negotiator from SLI was asked about the payment mechanism and previous experience to ensure it provided the correct structure. The response was that this payment model was used successfully on a recent Ontario Power Generation project (Lower Mattagami) but without the increased protection of a cap on labour price as was the case in the negotiated agreement with Astaldi. This, combined with the perceived upside target opportunity led the team to believe this model would provide proper incentive with the capped target for labour and fixed unit pricing on materials whilst saving the project financing costs.

The Astaldi challenges that occurred were the result of Astaldi's project management performance and severely underestimated overall productivity, not the contract strategy. The contract risk transfer and contract terms and conditions were actually very much in favour for Muskrat Falls Corporation as reflected in the fact that Astaldi is expected to take a substantial loss on the project. The Astaldi evolution and facts are referenced elsewhere in this document and exist in detail in PCN-0705.

Attachments

Attachment 1 – Key Risk Frames

Attachment 2 – Nalcor Presentation to Rating Agencies

Acronyms

Acronym	Meaning
AACE	Association for the Advancement of Cost Engineering
AGM	Annual General Meeting
B	Billions
CDN	Canadian
CEAA	Canadian Environmental Assessment Agency
CEO	Chief Executive Officer
CF	Churchill Falls
CM	Construction Management
CPW	Cumulative Present Worth
CSA	Canadian Standards Association
DG1	Decision Gate 1
DG2	Decision Gate 2
DG2a	Decision Gate 2a
DG2b	Decision Gate 2b
DG3	Decision Gate 3
EA	Environmental Assessment
EIS	Environmental Impact Statement
EOI	Expression of Interest
EPC	Engineering, Procurement and Construction
EPCM	Engineering, Procurement and Construction Management
FEED	Front End Engineering Design
FEL	Front-end Loading
FLG	Federal Loan Guarantee
GI	Gull Island
GNL	Government of Newfoundland and Labrador
HQ	Hydro Quebec
HVac	High Voltage Alternating Current
HVdc	High Voltage Direct Current
IBA	Impact and Benefits Agreement
IE	Independent Engineer
IEC	International Electrotechnical Commission
IPA	Independent Project Analysis
JRP	Joint Review Panel
KCRA	Kennedy Consulting Research & Advisory
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)
LMN	Labrador Metis Nation
LOI	Letters of Intent
M	Millions

Acronym	Meaning
MF	Muskrat Falls
MFC	Muskrat Falls Corporation
MHI	Manitoba Hydro International
ML	Maritime Link
MOU	Memorandum of Understanding
MW	Megawatts
MWH	MWH Canada Inc.
NGO	Non-Governmental Organizations
NL	Newfoundland and Labrador
NLH	Newfoundland and Labrador Hydro
OATT	Open-Access Transmission Tariff
OL	Overload Capacity
PDT	Project Delivery Team
PMT	Project Management Team
PSC	Project Support Contractor
PUB	Newfoundland and Labrador Board of Commissioners of Public Utilities
PwC	Pricewaterhouse Coopers
QRA	Quantitative Cost and Schedule Risk Analysis
Régie	Régie de l'énergie
RFP	Request for Proposal
SLI	SNC-Lavalin
SOBI	Strait of Belle Isle
TL	Transmission Line
UARB	Nova Scotia Utility and Review Board
VSC	Voltage Source Conversion

Attachment 1 – Key Risk Frames

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R1	Category	Enterprise	Current Risk Rating	High

Risk Details

Lead	**P. Harrington/B. Crawley**
Risk Title	Organizational experience and resources for a project of this size
Risk Description	Potential for the accelerated growth and diversification of Nalcor Energy to place strain on the organization and hinder timely decision making. Nalcor needs to recognize the risk and make the required changes in organizational governance and devolution of financial authorities and decision making in order to avoid loss of opportunities and best in class Project execution.
Specifics and Root Causes	This risk encompasses 2 primary issues: Organization and Authority / Empowerment. Nalcor is going through a significant growth phase straining limited resources and making it challenging to get priority issues addressed at the Executive level. Decision made to grow resources cautiously, which is difficult when significant effort is required to bring the organization processes, standards, etc. up to a level required to execute a megaproject. Nalcor Energy has not undertaken a project of this size/magnitude - challenges are: - Project Governance - Driving accountability down within the organization and empowering appropriately. Inherent governance structure of a crown corporation is influencing challenges with accountability and decision making. - Processes, Resources and Governance Structure - Specific experience of large hydro project - Depth of resources to draw upon - Lack of JV arrangements to lean upon for support. - Suitability and robustness of decision making processes for project execution.
Consequence / Impact	-Delay in making urgent decisions and resource limitations results in lost opportunities. Poor project execution using planned execution approach. Lender's & shareholder confidence required to minimize owner's contingency and to ensure timely and adequate financial backing for Project.
Early Warning Indicator of Risk Materialization	Turnaround time on Approvals / Decisions

Risk Response

Management Strategy	Avoid this risk by early and aggressive effort to address each specific cause: - Select project execution strategy that helps reduce this risk. - Demonstrate internal alignment and clarity on strategic direction - Secure experienced resources to supplement existing organization breadth and depth - Establish a project governance approach - Implement best PM practices, including structured decentralized decision making processes - Consider planned commercial structure for Maritime Link and understand impact on the overall execution approach for the LCP. An amount of residual risk that cannot be avoided will have to be accepted by Nalcor.

Risk Strategy	✔ Avoid	☐ Mitigate	☐ Transfer	✔ Accept

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R1	Category	Enterprise	Current Risk Rating	High

Action Plan	- Define corporate/enterprise governance and establish a decision making structure - Establish project charter. - Establish decision making protocol and processes. - Develop Project Execution Plan - Clearly define corporate / matrix organization interfaces. - Document and seek alignment on project governance approach - Leverage insight from other owners / developers who have faced similar challenges. - Finalization of PM / contracting approach - Develop Nalcor Matrix Organization LACTI - Identify roles and responsibilities - Develop LACTI defining interface between LCP and appropriate Nalcor departments (matrix organization) - Early engagement of lender's engineer and demonstrate internal capacity - ($2 to $5M) - Engagement of competent experienced contractors (known entities with the "A" team)
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Paul Harrington - Lead LCPMT - Technical Fasken - Consult PWC - Technical AON - Consult Owner's Eng - Technical
Unmitigated Risk Rating Rationalization	An event which would result in substantial losses to Nalcor due to claims from contractors is considered a Major impact; the likelihood is rated at 5 (Almost Certain) given that this has been a prevalent issue to-date within the Project.

Risk Trend and Status Update

- - RISK IS CONSIDERED TO HAVE LIMITED EXPOSURE TO THE PROJECT GIVEN THE EXTENSIVE MITIGATION EFFORTS IMPLEMENTED SINCE 2008.
- Project Governance Plan in draft form, requiring finalization. Project Team working in accordance with this key project document.
- Project Executive Committee established (i.e. Steering Committee) and meeting regularly to address key issues.
- Capital Expenditure Approval Procedure and Procurement Approvals process re-worked to reflect requirements for Gateway Phases 3 & 4, in particular delegating authority down within the organization.
- GM of Finance in-place with designated Project Controller. LCP F&A organization in-place; alignment with SPV structure
- Corporate Integration Manager hired focussed towards effective integration of the various elements of the Project into Nalcor's activities. This role helps facilitate liason with Shareholder.
- Key Management Plans, developed specifically for Project, have been implemented, including supporting organization.
- Sound financial and project control / MOC protocols in place. Well documented.
- Formal agreements in-place with Emera for Maritime Link; further NL agreements in-place.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R2	Category	Enterprise	Current Risk Rating	Low

Risk Details

Lead	**Gilbert Bennett**
Risk Title	Time required under Crown Corporation rules to gain approval
Risk Description	Potential exists that key strategic decisions could be delayed which impact the project schedule as a result of the time required to obtain shareholder approvals.
Specifics and Root Causes	Approvals from Shareholder may take a significant period of time given the effort required to ensure alignment with the various departments and stakeholders prior to seeking endorsement for a recommendation. This combined with the number of files decision makers are working could cause delays. Public perception issues may outweigh schedule delay considerations Delayed decisions may lead to: - Schedule slippage and cost increases - Loss of vendor and contractor interest - Loss of team morale
Consequence / Impact	- Delay in project sanction and making key decisions. - This risk is particularly relevant up to Gate 3.
Early Warning Indicator of Risk Materialization	Timeline for decision making by Shareholder.

Risk Response

Management Strategy	Mitigate this risk by: - Over communicating with shareholder to ensure alignment on issues of critical importance. - Communicate project impact of issue to shareholder and proactively work at the Executive level to ensure Decision making processes and information are available to support timely approvals. - Focus on embedding governance structure and ensuring alignment with Nalcor leadership, Board and Shareholder. - Implement governance structures that are designed to facilitate efficient Decision making and push accountability down within the organization. - Recognize the constraints of a crown corporation and the shareholder in the design of our execution approach. An amount of residual risk that cannot be mitigated will have to be accepted by Nalcor LCP given the Shareholder is the Crown and are not use to executing large capital intensive projects.
Risk Strategy	☐ **Avoid** ☑ **Mitigate** ☐ **Transfer** ☑ **Accept**
Action Plan	- Define Nalcor and LCP corporate structure - Increase awareness of impact (communicate to market place) - Establish a Steering Committee and ensure regular communication of key dates and activities to Shareholder.

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R2	Category	Enterprise	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Ed Martin - Accountable Gilbert Bennett - Lead Derrick Sturge - Consult LCPMT - Consult Paul Harrington - Technical

Unmitigated Risk Rating Rationalization	An event having significant financial exposure and construction schedule delays as well as potential reputation issues for Nalcor is classified as a Moderate event; the likelihood is rated at 5 (Almost Certain) given experience to-date.

Risk Trend and Status Update

- RISK IS CONSIDERED TO HAVE LIMITED EXPOSURE TO THE PROJECT GIVEN THE EXTENSIVE MITIGATION EFFORTS IMPLEMENTED SINCE 2008.
- LCP PMT continue to work with the Gatekeeper to understand the Shareholder's needs and schedule sufficient to address them, while at the same time building confidence / trust with the Shareholder.
- A process of engagement has helped to streamline the decision making process.
- Well-documented approval process proposed, including use of AFE's and increased financial approval levels within the LCP PMT will facilitate the approval process.
- Multiple independent reviews of the Project by various entities (Lender's Engineer, Public Utilities Board, Underwriters, Federal Government) has challenged internal resources, however expect this to end at DG3.
- Significant budget has been approved for 2012, including early works at MF. Team continues to work with Gatekeeper and Shareholder to ensure alignment on critical decisions required prior to Project Sanction.
- Timing risk on Project Schedule that impact overall project delivery schedule is considered low. Gatekeeper will work with Shareholder to ensure key awareness of constraints within project schedule (e.g. award of Mass Excavation contract)

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R3	Category	Financial	Current Risk Rating	Low

Risk Details

Lead	**Jim Meaney**
Risk Title	Changes in the financial market
Risk Description	As a result of changes in the Financial Market, preferred financing instruments may not be available in the quantity and terms desired, leading to additional financing cost.
Specifics and Root Causes	Driven by global financial markets - some project financed transactions (low risk "availability" structures) have experienced 30 BPS increases in credit spread. Higher valuation of risks by financial markets; reduced lending capacity in the banking sector due to erosion of capital base with sub-prime and other write-downs.
Consequence / Impact	Risk associated with the terms and conditions associated with financing instruments, including: - Interest rate risk - increased spreads due to financial market unrest - The risk that preferred financing instruments may not be available, or available in the quantities or on terms and conditions projected. - Financial markets require a construction contracting environment (as a precondition to financing) that is higher-cost or otherwise disadvantageous to LCP.
Early Warning Indicator of Risk Materialization	Debt base rates

Risk Response

Management Strategy	- Monitor financial markets. - Structure all aspects of the Project so as to minimize percieved transfer of risk to the lenders. - Carefully craft and execute Financial Market Sounding. - Engage appropriate expertise. IMPORTANT NOTE: Risks associated with financial market unrest cannot be directly affected by Nalcor. The risk strategy seeks to be affected as little as possible by these risks. However, the effect of mitigation is difficult to quantify at this stage. It will be important to structure the project appropriately, to consider the construction contracting strategy and to ensure a significant proportion of high quality off take contracts to support minimizing the impact. Demonstrate predictability of our hydro project as compared to other more technically complex projects. This strategy may result in reduced debt-service coverage ratio.
Risk Strategy	☐ Avoid ☑ Mitigate ☐ Transfer ☐ Accept
Action Plan	Represents best practice; potentially no cost over and above what Nalcor would seek to do in any case.
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Mark Bradbury - Lead PwC - Technical Westney - Consult

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R3	Category	Financial	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	Assume 50 basis points exposure on interest rate, thereby could be classified as a Major Event. Given the uncertainty in the financial market this event is considered possible.

Risk Trend and Status Update

- RISK IS CONSIDERED TO HAVE LIMITED EXPOSURE TO THE PROJECT GIVEN THE EXTENSIVE MITIGATION EFFORTS IMPLEMENTED SINCE 2008.
- Government of Canada's commitment for a Loan Gurantee or equivalent combined with the Province's current fiscal capacityhas dramatically altered the profile of this risk.
- Current financial market conditions indicates that debt is cheaper now than assumed at DG2, thus improving the CPW in favour of the Project.
- Shadow credit rating completed in Fall 2011 (without benefit of FLG) indicated a favorable view by 3 rating agencies - Moody's, S&P, DBRS

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R4	Category	Financial	Current Risk Rating	Medium

Risk Details

Lead	**Jim Meaney**
Risk Title	Foreign currency exchange risk
Risk Description	As a result of foreign currency exchange rate swings, the value of the Canadian Dollar may erode, leading to foreign currency exposure during the purchase of goods and materials.
Specifics and Root Causes	- Significant portion of content in non-CAD $ expenditure (e.g. US, Kroner, Euro) - 10% swing in exchange
Consequence / Impact	The value of the Canadian Dollar may erode, leading to foreign currency exposure during the purchase of goods and materials. Therefore we have currency risk beyond baseline of estimate.
Early Warning Indicator of Risk Materialization	Strength and trend of Canadian Dollar.

Risk Response

Management Strategy	- Mitigate exposure by developing cost estimating consistent with Nalcor's business planning assumptions for exchange rates. - Transfer risk by implementation of a currency hedging strategy.

Risk Strategy	☐ Avoid	☑ Mitigate	☑ Transfer	☐ Accept

Action Plan	- Establish realistic baseline Fx exchange rates to be used in economic analysis - Establish an overall currency hedging program - Develop an improved forecast of currencies for the overall project estimate
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Mark Bradbury - Lead PwC - Consult Investment Evaluation - Technical Dave Pardy - Consult
Unmitigated Risk Rating Rationalization	Assume 10% swing in rates based upon $1-2B non-CDN expenditure, thereby could be classified as a Major Event. Given the uncertainty in the financial market this event is considered possible.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R4	Category	Financial	Current Risk Rating	Medium

- Overall requirement for non-CDN expenditures is somewhere in the range of $500 to $800 million dollars.
- From a contracting / procurement practice, Nalcor assumes Fx exposure.
- LCP foreign currency exposure considered as part of the broader Nalcor Financial Risk Management Strategy, and will be considered as part of the project's plans going forward.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R5	Category	Financial	Current Risk Rating	Low

Risk Details

Lead	**Lance Clarke**
Risk Title	Risk Premium for obtaining lump sum contracts
Risk Description	As a result of the concerns of lenders regarding the creditworthiness of contractors and vendors, lenders may push Nalcor towards negotiating lump sum contracts in order to minimize their perception of risk exposure, which would result in additional capital cost for the Project.
Specifics and Root Causes	Market shifting from seller's market to buyer's market for contractors and vendors. While contractor's risk appetite is increasing, it is not back to historical levels. Contractor and vendor creditworthiness (i.e. risk of default) continues to be a concern for potential financiers.
Consequence / Impact	Risk that financial market (lenders) may wish to push Nalcor towards negotiating lump sum contracts in order to minimize their perception of risk exposure.
Early Warning Indicator of Risk Materialization	Risk appetite of financial market. Overall risk spectrum of LCP.

Risk Response

Management Strategy	- Risk brokering / allocation. - Increase equity contribution thereby removing risk.

Risk Strategy	☐ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	Avoid and mitigate this risk by: - Focus on risk brokering / allocation arrangement to achieve the most cost effective arrangement for all parties. - Ensure awareness of financial market of latest industry trends w.r.t lump sum contracts - Leverage risk strategy and 3rd party expertise to help sell the LCP approach during market sounding - Engage a shadow engineer and work with them to educate prospective lenders. - Optimize debt to equity structure to remove this risk. - Engage 3rd party partners on Maritime Link who can naturally reduce risk.
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Lead Jason Kean - Consult Lance Clarke - Consult Investment Evaluation - Consult PwC - Consult Westney - Technical
Unmitigated Risk Rating Rationalization	Assume 6% premium for Lump Sum contracts in worst case, thereby classified as a Major Event. The likelihood of this event is considered Possible given the current uncertainty in the global Financial market.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R5	Category	Financial	Current Risk Rating	Low

Risk Trend and Status Update

- Project's contracting strategy is contained in Overarching Contracting Strategy LCP-PT-MD-0000-PM-ST-0002-01 and supported by the Master Package Dictionary.
- In Fall 2011, Credit Rating Agencies viewed our contracting strategy as suitable; however, pointed out that the interface/integration risk exists
- Key exposure on the owner's organization – ability to fulfill owner's role, while SLI pulls away from its commitments under an EPCM arrangement.
- Project's financing strategy, in particular the Commitment Letter from the Province which indicates that the entire out-turn cost will be paid by the raterpayer, signficantly reduces this risk.
- Nalcor, with the Government of Canada's participation, has engaged MWH as the Independent Engineer to review the Project and advise of any concerns.
- RISK IS CONSIDERED CLOSED.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R6	Category	Power Sales and Market Access	Current Risk Rating	Low

Risk Details

Lead	**Rob Hull**
Risk Title	Extra year required to secure long-term PPAs
Risk Description	As a result of a slow negotiation process, the timeline to secure long-term PPAs for anchor loads may extend, resulting in a deferment of Project Sanction by 1 year.
Specifics and Root Causes	Concern about time to secure PPAs required to support Financial Close. Driven by: - Customers unwilling to sign PPA until certainty exist on how we will get the power to them. - The extended time for negotiations due to a lack of political will within New Brunswick. - Declining load in target markets - Non-alignment of our and customer timelines for delivery of power - Achieving federal alignment and support for the Energy Gateway - Uncertainty on market routing due to a delay in Regie decision on the Quebec OATT as a result of court action.
Consequence / Impact	- Delay in commencement of early works at Gull Island. - Delay in achieving Financial Close. - Increases the need to inject more equity in order to maintain schedule.
Early Warning Indicator of Risk Materialization	Engagement activities and pulse with potential anchor load customers.

Risk Response

Management Strategy	Avoid this risk from materializing through: - Agressively focusing Power Sales teams on Atlantic Canada customers. - Selling LCP value proposition to Atlantic Canada customers. - Seeking political alignment on the value of LCP to NS and NB in reducing their GHG problem. - Advancing the Energy Gateway initiative through the Federal Government Recognize that this risk is not entirely within Nalcor's control, but depends on counterparties, thus some acceptance of this risk is required. Mitigate potential exposure by only awarding Engineering Contract at Gate 2b when clarity on Market Access is available.
Risk Strategy	☐ **Avoid** ☐ **Mitigate** ☐ **Transfer** ☐ **Accept**
Action Plan	- Engage Emera and NB Power to discuss product and pricing - Prepare for Regie hearings for OATT complaints - Prepare fallback strategy if Regie decision is unfavorable - Work the Energy Gateway file on the political front. - Push for clarity on Government of Canada's GHG Policy
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Joanna Harris - Lead Derrick Sturge - Technical Laurie Coady - Technical Paul Harrington - Consult

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R6	Category	Power Sales and Market Access	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	An event having some financial exposure (worst case $50 to $60M) is classified as a Minor event; the likelihood is rated at 5 (Almost Certain) given experience to-date.

Risk Trend and Status Update

- Phase 1 (MF+IL+ML) Term Sheet with Emera has allowed a Gate 2 decision to be made. Given that MF is being developed to meet the Island's energy needs, PPA requirements are limited to NL Hydro. Hence, risk of delaying in achieving Sanction due to PPA completion schedule is largely considered eliminated.

- RISK IS CONSIDERED CLOSED.
- Formal agreements have been executed with Emera, while the Newfoundland agreements are drawing to a conclusion.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R7	Category	Power Sales and Market Access	Current Risk Rating	High

Risk Details

Lead	**Auburn Warren**
Risk Title	Federal government support for generation and transmission projects (OPPORTUNITY)
Risk Description	As a result of Federal Government financial support for the Project, general public and financial market confidence in the Project would increase, resulting in an exposure reduction for many of the strategic risks faced by the Project.
Specifics and Root Causes	Federal government visible support of the project in any form would benefit the confidence in the market that the project will proceed - talks with the federal government regarding funding support have not been fully initiated at this point in time but should add value once the Project progresses into Phase 3.
Consequence / Impact	- Economic modeling is based on no federal funding support, however various scenarios of federal support have been modeled. ** This could have significant unquantifiable positive impact for the project by increasing underlying market and supplier confidence, thereby reducing several Strategic Risks the Project faces.
Early Warning Indicator of Risk Materialization	Federal support for "Green" Energy.

Risk Response

Management Strategy	- Active and aggressive pursuit by Executive - Atlantic Canada political alignment on the value of the Energy Gateway and how it will develop each region. - Development of Federal Ask strategy and present to Feds. - Engage opposition parties to maintain support for the Project. - Influence GHG Policy through all vehicles including Canadian Hydropower Association.
Risk Strategy	☐ **Avoid** ☑ **Mitigate** ☐ **Transfer** ☐ **Accept**
Action Plan	- Lobby Federal government through Summa - Evaluate potential benefits to the Project from carbon credits
Risk Responsibilities (LACTI)	Ed Martin - Accountable Mark Bradbury - Lead Gilbert Bennett - Consult Investment Evaluation - Technical Steve Goulding - Consult PwC - Consult
Unmitigated Risk Rating Rationalization	Assume that Federals provide support requested as per Federal Ask the impact could be classified as Major. The likelihood is considered Possible.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R7	Category	Power Sales and Market Access	Current Risk Rating	High

- MOU in-place with Government of Canada for FLG, while negotations continue towards finalizing term sheet.
- FLG considered as part the Project's current financing strategy.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R8	Category	Power Sales and Market Access	Current Risk Rating	Low

Risk Details

Lead	**P.Humphries/R.Henderso**
Risk Title	Changes in Project scope resulting from maturing system integration / operation definition
Risk Description	As a result of limited maturity of the integration of the Island and Maritimes electrical systems with LCP power, significant change in the Project Definition / Scope may occur, leading to schedule delays and additional capital cost.
Specifics and Root Causes	*This is a project definition / scoping risk. Underlying causes are discussed below: - The Power market for this project could influence new routes for power sales and product mix (e.g. Maritime 1000 vs. 800 MW) until solid definition of long-term markets, project needs to remain flexible on market options and final configuration to market. - There is also a risk that system reliability requirements for the interconnection of NL to the Maritimes may require additional reliability work to be undertaken in each jurisdiction. - Uncertainty also exists as to whether the NB system can handle an 1000MW injection via the Maritime Link. Current NBSO SIS is for 800MW (740MW net) which is viable. There may be a need for additional spinning reserve to go to the 1000MW case - this will cost and thus impact the business case. - Finalize the Island upgrades to create the spinning reserve and system stability required for the Infeed in order for the Island system to survive / recover from a fault in the in-feed during service.
Consequence / Impact	- Delay in securing commercial structure for Maritime Link - Delay in executing LOI for power sales with Maritimes. - Delays and rework during definition phase of project. - Late scope growth - Additional integration complexities. - Cost and schedule growth - erosion of economics - Placing increased demands on resources.
Early Warning Indicator of Risk Materialization	Number and extent of design changes (i.e. increase in project scope prior to start of engineering.)

Risk Response

Management Strategy	- Avoid risk by engaging counterparties and validate project scope assumptions (i.e. Maritimes integration) ASAP. - Mitigate risk by maintaining commitment to maximize Front-End Loading (i.e. scope definition) prior to sanction. Select final market option prior to proceeding through Gate 2b. - Transfer some of the risks to 3rd parties through the Commerical Construct for Transmission.

Risk Strategy	☑ Avoid	☑ Mitigate	☑ Transfer	☐ Accept

Action Plan	- Inform and communicate impact with commercial/markets - Assure alignment between commercial/markets and technical (decision gate assurance process) - Receipt of NBSO Facilities Study for 800MW injection at Salisbury, NB. - Consider the merit of completing a 1000MW System Impact Study with NBSO pending the results of the proceeding. - Kick-off integrated work plan with NB Power and Emera to explore how LCP power will be

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R8	Category	Power Sales and Market Access	Current Risk Rating	Low

integrated and used with their systems.

Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Joanna Harris - Lead Paul Harrington - Consult Bob Barnes - Technical Chris Kirby - Technical Paul Humphries - Technical
Unmitigated Risk Rating Rationalization	Assume worst case impact of 40 to 50% cost growth, thereby classified as a Major Event. Given the current design and cost basis is reasonably robust and technology opportunities exist (e.g. HVdc light), then this risk is considered Possible.

Risk Trend and Status Update

- WHILE THIS RISK REMAINS OPEN, THE EXPOSURE IS CONSIDERED VERY LOW GIVEN THE EXTENSIVE ENGINEERING WORK COMPLETED SINCE DG2.
- AC Integration Studies have verified our planning basis.
- TQ in place to ascertain input of NERC on MF, however cost exposure is considered minimal.
- Decision to avoid converting Holyrood Units 1&2 to synchronous condenser support in lieu of increasing rating of Soldier's Pond units from 150 to 175MVar
- Requirements for integration of LCP power into the existing NL Hydro system continue to be developed. This remains a significant risk for the Project as demonstrated by PCN-014 which subsequently changed the operating voltage from 320 kV to 350 kV, while overload capacity of the system is also now deemed to be a requirement.
- Long-term operations plan must be prepared for the system. System planning will take a more active role with the Project Team, coordinating the interface with Emera on all power system issues.
- Executive Committee has confirmed that LCP PMT with SLI will lead the EPC & Management of the 3 new Synchronous Condensers and Soldier's Pond switchyard, while NL Hydro will address all other requirements.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R9	Category	HSE	Current Risk Rating	Medium

Risk Details

Lead	**Jason Kean**
Risk Title	Good HSE record is critical for project success
Risk Description	As a result of a lack of a safety culture, HSE performance is poor, which could lead to reputation and financial implications for Nalcor.
Specifics and Root Causes	- Safety is Priority #1 for Nalcor. Creating a safety culture will be a challenge given the diversity of contractors coming together on this project. - Remote and difficult work sites - Multiple work faces - Potential for contamination of river - Experience of workforce - Lack of safety culture among transient construction workforce
Consequence / Impact	Cost and reputation concerns related to potential on-site HSEQ issues including, but not limited to: - Poor project safety record, serious injuries or fatality - Substance abuse - River contamination during construction - Severe terrain - Remote site / wilderness / animals
Early Warning Indicator of Risk Materialization	- Safety Performance Triangle - Leading / Lagging Indicators - HSE Team recruitment and development of Management System.

Risk Response

Management Strategy	Avoid the likelihood of this risk occuring through: - Establishing and implementing a robust, consistent H&S and E management system across the Project. - Early and proactive program to promote and secure labour and contractor commitment to HSE. - Engaging and retaining contractors who are leaders in safety performance and have demonstrated the ability to proactively manage all aspects of HSE performance on remote worksites. - Recognizing HSE performance is imperative and start embedding an HSE culture early in the project. It all starts with management's commitment to safety. - Maintaining team awareness and establish strong & open communication channel on all aspects of HSE.

Risk Strategy	☑ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Establish safety culture in owner team (attitude and commitment) - Mitigate impact of catastrophic event with insurance (environment) - Incorporate environmental minimization into design - Implement a Behavioural Based Safety Program and a Safety Leadership Program for Supervisors across the Project. - Implement Safety-By-Design concept into the engineering phase. - Design necessary controls into project - Embed HSE within the front-end of the project - Ensure contractor understands roles - HSE processes in-place

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R9	Category	HSE	Current Risk Rating	Medium

- Develop environmental management plan for construction phase
- HSE is to be a key selection criteria for contractors
- Establish training and competency development programs
- Focus efforts on engagement and SWOP reporting of near misses.

Risk Responsibilities (LACTI)

Paul Harrington - Accountable
Jason Kean - Lead
Bob Barnes - Consult
Construction Manager - Technical

Unmitigated Risk Rating Rationalization

Poor HSE performance resulting in a fatalities could have substantial financial (site shutdown) and reputation implications to Nalcor. The likelihood of occurrence is rated at 3 (possible) given Nalcor's limited safety culture combined with the challenge

Risk Trend and Status Update

- Decision made to separate H&S and E functions within Nalcor PMT to facilitate stronger linkage of environmental and regulatory compliance function with EA. Environmental Manager transistioning from Generation EA process, hence good linkage. Functional resources now embedded within the Nalcor PMT. Actively recruiting H&S Manager and further functional support.
- The selected EPCM consultant has a best-in-class H&S performance.
- Nalcor Environmental Management Plan in-place, with strong linkages beginning to develop with SLI.
- SLI have mobilized separate H&S and Environmental Managers with supporting team. H&S Management Plan drafted.
- HSE criteria continues to be a key selection criteria for contractors.
- Safety-by-Design work program being developed by SLI.
- "Safety culture" firmly taking hold with Nalcor Project Team, however more focus required within SLI.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R10	Category	Engineering/Technical	Current Risk Rating	Low

Risk Details

Lead	Ron Power
Risk Title	Availability of resources to achieve a quality design
Risk Description	As a result of strong demand for hydro and transmission resources, the Project has challenges attracting the quality and quantity of required resources, resulting in poor and late engineering leading to quality and schedule delays during construction.
Specifics and Root Causes	- There is currently limited capacity within NL for hydro, resulting in the need to mobilize resources outside the Province. - Our current execution model endeavors to centralize engineering in St. John's, however it may be difficult to convince experienced expats required to achieve a quality design to mobilize here for 1 to 3 years. - Market improving with awards slowed and projects associated with commodity markets put on hold. -Hydro design market level of demand not seen since 1988 - Many considerations and reductions in hydro engineering resources in last decade - Prior to this current recession, engineering productivity has been challenged due to strain on experienced resources
Consequence / Impact	- Poor or late engineering results in quality and schedule delays during construction. - We may have to execute specialized engineering outside of the Province (similar to Hebron) which will increase the effort required to effectively manage interfaces.
Early Warning Indicator of Risk Materialization	- Track record for other projects - rework and late schedule. - Entry of new players into the marketplace."

Risk Response

Management Strategy	Avoid risk by: - Early and aggressive action to secure required engineering competences and resources required to avoid this risk - Schedule sufficient time for engineering completion prior to start of construction (enabled by requirements for Final Disclosure) Mitigate exposure by developing and implementing a project-wide Quality Management System and embed QA requirements in all contracts.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Divide engineering requirements into areas of specific expertise - Pay a premium for the A-Team - Provide retention incentives - Sell the job as a desirable opportunity - Select contractor on basis of competency of key named persons - Have s strong owners team in place - design / integrity function for checking - Establish design integrity review with expert panel - Combine with insurance and contractor parent company guarantee - Liquidated damages for early removal of key personnel by contractor - Factor productivity into engineering schedule

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R10	Category	Engineering/Technical	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Ron Power - Lead Bob Barnes - Consult Lance Clarke - Technical Westney - Technical

Unmitigated Risk Rating Rationalization	This event would result in a minor financial impact due to a limited capital cost exposure. The likelihood is considered of being Likely given the small marketplace, plus forecasted demand for new Tx and hydro, in particular in Brazil, India and China.

Risk Trend and Status Update

RISK IS CONSIDERED CLOSED FOR THE RATIONAL NOTED BELOW:
- SLI awarded EPCM contract for Hydro, transmission and HVDC specialities. Contract included naming of 43 key resources and for completion of engineering in St. John's.
- Overall engineering on the Project is approx. 50% completed.
- Generally, considering we have the A-team for engineering with some noted exceptions that are being addressed.
- Selective work to be done in Montreal to help achieve our target AFC drawings, in particular specialized engineering such as FEA modelling and reinforcement detailing.,
- EPCM Task Force set-up to work with SLI to confirm what Construction Management organization will look like. We do have some person-hour exposure beyond the DG3 estimate - considered tactical risk
- We have to agree upon a Fee Structure with SLI if we cannot agree upon personshours.
- Largest area of concern is SLI's ability to secure resources require to meet MFL requirements, in particular for Construction Management.
- DAN-0022 has been raised to address the increased cost of completing all engineering work in St. John's as required under the Benefits Agreement with the Province.

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R11	Category	Engineering/Technical	Current Risk Rating	Low

Risk Details

Lead	**Greg Fleming**
Risk Title	Submarine cable crossing of Strait of Belle Isle
Risk Description	As a result of the many firsts associated with installing a submarine cable across the SOBI, construction and installation challenges may occur, leading to significant cost and schedule exposure.
Specifics and Root Causes	Many firsts with crossing the SOBI. - Buried shore approaches due to icebergs - Weather window very short - Difficult currents will be a challenge for existing installation vessels - Different submarine terrain - Viability of trenching technology is questionable - Sea currents at 5 to 7 knots will be very challenging - Installation vessels will have to be mobilized from Europe, while there is limited capacity in the world (3 vessels).
Consequence / Impact	- Technology application for protection, installation & protection cost - Shoreline interface challenges - Delay concerns during installation - Long lead-time for order to delivery and limited supplies - Loss of cable during operations resulting in big impact of repair cost - poor reliability - Confidence of financiers in the feasibility of this crossing may make it difficult to finance - Insurance underwriters unwilling to insure this asset.
Early Warning Indicator of Risk Materialization	Viability of submarine cable option for SOBI.

Risk Response

Management Strategy	- Recognize the risks and challenges and evaluate all available opportunities as early as possible (pre Gate 2) in order to Avoid / Mitigate the risk.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Perform due diligence with additional studies, particular on trenching technology - Engage the best consultants available in order to fully understand the subsurface conditions. - Complete a detailed geotechnical program for the area. - Understand the risk of cable loss due to icebergs and fishing activity - Gather more marine data, i.e. currents, bottom survey, geotech., etc - Develop a design with adequate sparing - also have submarine cables in 2 different routes - Identify and minimize installation difficulties - Establish marine specialist capability within Nalcor - Engage 2 suppliers in design competition for the preferred crossing solution and pay for it - Build and test rock trenching equipment.

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R11	Category	Engineering/Technical	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Bob Barnes - Lead AON - Consult Ron Power - Technical Lance Clarke - Consult

Unmitigated Risk Rating Rationalization	Assume worst case impact is that cable system can be installed and finally commissioned, however at a substantial cost growth. It is very likely that this event will occur unless circumstances change.

Risk Trend and Status Update

RISK IS CONSIDERED CLOSED FOR THE RATIONAL NOTED BELOW:
- Following extensive desk top and field work in 2008-2010, the submarine cable crossing method was chosen over a cable-conduit option.
- Significant field and desktop studies completed since DG2, including ice risk exposure by C-CORE.
- Conceptual design of submarine cable option using HDD tunnels on each side with rock protection covering other exposed areas.
- Further geotechnical data, iceberg tracking and current data collection activities are planned for 2011.
- Contracting & Execution Strategy is based upon owner-managed agreements for: (1) Cable design and installation (EPCI); (2) Rock supply and placement (EPCI), (3) HDD engineering, and (4) HDD drilling
- Decision made to adjust cable installation from original plan of 2015 to 2016, to ensure sufficient manufacturing and installation capacity.
- HDD pilot hole completed in Feb 2012 - distance of ~1.5km.
- 3 bids for Cable Supply & Install were received - decision made to award to 1 prior to Sanction.
- Overall program is well defined.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R12	Category	HVdc Specialities Supply & Install	Current Risk Rating	Low

Risk Details

Lead	Greg Fleming
Risk Title	Faults in submarine cable during commissioning and post installation
Risk Description	As a result of design, fabrication and installation errors, the SOBI submarine cable may fail in-service, leading to/resulting in poor reliability, extensive increase in operating cost, and the requirement to maintain back-up power generation capacity.
Specifics and Root Causes	- Recent installations in Europe experiencing faults - NorNed - Faults in buried SOBI section extremely expensive to repair. - According to Statnett, cable manufacturers generally lack experienced installation engineering know-how.
Consequence / Impact	- System reliability implications (potentially caused by installation damages, manufacturing defects...). - Increase in operating cost - Requirement to maintain back-up power generator on the Island.
Early Warning Indicator of Risk Materialization	- Industry trends re cable failure (e.g. NorNed performance)

Risk Response

Management Strategy

Avoid risk by:
- Developing and implementing a project-wide Quality Management System and embed QA requirements in all contracts.
- Having significant owner involvement in all technical and construction aspects of the work, including a QC surveillance program at the manufacturing locations.
- Understanding problems on recent installations and avoid risks to degree possible.
- Using a conservative, robust design based upon proven technology.
- Selecting design and contracting strategy that minimizes interfaces.
- Clearly specify technical standards and acceptance criteria as part of all contracts for cable.
- Advance tunnel option thereby removing failure point due to icebergs, fishing and dragged anchors.

Mitigate risk by:
- Keep Holyrood available until HVdc system is proven.
- Maintain capability to repair / replace a failed cable.

Transfer risk by placing a Construction-All-Risk Policy for construction / installation risks.

Risk Strategy	☑ Avoid	☑ Mitigate	☑ Transfer	☐ Accept

Action Plan

- Implement manufacturing surveillance program
- Gather lessons learned from Norned and embed within LCP
- Type test cable prior to manufacturing
- Provisions in purchase/installation (EPIC) contract
- Perform FAT
- Include installation standards regarding allowable bending radius / kinking
- Evaluate potential insurance coverage
- Include appropriate provisions in PPA (force majure)
- Attempt to insure post installation from installation contractor

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R12	Category	HVdc Specialities Supply & Install	Current Risk Rating	Low

- Understand key hazards and take actions to mitigate
- Include installed spare cable
- Understand cable w.r.t. interfaces and design with required level of redundancy

Risk Responsibilities (LACTI)

Paul Harrington - Accountable
Bob Barnes - Lead
Ron Power - Consult
AON - Technical
PwC - Consult
Fasken - Technical

Unmitigated Risk Rating Rationalization

An event which would result in substantial financial losses and operation interruptions is considered a Major impact; the likelihood is rated at 3 (possible) given the track record HVdc cables once in operation as well as the design including 1 spare cab

Risk Trend and Status Update

RISK IS CONSIDERED CLOSED FOR THE RATIONAL NOTED BELOW:
- LCP cable will have no subsea joints, while cable will be Mass Impregnated design rather than less proven XLPE
- We will (test) from termination to termination
- Spare cable will be installed with capacity for high speed switching
- Minimal exposure from rock-dumping
- Consider that there is a low probability of a cable fault due to internal cable failure. Highest risk is pull-in tension, however the pull-in loads are considered acceptable by all 3 cable suppliers.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R13	Category	Engineering/Technical	Current Risk Rating	Low

Risk Details

Lead	**Bob Barnes**
Risk Title	System reliability during commissioning and start-up
Risk Description	As a result poor design and construction practices, overall reliability of the power system may be less than expected, resulting in extended period for start-up, performance degradation and / or rework during the operating phase.
Specifics and Root Causes	- Poor design, equipment selection, and construction practices - Many hydro projects have had reliability issues in recent years (generator inefficiencies, water availability). - Major issue for Transmission system.
Consequence / Impact	- Performance degradation and/or re-work adding cost and schedule delays or increase OPEX.
Early Warning Indicator of Risk Materialization	

Risk Response

Management Strategy	Avoid risk by enacting the following - Implement an overall project-wide Quality Management System and supporting programs. - Engage experience Engineering contractors who have a good track record for equipment specification and selection - equipment selection through Life Cycle Analysis - Early commissioning and operability planning - Material and component testing - Optimization System design based upon design Life, cost and reliability performance specifications. - Utilize M/C and Commissioning system with experienced team. Consider transferring risk through: - Commercial insurance products - e.g. delayed start-up, production insurance - Performance incentatives in major supply contracts linked to start-up and year 1 of operations.
Risk Strategy	☑ Avoid ☐ Mitigate ☑ Transfer ☐ Accept
Action Plan	- Negotiate a Water Management agreement with CF(L) Co. to increase production flexibility - Bring operation team representative on early as possible to influence key design decisions - Build simulator to facilitate commissioning and start-up - Engage existing operation staff for lessons learned - Negotiate in PPA to minimize cost impact of initial start-up and full load demands issues - Consider Negotiate performance incentives in equipment supply contracts - System redundancy considered in initial design - Establish and implement life-cycle design philosophy - Turbine - Generator supply with or w/o Balance of Plant to be determined. - Complete design review of overland Tx in order to optimize reliability requirements. - Conduct FAT and SAT on all control software / hardware - Evaluate available insurance products that could reduce our exposure should this risk occur.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R13	Category	Engineering/Technical	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Consult Bob Barnes - Lead Ron Power - Consult Faskens - Technical
Unmitigated Risk Rating Rationalization	An event which would result in significant financial losses and operation interruptions is considered a Moderate impact; the likelihood is rated at 3 (possible) given the track record of many hydro projects in recent years.

Risk Trend and Status Update

RISK EXPOSURE IS CONSIDERED LOW DUE TO THE FOLLOWING:
- SLI HVDC system engineering function has been established with experienced resources.
- Overland transmission design will be based upon 1/50 year reliability period with additional reinforcement in selected areas as viewed by meterological testing and field data collection (e.g. LRM)
- 3rd parties being used for design reviews, incl. Transgrid for converter station specs.
- Decision made to install spare submarine cable with separate routing across SOBI in order to provide increased reliability.
- SOBI cable will be designed with ~10 min temporary current overload capacity to facilitate switch over to spare cable and running in monopole mode.
- System will be based upon use of proven LCC HVdc technology

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R14	Category	Environmental Assessment	Current Risk Rating	High

Risk Details

Lead	**Stephen Pellerin**
Risk Title	Securing generation project release from Environmental Assessment
Risk Description	As a result of a lack of information in the Generation EIS, a legal challenge to the EA by Hydro Quebec, or Aboriginals claiming insufficient consultation, could result in a schedule slippage for achieving EA release and hence a delay in Project Sanction.
Specifics and Root Causes	Target date for release of Generation Project from EA does not reflect probable schedule risk. There are 4 principle causes: 1.) Lack of resources within the EA team to manage the process and associated risk introduces delays and missed opportunities. 2.) EIS contains missing information and we are unable or unwilling to provide this information. 3.) Legal challenge by HQ on EA, Aboriginals claiming insufficient consultation, or Quebec Innu claiming project splitting of the Tx and Generation Projects. 4) Inaction, indecision and political interference as a result of conflicts between Nalcor and Province's mandates. We are encumbered. EA process is largely outside of LCP control...thus may become highly problematic: - Regulators decision making process - Use of process to protest project - Alternatives requested - Multiple legislative jurisdictions which are not all defined - Navigable Waters Act impact on reservoir clearing
Consequence / Impact	- Cost of delay and legal challenge. If this occurs prior to EA release, greater exposure to the Project and Nalcor. - Not achieving EA release from the Panel.
Early Warning Indicator of Risk Materialization	-# of Information Requests submitted to the Panel. - Messages received during Consultation process. - Monitoring of topics and discussions taking place during all Environmental Assessment Hearings;

Risk Response

Management Strategy	Avoid this risk by: - Focus on ensuring quality information is provided to the EA Panel. - Step up consultation efforts, in particular with Aboriginal groups. - Bolster team resources to allow for efficient management and support of the EA process. Mitigate this risk by seeking Executive and Shareholder alignment on using 1980 EARP decision as a fallback measure.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Advance planning for technical sessions for Generation Project. - Prepare quality and complete answers to IRs - Push panel to meet all deadlines - Identify and fill information gaps - Prepare for hearings - Educate and engage stakeholders and regulators - Develop detailed plan to obtain permits with mitigating actions to accelerate - Public awareness campaign at various levels (appropriate timing is critical)

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R14	Category	Environmental Assessment	Current Risk Rating	High

- Strong owner's team direction and accountability
- Lobby regulators through appropriate government ministries.
- Mobilize required EA team resources to manage process.

Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Paul Harrington - Consult Steve Pellein - Lead

Unmitigated Risk Rating Rationalization	An event having significant reputation damage and some financial exposure for Nalcor is classified as a Moderate event; the likelihood is rated at 5 (Almost Certain) given statements made by each of HQ and Quebec Aboriginals to this effect.

Risk Trend and Status Update

RISK IS CLOSED - Generation Project was released from EA in March 2012.
- Condiitons of EA release are being managed by Nalcor with SLI under the leadership of a Regulatory Compliance function. Management Plan for EA Commitments in-place.
- Costs associated with EA commitments and conditions of release are included in the Base Estimate for DG3.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R15	Category	Environmental Assessment	Current Risk Rating	Low

Risk Details

Lead	**Stephen Pellerin**
Risk Title	Environmental process impact on design
Risk Description	As a result of the outcome of the Generation Environmental Assessment, late changes to the design or project scope may be required, resulting in cost and schedule impact.
Specifics and Root Causes	- Design changes may be required as a result of environmental concessions necessitated by EA process findings/ruling (e.g. HADD compensation). - Commitments made during the EA (e.g. expropriation of cabins and land, compensation for traditional hunting and trapping, etc.) increase capital cost and operating cost.
Consequence / Impact	Cost and schedule impact of late design changes / additions.
Early Warning Indicator of Risk Materialization	- Commitments made as part of the EA process.

Risk Response

Management Strategy	Avoid risk by: - Working to understand environmental issues and accommodate realistic solutions early in the design process to minimize downstream effects on procurement and construction. - Preparing a strong, defensible positions on each recommended option contained in the EIS - convince the Panel that our basis and assumptions are the most pragmatic. Ensure alignment and communicate any policy decisions and potential impact prior to making a commitment as part of the EA process. - Verifying potential impacts of commitments made during the EA process with all disciplines of the Project Team prior to making such commitments. Mitigate risk by: - Complete early concept desktop studies on potential scope / design changes that the EA could recommend in order to be in a better position to react if such changes are requied to secure EA release. - Tracking commitments and concessions made during the EA process and communicate within Project Team to allow for effective management of any implications on the design, construction, start-up and operation phases. This risk cannot be entirely avoided or mitigated given its nature, thus residual risk must be accepted as a part of doing business.

Risk Strategy	✔ Avoid	✔ Mitigate	☐ Transfer	✔ Accept

Action Plan	- Quantify financial commitments being considered prior to making them. - Develop an early warning system to forecast potential conditions imposed by the EA Panel / process.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R15	Category	Environmental Assessment	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Steve Pellerin - Lead Ron Power - Consult Bob Barnes - Technical

Unmitigated Risk Rating Rationalization	This event would result in a minor financial impact due to a limited capital cost exposure. The likelihood is considered of be Unlikely.

Risk Trend and Status Update

RISK IS CLOSED - Generation Project was released from EA in March 2012.

- Condtions of EA Release and commitments by Nalcor documented in a Commitments Plan and being stewarded by Regulatory Compliance function. No major concerns.
- Detailed design for Fish HADD underway by Stantec.

- Working to secure a Scallop Dragging restriction for SOBI.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R16	Category	Environmental Assessment	Current Risk Rating	Low

Risk Details

Lead	Stephen Pellerin
Risk Title	Unanticipated design changes impact environmental assessment process
Risk Description	As a result of design evolution, there may be differences between the design assessed within the EA and the current design, resulting in schedule slippage due to the need to assess the impact of the design changes.
Specifics and Root Causes	As a result of design evolution, there may be differences between the design assessed within the EA and the current design, resulting in schedule slippage due to the need to assess the impact of the design changes.
Consequence / Impact	Cost and schedule impact of late design changes / additions.
Early Warning Indicator of Risk Materialization	# of Design Change Notices from the Gate 2 Basis of Design

Risk Response

Management Strategy

Avoid risk by:
- Where uncertainty exists multiple concepts / options to be assessed as part of the EA process in order to increase flexibility (e.g. tunnel versus submarine cable for SOBI).
- Early screening for issues and try to work acceptable solutions that avoid schedule impact.

Mitigate risk by leveraging Project Change Management Process to include approval of design changes by EA Manager in order to avoid surprises within the EA Process.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan

- Clarify what is in each EA to anticipate impact
- Communicate and adjust plan to involved stakeholders
- Diligence on clear internal alignment on potential business impact and plan adjustment as EA evolves
- Validation of concept through further studies
- Lay-out multiple options (if applicable) in a EA registration for each project component

Risk Responsibilities (LACTI)

Paul Harrington - Accountable
Steve Pellerin - Lead
Bob Barnes - Technical
Ron Power - Consult

Unmitigated Risk Rating Rationalization

An event having some financial impact on the Project ($100M - worst case). Likelihood is considered Unlikely given that system rarely operates in this mode.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R16	Category	Environmental Assessment	Current Risk Rating	Low

RISK IS CONSIDERED TO HAVE LOW EXPOSURE DUE TO GENERATION PROJECT HAS BEEN RELEASED FROM EA, WHILE LITL EA CURRENTLY WELL-PROGRESSED WITH RELEASE ANTICIPATED IN Q1-2013. NO DESIGN CHANGES EXPECTED FOR LITL GIVEN OVERALL DESIGN IS SIGINFICANTLY ADVANCED.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R17	Category	Stakeholder	Current Risk Rating	Low

Risk Details

Lead	**Gilbert Bennett**
Risk Title	Schedule impact due to delay in ratification of IBA by Labrador Innu Nation
Risk Description	As a result of an inability to reach agreement on the IBA and related agreements, the IBA and related agreements are not ratified, leading to/resulting in the project not proceeding to sanction.
Specifics and Root Causes	- Ratification delay due to non-alignment within the Innu community (multiple factions). - Bundling of IBA with other agreements may make it unachievable to ratify the IBA. - Land claims deal may be challenged by other Aboriginal groups.
Consequence / Impact	- Required prior to start of construction hence delay and loss of 2011 construction season. - Note: Non-ratification of the IBA would likely result in a project termination.
Early Warning Indicator of Risk Materialization	Progress of IBA discussions; demonstrated dissatisfaction with the process from various Aboriginal groups.

Risk Response

Management Strategy	Avoid risk by: - Maintain close ties with Aboriginal leaders - be responsive to the needs of various Aboriginal groups. - support the communication of accurate information on the arrangement. - Accelerate Federal Government activities on Land Claims file. - Maintain a good working relationship with the Innu Nation. - Strengthen consultation activity with other Aboriginal groups.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Conclude IBA, Redress and Land Claims agreements - Continue to disseminate facts into the community on the Project.
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Steve Pellerin - Lead Mary Hatherly - Technical Paul Harrington - Consult Lance Clarke - Consult
Unmitigated Risk Rating Rationalization	An event which would cause the Project not to proceed to sanction is considered an extreme impact. Likelihood is considered Unlikely given that an IBA, Land Claim, and Upper Churchill Redress agreements are nearly concluded.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R17	Category	Stakeholder	Current Risk Rating	Low

- STRATEGIC RISK IS CLOSED - IBA HAS BEEN RATIFIED BY INNU NATION (2011)

- Some Tactical Risk remains, largely with respect to cost for implementation of commitments in IBA. Team has a IBA Commitments Lead mobilized, while 2 supporting resources as defined unde the IBA have yet to be hired.
- Reputation risk exposure remains as well as tactical cost risk exposure associated with premiums for IBA preferenced packages (e.g. accommodations complex, catering, etc.)

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R18	Category	Stakeholder	Current Risk Rating	Low

Risk Details

Lead	**Stephen Pellerin**
Risk Title	Lack of support from other Aboriginal groups
Risk Description	As a result of a perceived lack of consultation by other Aboriginal groups, EA process may be challenged, which could lead to a delay in the EA process and other demonstrations.
Specifics and Root Causes	- Other Aboriginal groups (Quebec Innu, NunatuKavut) may claim a lack of consultation during the project EA process which may result in the EA process being stayed. - Court challenge of the EA process on grounds of Project Splitting (Generation and Tx) - this happened by La Romaine - May also resist Labrador Innu Land Claim deal - Groups may claim land use rights for the areas in question (e.g. Island Link transmission right-of-way) and demand negotiation of an IBA
Consequence / Impact	- Delay in EA process by court challenge - Bad media coverage - Permitting intervention causing delay - Demonstration/work stoppage (unlikely and considered impractical)
Early Warning Indicator of Risk Materialization	Demonstrated dissatisfaction with the process from various Aboriginal groups.

Risk Response

Management Strategy	Avoid risk by: - Aggressive engagement and consultation of all potentially impacted Aboriginal groups. - Add additional consultation resources to ensure consultation is addressed. - Negotiate some sort of compensation agreement with the other Aboriginal groups.

Risk Strategy	✔ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Establish consultation agreements with each of NunatuKavut, Labrador Inuit and 6 Quebec Innu bands. - Seek a mandate to negotiate a compensation agreement with these groups. - Increased consultations and communications with parties - Ensure compliance with EA Guidelines and Terms of Reference - Ensure Crown complies with fiduciary requirements - Proactive engagement with government to ensure they are aware of this risk and work with us to manage it. - Seek training opportunities under ASEP - Understand their claims and traditional use of the land
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Consult steve Pellerin - Lead Mary Hatherly - Consult Gail Warren - Technical Maria Moran - Consult Dawn Dalley - Consult

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R18	Category	Stakeholder	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	An event having some financial and reputation impact for Nalcor is classified as a Minor event; the likelihood is rated at Very Likely.

Risk Trend and Status Update

- Generation Project has been released from EA in March 2012
- 2 legal challenges to the EA process have been made - largely litigation cost exposure since we view our position as very strong. Include tactical risk exposure of $20 to $30 million (worse case) to address litigation cost.

- Strong focus on Aboriginal consultation and engagement by Nalcor. Workplan with supporting resources in-place / being implemented.
- In Sept-10, Nalcor submitted an Aboriginal consultation summary to the JRP, which should reduce the likelihood of this risk materializing.
- Consultation agreement signed with Pakua Shipi (a Quebec Innu group) on April 30, 2010 for the Generation EA.
- Consultation agreements signed with Pakua Shipi on Nov 24, 2010 and NunatuKavut on Jan 19, 2011 for the Island Link EA.
- Consultation agreement near signing with Unamen Shipu (a Quebec Innu group) for the Island Link EA.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R19	Category	Stakeholder	Current Risk Rating	Low

Risk Details

Lead	**Dawn Dalley**
Risk Title	Non-governmental organization / stakeholder protest
Risk Description	As a result of a lack of proactive stakeholder engagement, stakeholders may be misinformed on matters relevant to them, leading to/resulting in adverse community relations and protest against the Project.
Specifics and Root Causes	- As a result of a lack of proactive stakeholder engagement, stakeholders may be misinformed on matters relevant to them, leading to/resulting in adverse community relations. - Protest could come at critical stage of construction, or it could come during the EA process when power sales and market access negotiations are underway. - Primary concern is transmission - there are precedents in Canada where community has opposed routing.
Consequence / Impact	- Negative media and public perception causing delay in making key decisions required to maintain the project schedule. - Poor community relations - Court challenge at EA release delaying permitting - Demonstration or work stoppage. - Community opposition to Tx line routing may delay engineering
Early Warning Indicator of Risk Materialization	Opinion and media articles featuring the views of NGOs

Risk Response

Management Strategy	- Develop and fully implement a stakeholder communication and consultation plan. - Focus on getting Nalcor's message out on the benefits of the Project (i.e. sell the project in order to leverage public support). - Convince our "silent" supporters to speak-out for the Project. - Monitor public and media pulse and focus strategic messages accordingly. - Leverage Quebec versus NL debate to rally support for this venture.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	Avoid risk through: - Develop and fully implement a stakeholder communication and consultation plan. - Monitoring public and media pulse and focus strategic messages accordingly. Mitigate impact by: - Focusing on getting Nalcor's message out on the benefits of the Project (i.e. sell the project in order to leverage public support). - Convincing our "silent" supporters to speak-out for the Project. - Leverage Quebec versus NL debate to rally support for this venture. Accept the fact that Nalcor will recieve some negative attention for undertaking a project like LCP.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R19	Category	Stakeholder	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Paul Harrington - Consult Consultation Lead - Technical Dawn Dalley - Lead

Unmitigated Risk Rating Rationalization	An event having some reputation impact that could be considered as minor and of no lasting consequence. Likelihood is considered Possible based upon the quick and significant negative response regarding the routing the Hvdc Tx Line through GMNP.

Risk Trend and Status Update

- Concern is not really wrt to NGOs, rather public support. Risk must be monitored for trends.

HISTORICAL NOTES:
- The Project has not received substantial bad press from International NGOs, however 1 of 2 current legal challenge against Generation EA has been led by Sierra Club. It is not apparent that the Sierra Club wish to minimize the amount of its financial resources challenging this Project. Routing of Tx line through GMNP created quite a stir leading to significant protest.
- Recently the Province has faced significant critism regarding whether LCP is the solution to meet the Island's long-term energy needs, in particular are been challenged on the basis of their assumptions. These developments have predicated the current review of DG2 decision by the Public Utilities Board as well as an Independent 3rd Party - Navigant.
- Facebook site opposing GMNP Tx line is an example of the potential negative publicity this can create.
- Meeting with BCTC and Manitoba Hydro in Oct-09 to collect lessons learned from their experiences (Mother's Against Power Poles)
- Sea Electrode issue could fit into this category - however no public outcry during recent meetings with communities on Labrador South Shore

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R20	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Scott O'Brien**
Risk Title	Availability of experienced hydro contractors
Risk Description	As a result of the strong demand for new hydro, industry consolidation, and a lack of hydro over the past 20 years, there is a limited availability of experienced hydro contractors, which could result in less than expected number of qualified contractors being interested.
Specifics and Root Causes	Industry consolidation and lack of hydro activity for 20 years has limited available and viable contractors. Key considerations: - Willingness to bid - Ability to perform - Fair lump sum price / Transparency / Risk Premium - Level of Aggregate Guarantee - Level of Completion Risk Guarantee - Conforming Contract - Creditworthiness -Market and contractor market improving in late 2009 due to weakening demand, as a result the premium to pay for experience is decreasing (i.e. lower profit margins for contractors).
Consequence / Impact	- Split contracts into manageable pieces - Number of qualified contractors interested may be more limited than expected.
Early Warning Indicator of Risk Materialization	Global and Canadian construction trends.

Risk Response

Management Strategy	Avoid risk by: - Engaging worldwide market and "sell the project" to stimulate interest. - Developing an Innovative contracting strategy to make project attractive to contractors with risk/benefit balance. Accept that this risk is not entirely avoidable and cover additional contingency to mitigate it.

Risk Strategy	☑ Avoid	☐ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Obtain market intelligence - Early engagement of qualified contractors - Evaluate and make decision on contract package configuration - Convey to contractors that the Project is "real" - Provide sufficient on-site oversight - Obtain completion guarantee
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Bob Barnes - Technical Lance Clarke - Lead Fasken - Technical AON - Consult Ron Power - Technical

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R20	Category	Hydro Construction	Current Risk Rating	Low

Pat Hussey - Technical

Unmitigated Risk Rating Rationalization	An event having significant financial impact on the Project ($100M - worst case). Likelihood is considered Possible given the current uncertainty in how the construction market will rebound from the current Recession.

Risk Trend and Status Update

RISK EXPOSURE IS CONSIDERED LOW, DUE TO THE FOLLOWING:
- We have significant interest in firms to pre-qualifiy for CH0007 - at the end end 4 bidders were pre-qualified - 3 are international / global firms
- Our key exposure remains construction labor productivity .
- Our contract terms and conditions and performance secuirity requirements are considered too heavy handed - we will have to manage this our risk that we will not have bidders or very high prices.
- Suggest that we still have $40 to $50 million of expsoure for CH0006, 7 & 8.

HISTORICAL NOTES:
- Market and contractor market improving in late 2009 due to weakening demand, as a result the premium to pay for experience is decreasing (i.e. lower profit margins for contractors).
- Stable environment, big enough to generate interest from engineering contractors - we now have SNC-Lavalin as our EPCM Consultant
- SLI as our EPCM Consultant have excellent insight into this market.
- SLI are evaluating the package strategy in consideration of attracting large civil contractors - proposing one large package for spillway, intake and powerhouse
- Low commodities level is impacting this group more than the any stimulus money is adding.
- Federal Government support for the Project will likely significantly reduce this risk.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R21	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Lance Clarke**
Risk Title	Ability to use Newfoundland & Labrador contractors due to lack of creditworthiness
Risk Description	As a result of the conditions of non-recourse project finance, our ability to use NL-based contractors due to their lack creditworthiness could lead to Nalcor having to backstop the inherent risks of using these contractors.
Specifics and Root Causes	Desire to support local economies by utilizing local contractor capacity, however due to size of work scope, may be difficult due to following considerations: - Creditworthiness - Level of Completion Risk Guarantee - Ability to perform - The conditions of non-recourse project finance will demand contractors be credit worthy for value of scope, otherwise Nalcor will have to backstop any risks (lenders won't accept the risk of default).
Consequence / Impact	- Possible general contractor "wrap," but very unlikely in current market - Federal or provincial support/guarantee.
Early Warning Indicator of Risk Materialization	

Risk Response

Management Strategy	Miitgate by: - Work with local contractors to find suitable partners or underwriters. - Initiate discussions with Atlantic Canada Opportunities Agency (ACOA) to educate them on this risk and work with them to help mitigate this risk. - Consider this risk in the contract package definition.
Risk Strategy	☐ Avoid ☐ Mitigate ☐ Transfer ☐ Accept
Action Plan	- Proactive program to educate contractors and supplies on issue - Potentially develop regional vendor data base - Encourage teaming or partnering arrangements for local companies - Consider insurance program to backstop this exposure - Develop creditworthiness assessment guidelines
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Lead Fasken - Consult Charles Cook - Technical PwC - Technical Dawn Dalley - Consult Pat Hussey - Technical
Unmitigated Risk Rating Rationalization	This event would result in a minor financial impact due to a limited capital cost exposure. The likelihood is considered to be Possible, but will be driven by the risk-appetite of the Financial Markets and overall project risk portfolio.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R21	Category	Hydro Construction	Current Risk Rating	Low

Risk Trend and Status Update

RISK IS CLOSED DUE TO THE FOLLOWING:
- We have no particular requirement to use NL contractors from a benefits perspective, rather our packaging strategy is largely aligned with using larger national/ international contractors
- We have defined our performance security requirements.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R22	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Ron Power**
Risk Title	Availability of qualified construction management / supervision
Risk Description	As a result of competition from other projects around the globe, the project may be unable to source the required qualified construction management and supervision, resulting in poor labor productivity, cost growth and schedule slippage.
Specifics and Root Causes	- Worldwide construction at historic high with peak early next decade, however current Economic Recession is resulting in a forecasted slowdown for the short to medium term. - On a project of this size and complexity, the major cost and schedule risk is productivity - the key to productivity will be the 200 to 300 front line to top construction supervisors/managers. Key issues for productivity: - Accommodations complex conditions - Rotation / Transportation - Career goals and opportunity - Pride for Newfoundlanders – Coming home from Alberta? - Correct skill sets - Competitive Compensation
Consequence / Impact	- Cost growth and poor productivity - High turnover rates - Potential schedule slippage
Early Warning Indicator of Risk Materialization	Global and Canadian construction trends.

Risk Response

Management Strategy	-

Risk Strategy	☑ Avoid	☐ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Make work location/employment attractive (quality of accommodation/resort complex, transportation, family benefits, vacation) - Sell the project as an opportunity for NL - Consistent employment deals where possible - Maintain some control of benefit distribution - Include provisions in contracts and labor agreements - Consider alignment with other mega projects being executed in province - Consider incentives with contractors to achieve labor objectives - Consider that some qualified supervision may be French Canadian

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R22	Category	Hydro Construction	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Lead Dawn Dalley - Consult Fasken - Consult

Unmitigated Risk Rating Rationalization	An event having some financial impact on the Project ($90M - worst case). Likelihood is considered Possible given the current uncertainty in how the construction market will rebound from the current Recession.

Risk Trend and Status Update

- The Project Contracting Strategy is to maximze the using of lump sum or fixed price contracting strategies where the contractor assumes the performance risk. Under this approach the contractor is naturally incentived to put quality supervision on the job.
- The labor agreements under negotation with the RDC includes the provision for contractors to name-hire supervision from the union hall.
- DG3 wage rates for supervision are considered attractive.
- Planned accommodations and recreation facilities at MF will be competitive with Western Canada, however will be difficult to compete on wages.
- Securing CM personnel for the EPCM will be a large challenge.

- While not closed, the residual risk exposure is considered to be low.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R23	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Scott O'Brien**
Risk Title	Site conditions worse than geotechnical baseline
Risk Description	As a result of geotechnical and design uncertainties at Muskrat Falls, scope increases due to increased civil work scopes, results in added cost and schedule slippage.
Specifics and Root Causes	- Contractors will not take unknown geotechnical risk without prohibitive risk premiums - Potential unknowns (i.e. faults) at site of the dam may lead to considerable excavation and/or grouting in excess of expectations
Consequence / Impact	- Scope increases result in added cost and schedule slippage. - Contingency erosion - Delay in First Power
Early Warning Indicator of Risk Materialization	Detection of uncertainties in geotechnical surveys.

Risk Response

Management Strategy	Mitigate the risk by maximizing geotechnical investigations to determine conditions as well as possible before bidding. Residual risk will have to be accepted by Nalcor since contracts will not accept it.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Collect data and perform studies in order to develop comprehensive geotechnical baseline - Optimize plant layout using the findings from 2010 geotechnical program prior to the start of detailed engineering and contracting. - Consider commercial structure of contract to minimize impact (unit prices) - Establish owner's representatives (preferably on-site) to monitor contractor performance Negotiate construction contracts that considers residual, immitigable geotechnical risk.
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Bob Barnes - Lead Ron Power - Consult Dave Brown - Technical
Unmitigated Risk Rating Rationalization	An event having significant financial exposure and construction schedule delays classified as a Moderate event; while it might occur thus is rated as Possible.

Risk Trend and Status Update

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R23	Category	Hydro Construction	Current Risk Rating	Low

- RISK RANKING IS CONSIDERED LOW GIVEN SIGNIFICANT MITIGATION ACTIVITIES SINCE DG2

- Field programs conducted in 2010 have established a Geotechnical Baseline for Muskrat Falls - resulted in re-orientation of powerhouse/Intake by 30 degrees
- Findings from 2010 program have been incorporated into MF plant layout optimization working completed by SLI under WTO MF1340, including the development of a 3D model of the physical structures in CATIA software. This has allowed for the more accurate determination of major excavation and concrete quantities.
- May 2011 desktop analysis of the potential geotechnical exposure based upon the existing data limitations have indicated the potential of some exposure in river, however NPV of completing a field program in 2011 is consider negative, hence no rationale for undertaking work.
- Largest risk exposure remains in North Spur - geotechnical program planned for spring 2013 - exposure covered under Tactical Risk
- Geotechnical surveys completed in spring / summer 2012 for switchyards - favourable results considerd in Tactical Risk exposure
- Residual risk is being considered in the development of the construction schedule.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R24	Category	Hydro Construction	Current Risk Rating	High

Risk Details

Lead	**Lance Clarke**
Risk Title	Availability and retention of skilled construction labour
Risk Description	As a result of competition from other provinces (Alberta), the Project may have challenges recruiting and retaining skilled, experienced trades, resulting in poor productivity, cost growth and schedule slippage.
Specifics and Root Causes	- Current worldwide peak construction over Q2 2011 and demand will reduce accordingly. - Need to start communicating the project in areas of high concentration of the skilled work force required to target these resources - experienced equipment operators will likely be the largest demand. Key issues: - Accommodations complex conditions - Compensation & competition with Alberta - Rotation / Transportation - Pride for Newfoundlanders – coming home from Alberta? - Productivity Other considerations: - Union attitude on training and development - Foreign workers - NL is largely a micro-economy within Canada, forecasting significant growth during the coming years.
Consequence / Impact	- Cost growth and poor productivity - High turnover rates - Potential schedule slippage
Early Warning Indicator of Risk Materialization	- Increased sick leave amongst the older demographic - Rates of current enrolment in various applicable trades programs - Out-migration to oil jobs in Alberta continues.

Risk Response

Management Strategy	Avoid risk by: - Recognize competition threat for labour and proactively manage. - Making the work and work site appealing to Newfoundlanders (e.g. attractive camp, compensation, rotation and transportation) and actively recruit NLs working afar - Actively recruit workforce currently commuting to Western Canada from Newfoundland and Labrador and Atlantic Canada – leverage the "legacy" theme to entice end of career experienced supervisors & labour back home. Mitigate the exposure by: - Developing a construction schedule based upon achievable labor productivities - Negotiating a labor agreement that supports trade flexibility - Implement a constructability focus at the start of engineering to ensure plant can be efficiently constructed. - Tap into traditionally under-represented groups such as women and aboriginals by encouraging training and education initiatives.

Risk Strategy	✔ Avoid	✔ Mitigate	☐ Transfer	☐ Accept

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R24	Category	Hydro Construction	Current Risk Rating	High

Action Plan	- Make work location/employment attractive (quality of accommodations, transportation, family benefits, vacation) - Consistent employment deals where possible - Maintain some control of benefit distribution - Structure labor strategy that does not impair engaging local labor - Develop a construction schedule based upon achievable labor productivities - Develop a dynamic labor supply and demand model in order to understand this issue. - Labor strategy that considers lessons learnt for other projects incl. demarkation and composite crewing.
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Lead Jason Kean - Consult Steve Goulding - Technical Maria Moran - Technical Debbie Molloy - Technical Westney - Consult
Unmitigated Risk Rating Rationalization	An event having significant financial impact on the Project ($100M - worst case). Likelihood is considered Possible given the current uncertainty in how the construction market will rebound from the current Recession.

Risk Trend and Status Update

- THIS REMAINS THE KEY RISK FOR THE PROJECT. MITIGATION STATUS:
- DG3 labor strategy considered this risk and baked mitigation measures into plans, including labor rate in a competitive environment and a 20/8 rotation.
- Collective agreement negotations underway with the RDC - concept of "work teams" has been embraced.
- Planned accommodations and recreation facilities at MF will be competitive with Western Canada, however will be difficult to compete on wages.
- If we Sanction in fall 2012, we should good for the next 12 months given a slowing of activity in Western Canada, however our current schedule puts is aligned with Hebron hence large competition for workers.
- Key concern is availability of contractor's non-union supervisors.
- Labor supply and demand model prepared - we understand the key shortfalls for LCP - expect Quebec workforce can be leveraged.
- Evaluate opportunities for helicopter construction on transmission line - will reduce labor demand.
- Productivity Action Plan developed and being gradually implemented within the actions for Nalcor and SLI.
- Labrador Aboriginal Training Partnership established with $15M in training funding - great success to-date.
- EPCM Services Agmt with SLI includes a strong focus on construction planning prior to Project Sanction.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R25	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Lance Clarke**
Risk Title	Availability of unskilled construction labour
Risk Description	As a result of the Western Canada oil boom, the project may have challenges recruiting and retaining unskilled labor, resulting in poor productivity, cost growth and schedule slippage.
Specifics and Root Causes	- Remote jobsite and less desirable work - In an effort to support local economies, need to work to focus training efforts in areas of lower employment, i.e. target availability of unskilled resources Key issues: - Accommodations complex conditions - Compensation & competition with Alberta - Rotation / Transportation - Opportunities / Training
Consequence / Impact	** There is very minimal exposure for this risk in the current marketplace. - Cost growth and poor productivity - High turnover rates - Potential schedule slippage
Early Warning Indicator of Risk Materialization	- Increased sick leave amongst the older demographic - Rates of current enrolment in various applicable trades programs - Out-migration to oil jobs in Alberta continues.

Risk Response

Management Strategy	Avoid risk by: - Providing competitive opportunities for locals. - Promoting opportunity for training and advancement of local unskilled workforce. - Leveraging under-utilized labor pools (e.g. Aboriginal and other visible minority groups).

Risk Strategy	☑ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Make work location/employment attractive (quality of accommodation/resort complex, transportation, family benefits, vacation) - Make the worksite attractive for the local residents (daily commute options, etc.) - Develop a diversity plan - Promote in recruitment plan - Consistent employment deals where possible - Maintain some control of benefit distribution - Include provisions in contracts and labor agreements - Structure labor strategy that does not impair engaging local labor - Leverage ASEP program to train Aboriginals
Risk Responsibilities (LACTI)	Paul Harrington - Accountability Lance Clarke - Lead Steve Goulding - Technical Maria Moran - Technical

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R25	Category	Hydro Construction	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	This risk is considered to have minimal financial impact given current economic situation. Similarly risk likelihood is considered Unlikely.

Risk Trend and Status Update

REFERENCE STATUS UPDATES FOR R24
- People working in Western Canada commute & send money home to Newfoundland; most Newfoundlanders working in Western Canada would prefer to be in NL.
- Labor supply and demand model prepared - we understand the key shortfalls for LCP.
- Labrador Aboriginal Training Partnership established with $15M in training funding - great success to-date.
- Unskilled workers are the first to be let go in a rotation, hence currently this risk should be minimal. But where will it be in 2011-17?

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R26	Category	Hydro Construction	Current Risk Rating	Low

Risk Details

Lead	**Scott O'Brien**
Risk Title	Limited number of creditworthy hydro turbine suppliers
Risk Description	As a result of significant industry consolidations and limited activity within North America, there is a limited number of creditworthy hydro-turbine suppliers, which could lead to longer delivery lead times, and increased cost.
Specifics and Root Causes	- Significant industry consolidations and work in North America limited - Industry presently busiest since "Golden years" of 83 to 92 - In last 5 years increasingly "sellers" market - order books full for 2010 - North America declining in importance as market – GE exits North America for Brazil and China - Complex international supply chain - Only remaining North American supplier is Alstom - they are busy Key Considerations: - Willingness to bid - Ability to deliver / reliability - Installation competency - Fair lump sum price / Transparency / Risk Premium - Level of Aggregate Guarantee - Level of Performance Guarantee / Testing acceptance - Warranty – Latent defects - Level of Completion Risk Guarantee - Conforming Contract - Creditworthiness
Consequence / Impact	- Longer lead times required and earlier commitments - Fewer suppliers = less competition - Increased cost due to demand factor despite downturn in commodities
Early Warning Indicator of Risk Materialization	- Global demand for hydro. - # of creditworthy suppliers

Risk Response

Management Strategy	Mitigate the risk by: - Engaging 2 existing "bankable" suppliers and explore contracting model and risk allocation strategy. - Early strategy decision and selection of supplier. - Enhanced oversight during design and manufacture phases. Residual risk will have to be accepted since cost will be driven by underlying global demand.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Gather market intelligence and monitor marketplace - Early engagement of qualified vendors - Evaluate and make decision on turbine package configuration - Convey to vendors that project is "real" - Provide sufficient factory oversight - Potential insurance to cover unexpected perils during manufacture - Obtain performance guarantee on efficiency (exclude run-a-way test)

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R26	Category	Hydro Construction	Current Risk Rating	Low

Risk Responsibilities (LACTI)	Paul Harrington - Accountable Bob Barnes - Technical Pat Hussey - Technical Lance Clarke - Lead Fasken - Technical AON - Technical
Unmitigated Risk Rating Rationalization	An event having some financial exposure classified as a Minor event; while it likely that this event will occur thus is rated as Likely.

Risk Trend and Status Update

RISK IS CLOSED - CONTRACT AWARDED TO ANDRITZ CANADA

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R27	Category	Financial	Current Risk Rating	Low

Risk Details

Lead	**Jason Kean**
Risk Title	De-escalation / hyper-inflation risks
Risk Description	As of result of global demand for construction goods and materials, the project may be exposed to hyper-inflation , resulting in significant increase in capital cost.
Specifics and Root Causes	- Driven by global demand - There has been significant upswing and downswing on commodities since late 2004 resulting in significant increase in build cost. - Future is difficult to predict - best we can practically hope for is a reasonable view for the next 2 years - We need to consider Hyper-inflation due to continued world demand, combined with significant barriers to entry for new players in the specialty supply marketplace.
Consequence / Impact	- Threat or opportunity? If threat, could erode significant shareholder value. - Hyper-inflation, resulting in significant increase in capital cost.
Early Warning Indicator of Risk Materialization	Market indices for raw and finished products.

Risk Response

Management Strategy	Avoid risk by: - Monitoring market and understand supply / demand balance for goods and materials. - Developing an escalation forecasting model specific for LCP in order to translate market intelligence into an educated assessment of likely exposure to this risk. Transfer residual risk by: - Consider commodity hedging strategy to reduce exposure. - Consider commerically pushing some of this risk to offtakers as part of the PPAs rather than pricing the associated cost uncertainty into power rates.

Risk Strategy	☑ Avoid	☐ Mitigate	☑ Transfer	☐ Accept

Action Plan	- Escalation will be applied by project components (turbine, labor, etc) - Consider core escalation plus market specific escalation - Obtain external benchmarking on escalation - Consider foreign currency and exchange assumptions - Continue to obtain market intelligence on supply & demand of key equipment (e.g. T/G's)
Risk Responsibilities (LACTI)	Derrick Sturge - Accountable Rob Hull - Consult Jason Kean - Lead Steve Goulding - Technical Pat Hussey - Consult Fasken - Consult PWC - Consult Westney - Consult

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R27	Category	Financial	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	An event having substantial financial impact on Nalcor. Based upon historical trend and prices contained in the Gate 2A estimate it is considered unlikely the event would be of significant enough nature to cause a substantial impact to Nalcor.

Risk Trend and Status Update

RISK EXPOSURE IS CONSIDERED LOW

- Detailed escalation model prepared which formed the basis of DG3 escalation recommendations. From this analysis, risk exposure is considered low.
- Nalcor continues to monitor market through Global Insight and PowerAdvocate. Recently commodity upswing having an impact on the price of steel, conductor, etc. for transmission.
- DG3 includes an investigation of major currency exposure based upon cash flow analysis - some, but limited exposure to US, NOK, and Euro. .
- Contracting strategy for major manufacturered components (submarine cable and TGs) includes consideration of this risk - decision to be made on who is best able to manage the risk.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R28	Category	Transmission Construction	Current Risk Rating	Low

Risk Details

Lead	**Kyle Tucker**
Risk Title	Availability of experienced high-voltage contractors and skilled labour
Risk Description	As of result of the limited availability of qualified overland Tx contractors and linespersons in North America and the strong demand for such services in the US, the Project may have challenges securing qualified contractors, leading to cost growth and schedule slippage.
Specifics and Root Causes	- Limited number of qualified transmission contractors especially in North America (approximately 4 available) - the size of the scope will require multiple contractors. - US grid reinforcements is strongly influencing this risk. - Resource requirements very large compared to supply for key skill sets such as line workers - Increasing risk as demand for HV contractors increases with the investment in wind power. - Key Considerations: - Willingness to bid - Ability to perform - Fair lump sum price / Transparency / Risk Premium - Level of Aggregate Guarantee - Level of Completion Risk Guarantee - Conforming Contract - Creditworthiness
Consequence / Impact	- Inability to secure the quantity of skilled persons required could lead to quality issues, added cost, and schedule slippage/delay.
Early Warning Indicator of Risk Materialization	- Global build of new transmission - # of linepersons graduating from college in Canada.

Risk Response

Management Strategy	Mitigate this risk by: - Commercial ownership construct for the Island Link and Maritime Link should be configured to reduce this risk (i.e. select partners who have the ability to reduce this risk). - Split into 5 to 6 smaller contracts for cost and scheduling reasons - Actively pursue potential suppliers and expand to worldwide considerations - Phase the transmission build in order to flatter resource demands - Actively support the training of linespersons. Residual risk will have to be accepted.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Obtain market intelligence - Select equity / ownership partners who are able to reduce this risk. - Package scope into manageable segments/spreads - Ensure contractor has adequate line resources - Train resources to improve quality and increase supply base

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R28	Category	Transmission Construction	Current Risk Rating	Low

- Union labor agreements may be able to help provide resources
- Break contract into sequence of erection (material, towers, line installation, etc)
- Identify availability of critical transmission equipment

Risk Responsibilities (LACTI)

Paul Harrington - Accountable
Lance Clarke - Lead
Bob Barnes - Technical
Fasken - Technical
Ron Power - Technical
Steve Goulding - Consult
Maria Moran - Consult

Unmitigated Risk Rating Rationalization

This event would result in significant impact given the potential capital cost exposure; while the materialization is this event is Almost Certain to occur given global demand for new Tx and skilled constructors and labor limitations.

Risk Trend and Status Update

RISK EXPOSURE HAS REDUCED SINCE DG2.

- Base Estimate is considered very solid, while basic exposure can be considered Tactical Risk
- A wide range of contractors have expressed interest in our project.
- Use of helicopters is very likely, which will reduce labor requirement
- Collective Agreement will be a wall-to-wall agreement with IBEW, and include provisions for import of foreign labor.
-Productivity exposure due to quality of labor. 3M hours @ $5 – 10/hr = $15 - $30 M

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R29	Category	HVdc Specialities Supply & Install	Current Risk Rating	Medium

Risk Details

Lead	Darren Debourke
Risk Title	Limited number of HVdc specialties suppliers and installers
Risk Description	As a result of the limited number of HVdc specialties suppliers and installers, the Project may have challenges securing manufacturing and installation capacity, resulting in additional cost and schedule slippage.
Specifics and Root Causes	- Basically two big suppliers and installers of sub sea cable (ABB and Nexans) - 3 main suppliers of HVdc equipment - Areva, Siemens and ABB - Location, especially Strait of Belle Isle, is challenging - Tight weather window for installation - Cabot Strait and SOBI combined would place tremendous demands on cable supply
Consequence / Impact	- Unavailability of cable installation vessels - Unavailability of factory slots for cable - Schedule delays - Cost premium to secure and maintain factory slots for cable and installation vessels
Early Warning Indicator of Risk Materialization	- Market demand for HVdc technology - Market consolidation or entry of new players - Financial strength of existing Market players

Risk Response

Management Strategy	Mitigate this risk by: - Optimization of packaging strategy of HVdc specialties equipment and services to entice key players - Early selection and engagement to ensure availability Acceptance of risk residual by paying a premium to get the best.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	- Evaluate potential alternatives for marine installation vessels - Further understand the market and its dynamics. - Reassess execution and contract packaging for this scope to align with market intelligence and mitigation of this risk.
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Lance Clarke - Lead Bob Barnes - Technical Faskens - Consult Ron Power - Consult
Unmitigated Risk Rating Rationalization	This event would result in a minor financial impact due to a limited capital cost exposure. The likelihood is considered of be Likely given the small marketplace, plus forecasted demand for new transmission.

Risk Trend and Status Update

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R29	Category	HVdc Specialities Supply & Install	Current Risk Rating	Medium

- Currently 3 main HVdc equipment suppliers (ABB, Alstrom & Siemens) have been engaged and all are interested in the LCP. SLI Component 3 Team has good, recent experience dealing with these vendors and understand the marketplace.
- Key concern is getting the RFP out the door to allow for award prior to Financial Close
- Strategic opportunity for sourcing synergies with Emera to be further explored
- Confirmation of contracting strategy for AC Switchyards remains - EPCM model or EPC. Key risk for us is our EPCM managing E&I delivery scope →Uncertainty is risk premium.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R30	Category	Environmental Assessment	Current Risk Rating	Low

Risk Details

Lead	**Stephen Pellerin**
Risk Title	Island Link EA results in late design changes
Risk Description	As a result of the outcome of the Island Link and Maritime Link Environmental Assessment, late changes to the design or project scope may be required, resulting in cost and schedule impact.
Specifics and Root Causes	As a result of the outcome of the Island Link and Maritime Link Environmental Assessment, late changes to the design or project scope may be required, resulting in cost and schedule impact. Potential Threats: - Sea return electrode - have faced challenges in other jurisdictions - protest from NGOs and other groups due to the inability to predict long-term effects (i.e. pipeline corrosion, gas generation, effects on magnetic compasses, etc.) - There have been significant public concerns raised regarding the access route for the electrode line to Lake Mellville / Mud Lake. - Impact of line routing in Labrador and over the Long Range Mountains on Woodland Caribou mitigation and protection. - Habitat destruction in the SOBI due to submarine cable. Significant compensation required.
Consequence / Impact	- Mitigation costs for alternate design solution. E.g. route Labrador section of Island Link closer to TLH, use beach electrode. - Potential schedule slippage resulting from additional time to find alternative solution.
Early Warning Indicator of Risk Materialization	- Issues raised during consultation - Extent of media interest and tone of coverage - EIS Guidelines - how it addresses these issues

Risk Response

Management Strategy	Avoid risk by: - Working to understand environmental issues and accommodate realistic solutions early in the design process to minimize downstream effects on procurement and construction. - Preparing a strong, defensible position on each recommended option contained in the EIS - convince the Panel that our basis and assumptions are the most pragmatic. Ensure alignment and communicate any policy decisions and potential impact prior to making a commitment as part of the EA process. - Verifying potential impacts of commitments made during the EA process with all disciplines of the Project Team prior to making such commitments. Mitigate risk by: - Complete early concept desktop studies on potential scope / design changes that the EA could recommend in order to be in a better position to react if such changes are requied to secure EA release. - Tracking commitments and concessions made during the EA process and communicate within Project Team to allow for effective management of any implications on the design, construction, start-up and operation phases. This risk cannot be entirely avoided or mitigated given its nature, thus residual risk must be accepted as a part of doing business.

Risk Strategy	✔ Avoid	✔ Mitigate	☐ Transfer	✔ Accept

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R30	Category	Environmental Assessment	Current Risk Rating	Low

Action Plan	- Establish expert panel on the subject and undertake investigation of the optimal electrode type for LCP considering our operational requirements and public perception. - Develop a communications strategy that focus on the key message that our system is bi-pole, mono-pole is only utilized as back-up for emergency situation (hours per annum). - Consider alternate arrangements for electrode rather than in a marine environment (e.g. beachside, or near-shore pond) - Evaluate the economic and technical merit of routing the Labrador Tx line closer to the TLH and present a strong justification for selected route as part of the EIS.
Risk Responsibilities (LACTI)	Paul Harrington - Accountable Bob Barnes - Technical Steve Pellerin - Lead Steve Bonnell - Technical Dawn Dalley - Consult
Unmitigated Risk Rating Rationalization	This event could result in a Major financial impact if re-routing of the Tx line in Labrador was required. The likelihood is considered to be Possible.

Risk Trend and Status Update

- Key concerns are related to avifauna, caribou calving grounds and ROW clearing restrictions in June & July due to nesting birds.
- Some concern re Outfitters - claim that we may be disrupting their business.
- Work to-date has not identified any surprises, however there will likely be construction restrictions coming out of the EA approval (e.g. nesting Songbirds hampering clearing operations, Woodland caribou birthing season on the Norhtern Pennisula).
- LIL originating at MF rather than Gull Island reduces the amount of interior Labrador to be traversed - less disruption as now following TLH for half of Labrador line section.
- Significant effort has been placed into consultation, however Spring 2011 cross-province consultation workshops were cancelled part way through due to a lack of attendance / public interest.
- Shore-type electrode has been selected over sea-electrode. Location selected at Dowden`s Pt, CBS and Lanse Diablo, Labrador.
- Registration for Lab - Island Link has been revised to reflect known changes to design such as electrode site and type of electrode, SOBI cable crossing routing and landing points.
- EIS guidelines not received until Q2-11, hence delaying EIS submittal. A number of component studies have been issued, however complete EIS not to be submitted until Q4 2011, with a decision on the Island Link EA anticipated in Q1 2013.
- Scallop dragging restriction being sought for SOBI cable area.

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Strategic Risk Frame

Revised	16-Sep-12

Risk #	R31	Category	Enterprise	Current Risk Rating	Medium

Risk Details

Lead	**Gilbert Bennett**
Risk Title	Unwillingness of Shareholder to fund early construction on equity defers construction
Risk Description	As a result of an unwillingness of the Shareholder to fund early construction activities prior to Financial Close, the planned execution approach and timeline for start of construction would change, resulting in a significant slippage of the target First Power date.
Specifics and Root Causes	Current engineering and construction schedule is predicated upon substantial equity injection ($2 to $3B) prior to Financial Close in 2013. Major go/no-go decision of equity spend is in 2011 with start of Early Works at Gull Island and awarding contracts for T/G sets. This is concurrent with the timing of the next provincial election (Oct 11, 2011) - risk of unwillingness to commit during election campaign.
Consequence / Impact	- Change in strategy - no construction or issue of purchase orders pre-Financial Close. - Delay in start of construction until post 2011 election. - Slippage of first power date.
Early Warning Indicator of Risk Materialization	Approval of capital expenditure program for 2010 and start of engineering on early infrastructure works, award of main engineering contract, issue PO for bridge and camp.

Risk Response

Management Strategy	Avoid risk by: - Ensuring early and on-going alignment with the Shareholder on all aspects of the project. - Confirming Province's appetite for equity injection pre-Financial Close and validate the availability of equity from Shareholder is aligned with the proposed execution schedule. - Seek early commitment and release of capital for 2010 activities. Mitigate this risk by executing engineering and contracting in a scale-down fashion availing of the longer time time.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Confirm equity injection capacity from the Province prior to Decision Gate 2 and adjust execution plan accordingly. - Regular briefings provided by Project Team to Executive Leadership on pending decisions for the next 90 days. - Regular communication on key messages between Nalcor and Shareholder. - Ensure clarity on overall project schedule and financial commitment curve.
Risk Responsibilities (LACTI)	Ed Martin - Accountable Gilbert Bennett - Lead Mark Bradbury - Technical Rob Hull - Technical Paul Harrington - Technical Jason Kean - Consult
Unmitigated Risk Rating Rationalization	An event having significant financial impact on the Project ($100M - worst case). Likelihood is considered Possible given the current uncertainty in how the construction market will rebound from the current Recession.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	16-Sep-12

Risk #	R31	Category	Enterprise	Current Risk Rating	Medium

Risk Trend and Status Update

RISK IS CONSIDERED CLOSED DUE TO THE FOLLOWING:

- We have strong equity commitment from the Province - $665 million approved for 2012 works
- Province approved the commencement of MF Early Infrastructure works prior to Sanction.
- Legislative and regulatory framework changes on-going
- Commitment Letter from GNL in-place

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R32	Category	Environmental Assessment	Current Risk Rating	Low

Risk Details

Lead	**Stephen Pellerin**
Risk Title	Delay in the release of the Island Link from EA
Risk Description	As a result of a delay in a decision of the type and level of federal EA required, a delay in the Island Link release from EA may occur, which could lead to an overall slippage on the target First Power date.
Specifics and Root Causes	-Federal government decisions on type and level of federal EA required have not yet been made, due to the fact that Nalcor Energy has not yet responded to Parks Canada's May 4 2009 letter. Risk that this will result in further process delays and/or calls for a Panel Review. - Uncertainty re type and location of electrodes - Uncertainty re conduit or sub sea option for SOBI - Limited Aboriginal consultation - Challenge of Project Splitting - Additionally if federal funding support is obtained for any component of the Project, then it will trigger a comprehensive study at that point thereby risking schedule slippage.
Consequence / Impact	- Recycle part way through the EA process. - Schedule delay as a result of delay in EA Release - Potential court action re lack of consultation and Project Splitting - Slippage of first power date.
Early Warning Indicator of Risk Materialization	Timing of issue of EA Guidelines.

Risk Response

Management Strategy	Avoid risk by: - Making a strategic decision to go with a Comprehensive Review rather than a Screening Study to avoid recycle and schedule slippage. Mitigate overall exposure by: - Leveraging the 1980 EARP Panel Approval - Strategically manage the EA process leveraging lessons learned from Generation EA - Increasing stakeholder consultation activities

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Respond to CEAA's letter re GMNP. - Consider merit of rolling the Island Link in with the Generation Project EA process. - Increase consultation resources - Execute consultation agreements as req'd.
Risk Responsibilities (LACTI)	Gilbert Bennett - Accountable Paul Harrington - Responsible Steve Pellerin - Lead Steve Bonnell - Technical

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R32	Category	Environmental Assessment	Current Risk Rating	Low

Unmitigated Risk Rating Rationalization	An event having some financial impact due to schedule slippage. Likelihood is Unlikely given it would take substantial schedule slippage for impact to First Power.

Risk Trend and Status Update

RISK IS CONSIDERED TO HAVE LOW EXPOSURE

- EA Release expected by April 2013
- Need an Purpose has been addressed at Generation EA and PUB review, while public debate prior to DG3 should clear other issues.
- No JRP – removes interim decision
- Environmental effects are much less than for Generation

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Strategic Risk Frame

Revised	13-Jul-11

Risk #	R33	Category	Enterprise	Current Risk Rating	Low

Risk Details

Lead	**Gilbert Bennett**
Risk Title	Uncertainty on commercial structure for transmission
Risk Description	As a result of the uncertainty of the commercial construct for the Maritime Link, delay in the EA process, financial market sounding, and PPA negotiations may arise, leading to an overall project schedule slippage.
Specifics and Root Causes	- Ownership philosophy for the Maritime Link or Island Link not determined. Emera and NB Power are potential equity partners, while lobbying for the Government of Canada is on-going. - Uncertainty also exists as to whether this will be a merchant or regulated asset. - Finalization of this philosophy to allow for securing the necessary partners is considered to take considerable amounts of time. - JV partners must be locked down pre Financial Market Sounding planned for September 2011.
Consequence / Impact	- Schedule delay in PPA negotiations as a result of uncertainty of the commercial construct. - Schedule delay pre Market Sounding given the need to have all JV partners onboard prior to this occurring. - Delay in registration of the Maritime Link for EA and subsequent delay in EA release impacting Financial Close timelines.
Early Warning Indicator of Risk Materialization	Pulse of negotiations on Maritime Link.

Risk Response

Management Strategy	Avoid risk by: - Strategically identify and evaluate all plausible options and develop recommendation based on alignment with Nalcor's and the Province's strategic objectives. Seek early clarity and alignment on recommendation. Developing supporting strategy and execute. - Aggressive engage Emera and NB Power - Nalcor to champion link. Mitigate exposure risk by: - Evaluating options for Nalcor led EA for Maritime Link

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	- Verify preferred option with Steering Committee. - Develop a strategy to progress selected option. - Develop EA strategy for Maritime Link. - Develop Aboriginal consultation plan for Maritime Link.
Risk Responsibilities (LACTI)	Ed Martin - Accountable Gilbert Bennett - Lead Laurie Coady - Technical Rob Hull - Technical Steve Pellerin - Technical Derek Sturge - Consult
Unmitigated Risk Rating Rationalization	An event which would result in significant losses to Nalcor due to schedule slippage is considered a Moderate impact; the likelihood is rated at 5 (Almost Certain) given that this has been an prevalent issue to date within the management of the Project

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	13-Jul-11

Risk #	R33	Category	Enterprise	Current Risk Rating	Low

Risk Trend and Status Update

RISK IS CONSIDERED NO LONGER APPLICABLE, HENCE IS CLOSED.

HISTORICAL NOTES:
- Term Sheet for development of the Muskrat Falls, Labrador-Island Transmission Link signed with Emera on November 28, 2010. JOA currently under development / negotiation.
- Key uncertainty at present regarding the approach to be used for implementation of the Maritime Link (e.g. integrated Emera – Nalcor team).
- Emera will lead the EA process, however based upon current progress it is anticipated that it will be challenging to have the Maritime Link ready to accept Muskrat Falls power by May 2017.
- All commerical agreements required for development of Project have been identified and are being championed by a designated Senior Mgmt rep.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R34	Category	Financial	Current Risk Rating	Low

Risk Details

Lead	Jim Meaney
Risk Title	Required debt or equity capital not available due to loss of credit worthiness
Risk Description	As a result of a loss of credit worthiness, required debt or equity capital may not be available, leading to/resulting in the Project not proceeding to sanction.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	D/E ratio and Credit Rating.

Risk Response

Management Strategy	Mitigate this risk by taking steps to ensure a credit rating that is investment grade. This will engender confidence in investors including the Province (equity infusion/backstopping) and debtholders. It will also instil confidence in the Federal Govt. thereby supporting the federal loan guarantee decision. The accomplshment of this objective entails strategies that secure the ultimate cash flows of the project such as; effective project execution capability, cost and schedule certainty, contingent equity, regulatory certainty, recovery of and return on rate base, effective transmission capability and FERC compliance.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would cause the Project not to proceed to sanction is considered an extreme impact. Likelihood of this risk occuring is very low since the Federal governmeent is expected to guarantee project debt, coupled with contingent equity commitment

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R34	Category	Financial	Current Risk Rating	Low

RISK IS CONSIDERED TO HAVE LOW EXPOSURE DUE TO THE EXISTANCE OF A COMMITMENT OF A FEDERAL LOAN GUARANTEE.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R35	Category	Financial	Current Risk Rating	Medium

Risk Details

Lead	Jim Meaney
Risk Title	Required debt or equity capital not available due to the discontinuation of shareholder investment
Risk Description	As a result of the discontinuation of shareholder investment, required debt or equity capital may not be available, leading to/resulting in the Project not proceeding to sanction.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Willingness of the provincial government to make equity funding available.

Risk Response

Management Strategy	Mitigate this risk by ensuring the continuation of the Provincial Government Debt guarantee; and continue to pursue project investment based on the guarantee. A residual exposure will have to been accepted as a fact of doing business.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would cause the Project not to proceed to sanction is considered an extreme impact; the likelihood is rated at 1 (very low) due to the Shareholder's stated public commitment for the Project as well as the potential availability of alternate

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R35	Category	Financial	Current Risk Rating	Medium

RISK IS CONSIDERED CLOSED WITH THE EXISTANCE OF THE COMMITMENT LETTER FROM THE PROVINCE OF NL.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R36	Category	Power Sales	Current Risk Rating	Low

Risk Details

Lead	**Gilbert Benneft**
Risk Title	Default of a major customer on its commitments under PPA contract
Risk Description	As a result of default of a major customer on its commitments under PPA contract, the company is unable to fund its obligations.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Off takers financial strength and historical business dealings.

Risk Response

Management Strategy	Avoid risk by strategically aligning interest by negotiating commercial construct on the Maritime Link to monetize value of Muskrat Falls resources not required for the Island. Some acceptance of residual risk will be required.

Risk Strategy	☑ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would result in substantial financial losses and suspension of the construction program is considered a Major impact; the likelihood is rated at 1 (very low).

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R36	Category	Power Sales	Current Risk Rating	Low

RISK IS NOT APPLICABLE FOR LCP PHASE I

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R37	Category	Financial	Current Risk Rating	Medium

Risk Details

Lead	Jim Meaney
Risk Title	LCP unable to access required debt capital as a result of a lack of recovery/liquidity in capital markets
Risk Description	As a result of a lack of recovery/liquidity in capital markets, LCP may be unable to access required debt capital, leading to increased demand for equity and/or delay.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Market indices (S&P, TSX, DJIA, NASDAQ)

Risk Response

Management Strategy	Mitigate risk through close monitoring of market indices and progress on the environmental assessment; acquisition of power purchase agreements and debt capital upon finalization of the environmental assessment process. Also take steps to solidify comitments made by the Feds re the guarantee and those made in the Commitment Letter...legislative means preferred by financiers.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	Would not expect a delay of more than a year. In view of the promise of a Federal guarantee, the likelihood is rated at 2 (unlikely). A second consideration is province's commitment letter that provides assurances as to certainty around regulated returns.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R37	Category	Financial	Current Risk Rating	Medium

RISK IS CONSIDERED CLOSED GIVEN THE EXISTANCE OF THE FEDERAL LOAN GUARANTEE AND THE PROVINCE'S STRONG FINANCIAL POSITION.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R38	Category	Financial	Current Risk Rating	Low

Risk Details

Lead	Jim Meaney
Risk Title	Shareholder not able to contribute required equity capital as a result of low oil prices
Risk Description	As a result of low oil prices, the shareholder may not be able to contribute required equity capital, leading to/resulting in the Project not proceeding to sanction.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Reduced oil royalties could result in deficit provincial budgets; decrease in oil exploration

Risk Response

Management Strategy	The presence of the federal guarantee and the provincial commitments with resepct to cost recovery from ratepayers will allow for greater leverage and less reliance on equity.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would lead to a greater than 12 month delay is considered an extreme impact; the likelihood is rated as posible.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R38	Category	Financial	Current Risk Rating	Low

THIS RISK IS TO MONITORED. THE RATING COULD GO INCREASE IF THE PRICE OF OIL DROPS DRAMATICALLY.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R39	Category	Power Sales	Current Risk Rating	

Risk Details

Lead	LCP PS & MA Manager
Risk Title	Unablility to secure power purchase agreements
Risk Description	As a result of the inability to secure transmission access, the Project may be unable to secure power purchase agreements, leading to/resulting in the Project not proceeding to sanction.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Number of jurisdictions expressing an interest in the purchase of Lower Churchill Power.

Risk Response

Management Strategy	Application for transmission of larger blocks of power under Quebec OATT into Ontario & the US; continue to explore possible Labrador industrial loads

Risk Strategy	☐ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would cause the Project not to proceed to sanction is considered an extreme impact; the likelihood is rated at 3 (possible) due to the size of current existing transmission lines and the contemplation of the Maritime Transmission Route.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R39	Category	Power Sales	Current Risk Rating	

NOT APPLICABLE FOR LCP PHASE I SINCE THE CPW IS DONE ON THE BASIS OF SUPPLYING THE ISLAND ONLY AND THE REMAINDER IS CONSIDERED SPILL.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R40	Category	Power Sales	Current Risk Rating	Medium

Risk Details

Lead	LCP PS & MA Manager
Risk Title	Loss of hydro-electric price advantage as a result of and extended depression in oil prices
Risk Description	As a result of and extended depression in oil prices. a change in the long term outlook for oil prices might occur during construction which could point to a loss of hydro-electric price advantage and thus lead to challenges of the Government's commitments regarding cost recovery.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	- Oil and natural gas price forecast.- price of Carbon

Risk Response

Management Strategy	Mitigate this risk by moving forward with legislative changes that confirm cost recovery in accordance with the Provincial Commitment Letter providing still least cost and no rate shock.

Risk Strategy	✔ Avoid	✔ Mitigate	☐ Transfer	✔ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	If cost recovery is questioned, at worst the impact would be equivalent to the differential between the two alternatives which in present value terms, should be limited to something less than $100 m. The likelihood of this becoming an issue is considered

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R40	Category	Power Sales	Current Risk Rating	Medium

RISK IS CONSIDERED CLOSED. DG3 CPW MODELLING INDICATES A VERY POSITIVE CPW BENEFIT FOR LCP OVER THE ISOLATED ISLAND SCENARIO.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R41	Category	Financial	Current Risk Rating	

Risk Details

Lead	LCP PS & MA Manager
Risk Title	Project revenues may not be sufficient to support debt servicing and operating requirements
Risk Description	As a result of LCP not being able to wheel smaller quantities of power through Quebec (300-500 MW), project revenues may not be sufficient to support debt servicing and operating requirements, leading to/resulting in the Project not achieving the envisioned economic rent.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	- OATT Applications- Recall power sales

Risk Response

Management Strategy	Mitigate this risk by: - OATT applications and associated challenges to the Regie - Exploring the development of the Maritime Link at 1000MW capacity. Accept risk as work power sales strategy to mitigate it as best as possible.

Risk Strategy	☐ Avoid	☐ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would result in substantial losses to Nalcor due to loss opportunity is considered an Major impact; the likelihood is rated at 2 (Unlikely) given the small amount of energy, recent success with Recall and available capacity booking, as well

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R41	Category	Financial	Current Risk Rating	

Regie Hearing scheduled for January 2010 to hear Nalcor complaints. Recent success with application to push Recall power through PQ has resulted in firm booking that has available capacity for some Gull power.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R42	Category	Environmental Approval	Current Risk Rating	Medium

Risk Details

Lead	Stephen Pellerin
Risk Title	Delay in environmental assessment process
Risk Description	As a result of legislative changes, the environmental assessment process may be delayed by several years, leading to/resulting in the Project not proceeding to sanction.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Close monitoring of environmental legislative changes at both the Provincial and Federal levels; timely assessment of the impact of the changes on the Project.

Risk Response

Management Strategy	Mitigate impact of risk by: - Closely monitor any proposed and/or enacted legislative changes; quickly assess the impact these changes may have on the environmental assessment process, and affect any possible strategy changes. Residual risk will still require acceptance. Advent of FLG should reduce likelihood. - Embed Provincial commitment for pass thru of cost increases to rates in legislation provided still least cost and no rate shock. .

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	The impact is rated at 5 (extremer) as there could be an extended delay, but not permanent failure; the likelihood is rated at 2 (unlikely) due to the inability to predict government actions.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R42	Category	Environmental Approval	Current Risk Rating	Medium

THIS RISK IS CONSIDERED CLOSED SINCE GENERATION PROJECT HAS BEEN RELEASED FROM EA.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R43	Category		Current Risk Rating	Low

Risk Details

Lead	Paul Harrington
Risk Title	Challenges attracting and retaining quality required Owner's team resources as a result of competing local mega-projects
Risk Description	As a result of a number of competing mega-projects occuring locally, the Project has challenges attracting and retaining the quality of required Owner's team resources, resulting in the inability to adequately perform the Owner's oversight / management role.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	- Turnover among team - Market rates

Risk Response

Management Strategy	Avoid risk by: - Structuring an overall team effectiveness program that includes a retention scheme mechanism. - Make Nalcor LCP the Project of Choice - Recruit and develop younger talent. Mitigate risk by being very competitive in the market.

Risk Strategy	✔ Avoid	✔ Mitigate	☐ Transfer	☐ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	This event would result in a moderate financial impact due to a limited capital cost exposure. The likelihood is considered of be Likely given the small marketplace, plus anticipated demand for skilled individuals in NL over the coming months.

Risk Trend and Status Update

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R43	Category		Current Risk Rating	Low

- Risk is considered to have a low rating given that the team is largely mobilization and turnover has been minimal. Largest exposure relates to SLI`s ability to attract CM resources. Mitigation efforts to include Completion Bonus.
- Deliotte engaged to implement Team Functionality work-plan.

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Strategic Risk Frame

Revised	

Risk #	R44	Category		Current Risk Rating	High

Risk Details

Lead	Gerry Brennan (Emera)
Risk Title	Estimate uncertainty as a result of limited engineering and design definition for the current 320kV Maritime Link
Risk Description	As a result of limited engineering and design definition for the current 320kV Maritime Link and the high-level cost estimate available, there is a significant amount of estimate uncertainty (tactical risk), results in added cost and schedule slippage.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	- Cost growth against target- Number of design changes / deviations from Gate 2 Basis of Estimate

Risk Response

Management Strategy	- Mitigate the risk by completing a bottom-up review of the cost estimate for the overhead transmission - Completion of third party benchmarking - Some amount of uncertainty will remain which will have to be accepted.

Risk Strategy	☐ Avoid	☑ Mitigate	☐ Transfer	☑ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event having significant financial exposure and construction schedule delays classified as a Extreme event; while it might occur thus is rated as Possible.

Risk Trend and Status Update

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	

Risk #	R44	Category		Current Risk Rating	High

Recent market intelligence has confirmed the significant risk of cost growth for overhead transmission lines.

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Strategic Risk Frame

Revised	15-Sep-12

Risk #	R45	Category		Current Risk Rating	Low

Risk Details

Lead	LCP PS & MA Manager
Risk Title	Low water inflows to reservoirs leading to hydroelectric facilities unable to produce sufficient revenue
Risk Description	As a result of climate change driven drought, low water inflows to reservoirs may occur, which could lead to the hydroelectric facilities being unable to produce sufficient revenue.
Specifics and Root Causes	
Consequence / Impact	
Early Warning Indicator of Risk Materialization	Reservoir levels at Churchill Falls.

Risk Response

Management Strategy	Understand hydrology and evaluate economics using a Stress Test with water spillage or low water levels. Base firm power sales on conservative water inflows. Accept risk.

Risk Strategy	☐ Avoid	☐ Mitigate	☐ Transfer	☑ Accept

Action Plan	
Risk Responsibilities (LACTI)	
Unmitigated Risk Rating Rationalization	An event which would result in substantial financial losses and operation interruptions is considered a Major impact; the likelihood is rated at 1 (rare or improbable) given our 40 + year knowledge of the Churchill river hydrology.

Risk Trend and Status Update

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R45	Category		Current Risk Rating	Low

Reservoir levels has remained consistent with historical trends. Not considered a capital risk.

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LOWER CHURCHILL PROJECT

Strategic Risk Frame

Revised	15-Sep-12

Risk #	R45	Category		Current Risk Rating	Low

Attachment 2 – Nalcor Presentation to Rating Agencies

Lower Churchill Phase I: Indicative Rating Presentation

November, 2011

Boundless Energy

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Confidential and Commercially Sensitive

Nalcor Team

- Derrick Sturge – VP, Finance & CFO
- Paul Harrington – Project Director, LCP
- Lance Clarke – Business Services Manager, LCP
- Jim Meaney – Corporate Treasurer & Chief Risk Officer
- Auburn Warren – Manager, Investment Evaluation
- Terry Paddon – Deputy Minister (NL Finance)
- Charles Bown – Associate Deputy Minister (NL Natural Resources)
- Rob Hull – General Manager, Commercial & Financing
- Rob Henderson – Manager, System Operations and Customer Service
- Tom Garner – Financial Advisor (PwC)

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Presentation Outline

1. Safety Moment
2. Purpose of Presentation
3. Introduction & Background
4. Investment Grade Rating Highlights
5. Project Execution
6. Project Structure & Key Agreements
7. Financing Strategy
8. Financial Metrics & Debt Service
9. Summary and Next Steps

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Safety Moment

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Purpose of Presentation

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Purpose of Presentation

- Launch the indicative credit rating process, excluding a federal loan guarantee ("FLG"), for the proposed $4.0 billion project debt financings for Phase I of the Lower Churchill Projects ("LCP"):
  1. Muskrat Falls ("MF") and Labrador Transmission Assets ("LTA")
  2. Labrador Island Link ("LIL"), assuming 100% Nalcor ownership
- Nalcor is undertaking this credit rating assessment now for two reasons:
  - to gain valuable financial market information as we prepare for a Project Sanction decision in 2012; and
  - to facilitate our ongoing discussions with the Government of Canada on the FLG by establishing a non-guaranteed credit rating
- Financing of the Maritime Link ("ML") to be undertaken by Emera Inc. – outside the scope of this credit rating request

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Investment Grade Rating Highlights

- ✓ Robust business case
- ✓ Attractive project attributes
- ✓ High quality regulated revenues
- ✓ Assembled experienced team with mega-project expertise
- ✓ Proven operating experience
- ✓ Robust financial profile
- ✓ Access to export markets via two transmission routes
- ✓ Strong support from Shareholder – Government of NL
- ✓ Projects supported by Innu – ratified Innu Benefits Agreement ("IBA")
- ✓ Projects supported and endorsed by Government of Canada

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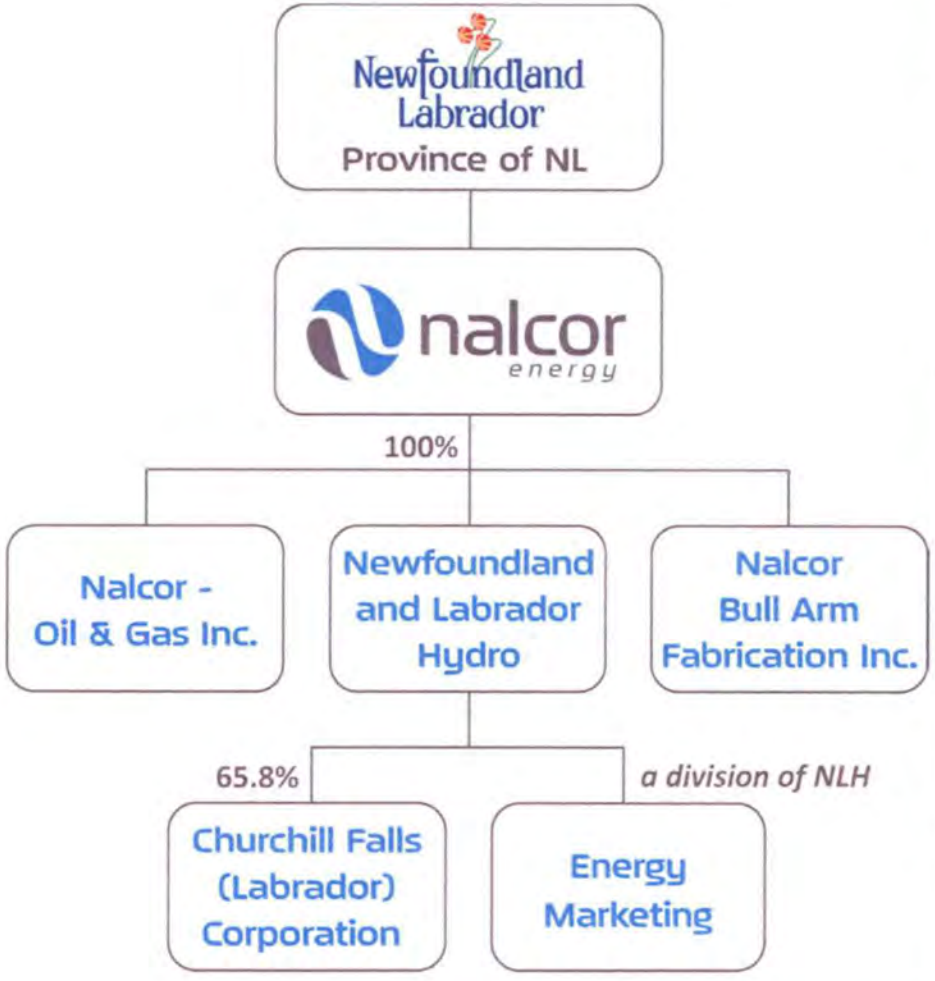
Introduction & Background

Nalcor Energy – Corporate Profile



Who is Nalcor?

- Diversified growth focused energy company
- World class energy assets
- Partner with other leading energy companies
- Demonstrated history of building and operating hydro-electric and transmission assets
- Key player in executing NL Energy Plan

Key Assets/Operational Statistics

Hydro-electric generation (MW)	6,386
Other Generation (MW)	698
Transmission Lines (km)	4,820
Labrador-NY Transmission (MW)	265
Oil Reserves (Mbbls)	22.7
Oil Production (000 bbls per year)	840
Domestic Electricity Sales (TWh)	8.4
Export Sales- HQ (TWh)	29.0
Export Sales – NY/NB (TWh)	1.5

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Nalcor Energy - Financial Profile

($ millions, except ratio)	2005	2006	2007	2008	2009	2010	2011 (F)
Revenue	527	542	568	563	562	589	698
Net Income	72	70	82	82	60	78	128
Cash from Operations	124	122	134	141	116	146	217
Debt	1,462	1,362	1,252	1,184	1,000	937	944
Equity	507	574	678	935	1,142	1,265	1,401
Debt:Equity Ratio	74:26	70:30	65:35	56:44	47:53	43:57	40:60
Capital Expenditures	48	61	87	206	178	196	305
Dividends	56	3	---	---	---	---	---
Total Assets	2,204	2,216	2,286	2,480	2,631	2,805	2,756

- Significant improvement in capital structure since 2005
- No dividend payments since 2006 – all cash reinvested
- Significant equity contributions made by Shareholder
- Debt levels reduced by $500+ million
- Investments in Lower Churchill and Oil & Gas all financed by equity (in excess of $500 million)
- New investment starting to produce significant cash flow in 2011
- Newfoundland Labrador Hydro ("NLH") regulated ROE to be same as Newfoundland Power starting in 2012

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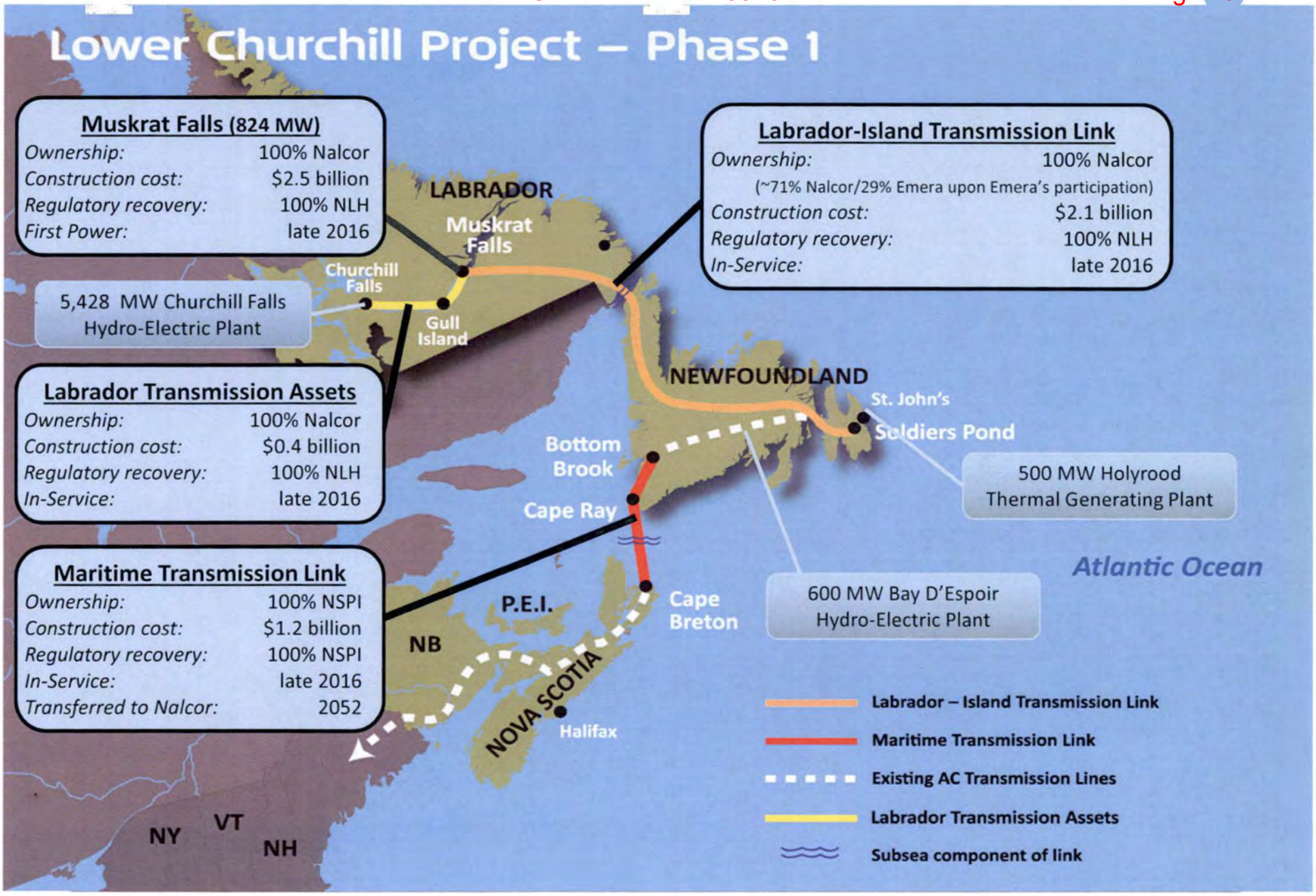

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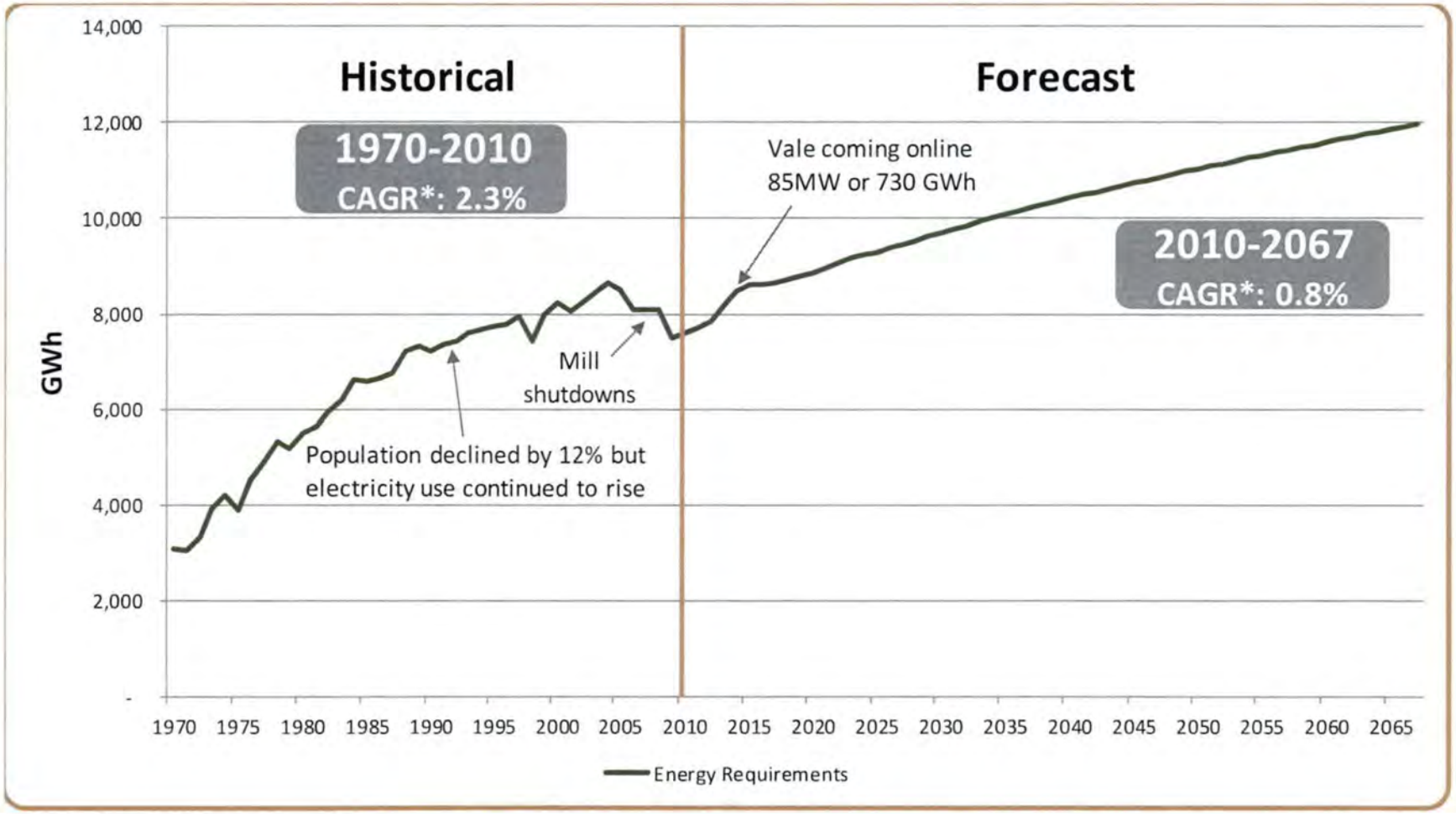
Island Electricity Needs



***CAGR** - Compound Annual Growth Rate

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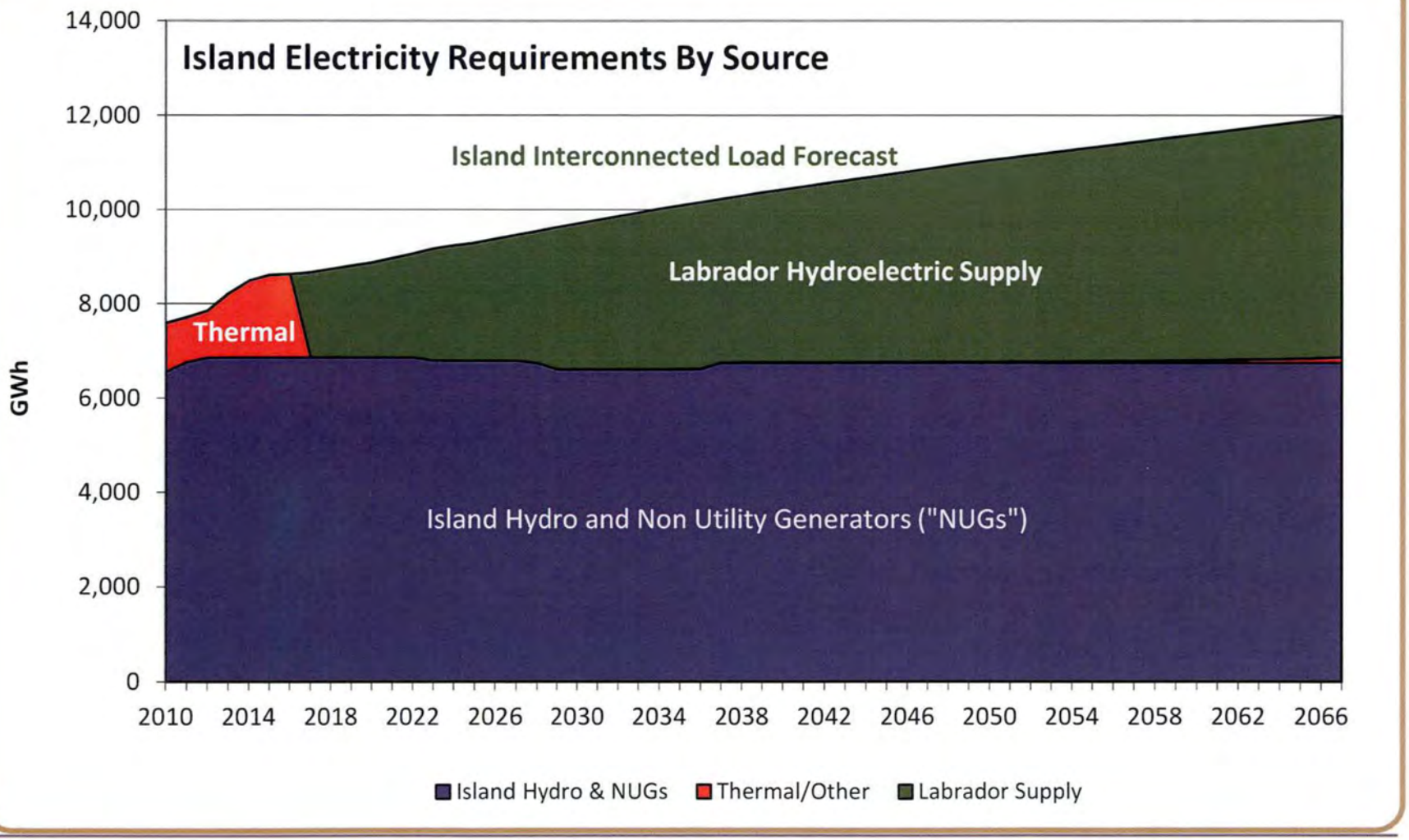
Island Supply Projections (2010 – 2067)



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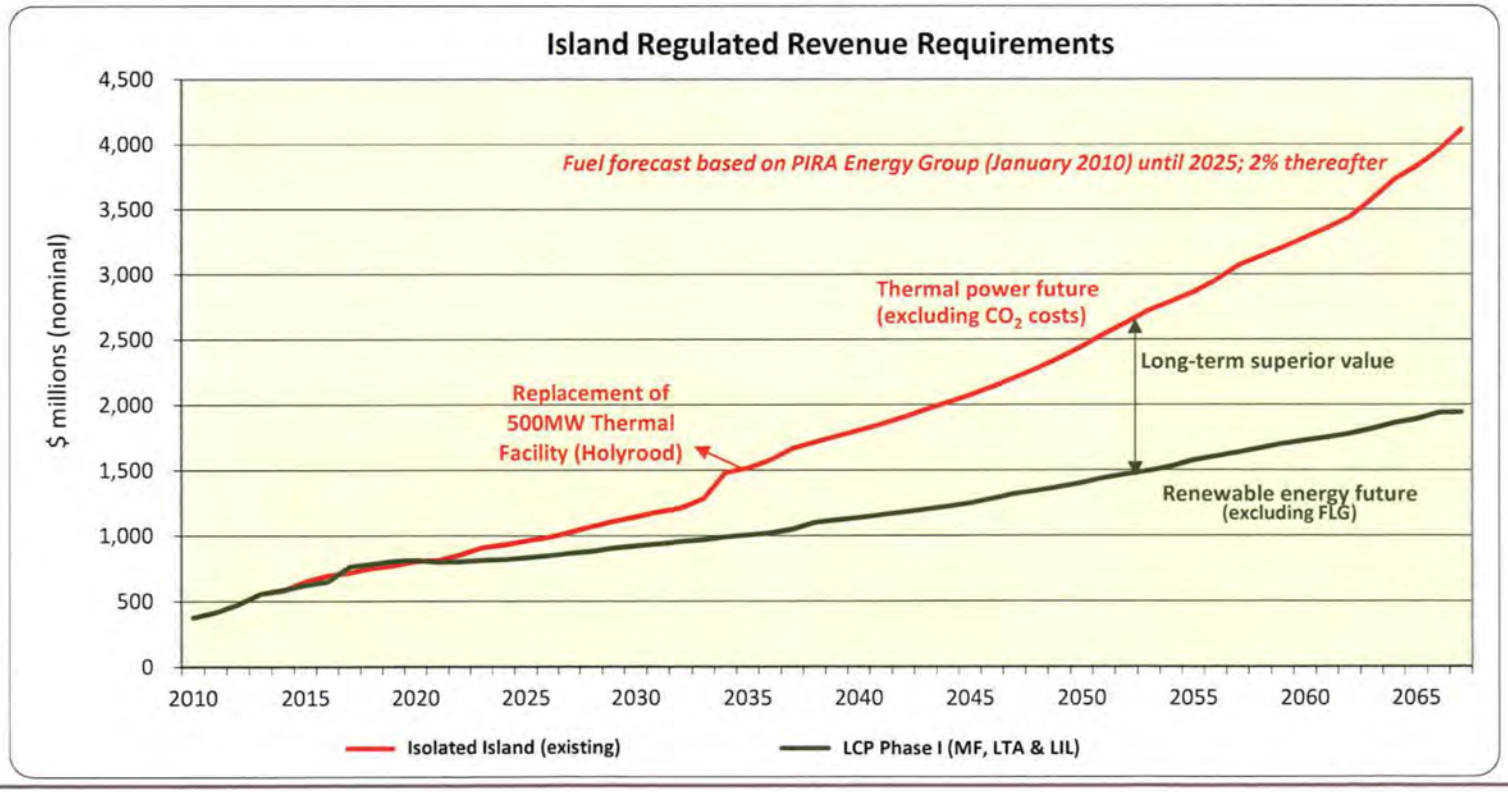
Island Supply Costs

- MF provides the least-cost alternative to meet NLH customer demand for power
- $40+ billion in nominal savings over the life of the asset (PV of $2.2+ billion savings)
- Long-term rate stability – removes reliance on thermal generation and global fuel prices
- Muskrat Falls provides a reduction in "real" rates to customers



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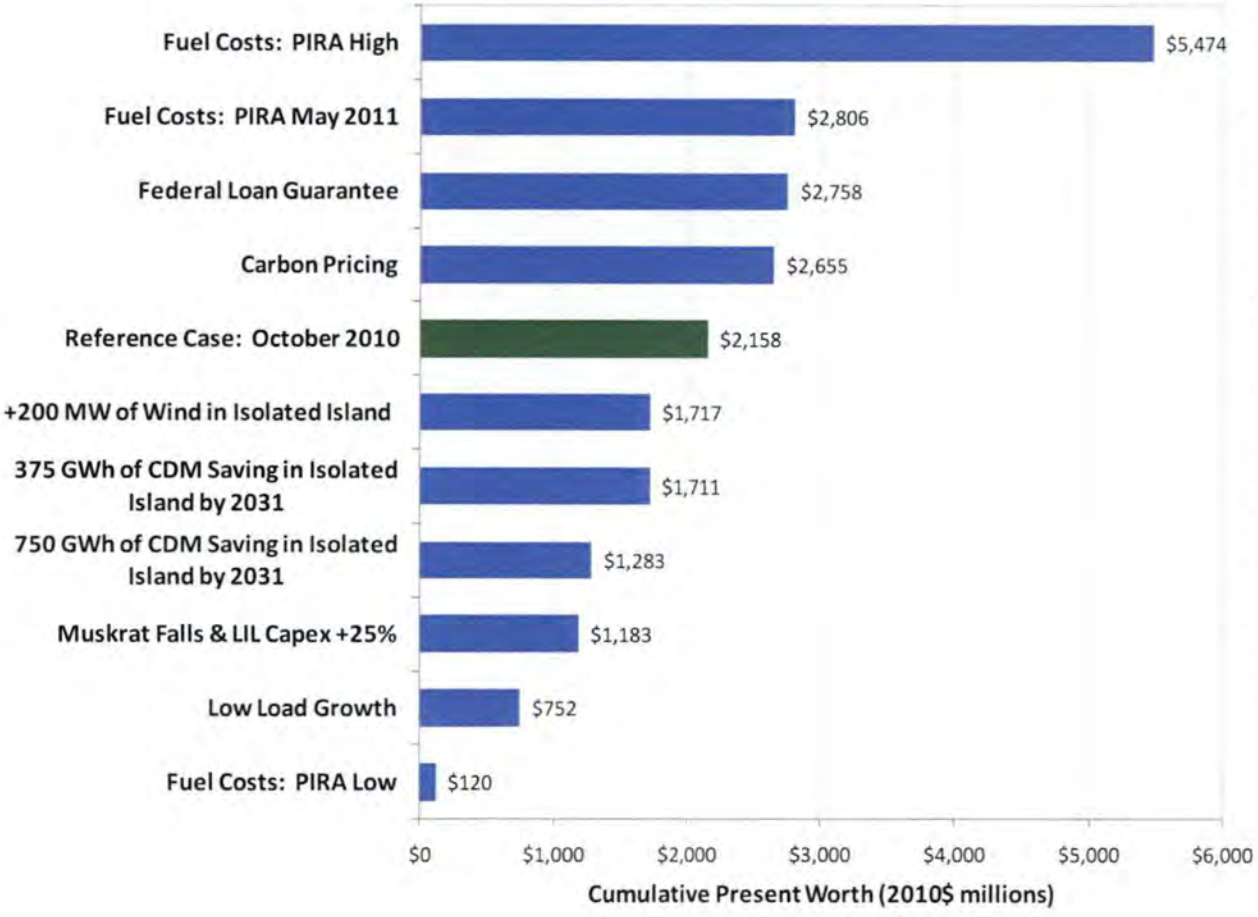
Robustness of Island Supply Decision



All of the sensitivity cases run by Nalcor and Navigant resulted in a Cumulative Present Worth preference for the Interconnected Island alternative clearly indicating the robustness of the DG2 decision given the underlying risk and uncertainty in key assumptions.

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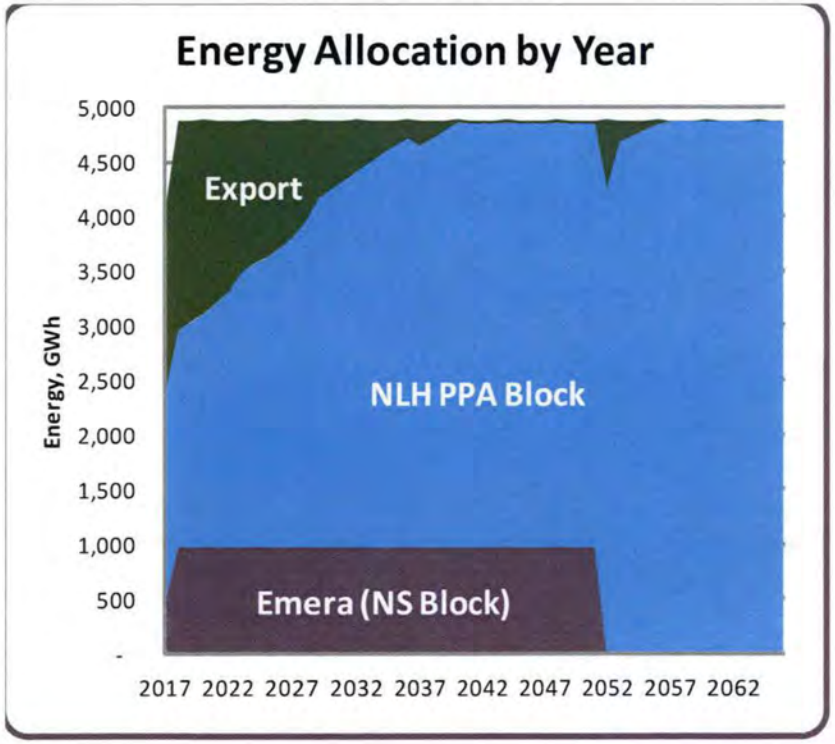
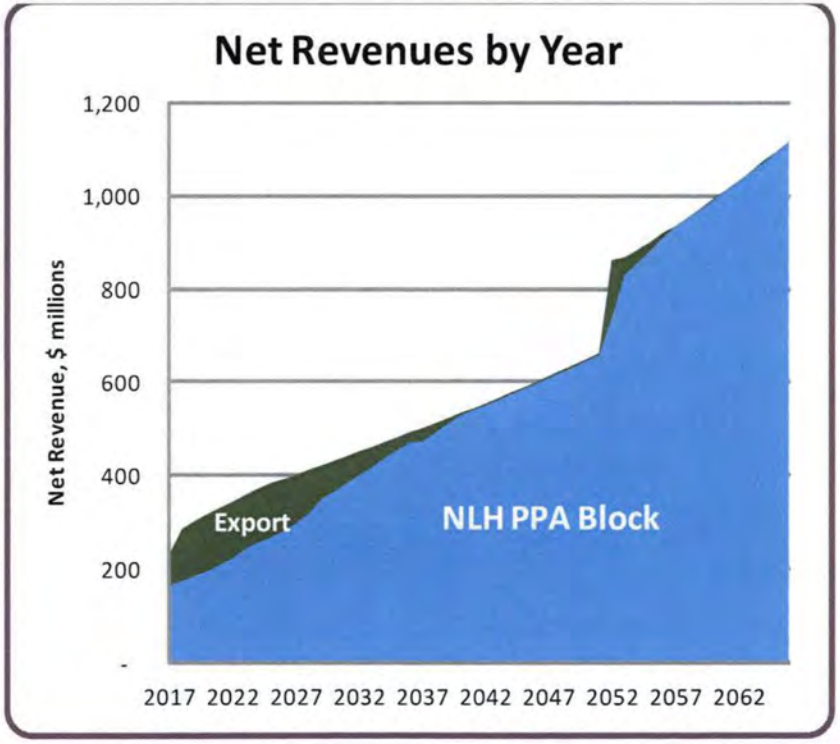
Annual Revenue and Energy Supply

MF energy and revenue are supported by a long-term Power Purchase Agreement ("PPA") with NLH to meet Island demand





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Where we are...

Project Execution

- Passed through Decision Gate 2 ("DG2") Q4-2010; moving towards Decision Gate 3 ("DG3") Sanction Q2-2012
- SNC Lavalin ("SNC") engaged as EPCM Consultant
- Environmental processes under way
- Innu Nation IBA and land claims ratified
- RFP's for LIL subsea cable and MF turbine and generator contracts issued
- DG2 independent reviews on project execution readiness and business case completed
- Independent Engineer RFP process underway and to be engaged by Q1-2012

Commercial & Financing

- NL Government Commitment Letter – equity commitment and cost recovery framework to be enacted by Q2-2012
- NL Memorandum of Principles – agreed to principles for power supply and transmission arrangements with NLH; agreements to be finalized Q1-2012
- Emera Term Sheet – agreements to be finalized Q4-2011
- Financing strategy well developed
- FLG Memorandum of Agreement with Canada; term sheet to be finalized Q1-2012
- Water Agreements executed

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Financing Strategy & Capital Structure

- Debt Structure
  - Traditional project financing – construction period loan with long-term takeout
  - 3 project entities participating in 2 financings (MF/LTA borrow jointly)
  - Sizing based on available debt service coverage from NLH revenues
  - Total debt of $4.0 billion
- Prudent capital structure, debt-to-equity ratios as follows:
  - MF 60:40; LTA 42:58 (Combined 58:42)
  - LIL 75:25
- Equity to be provided by Nalcor via NL equity commitment
  - Base equity level
  - Contingent equity level – to ensure in-service achieved
- Debt Service
  - All debt service is supported without export sales
  - Debt Service Reserves and Liquidity Reserve account

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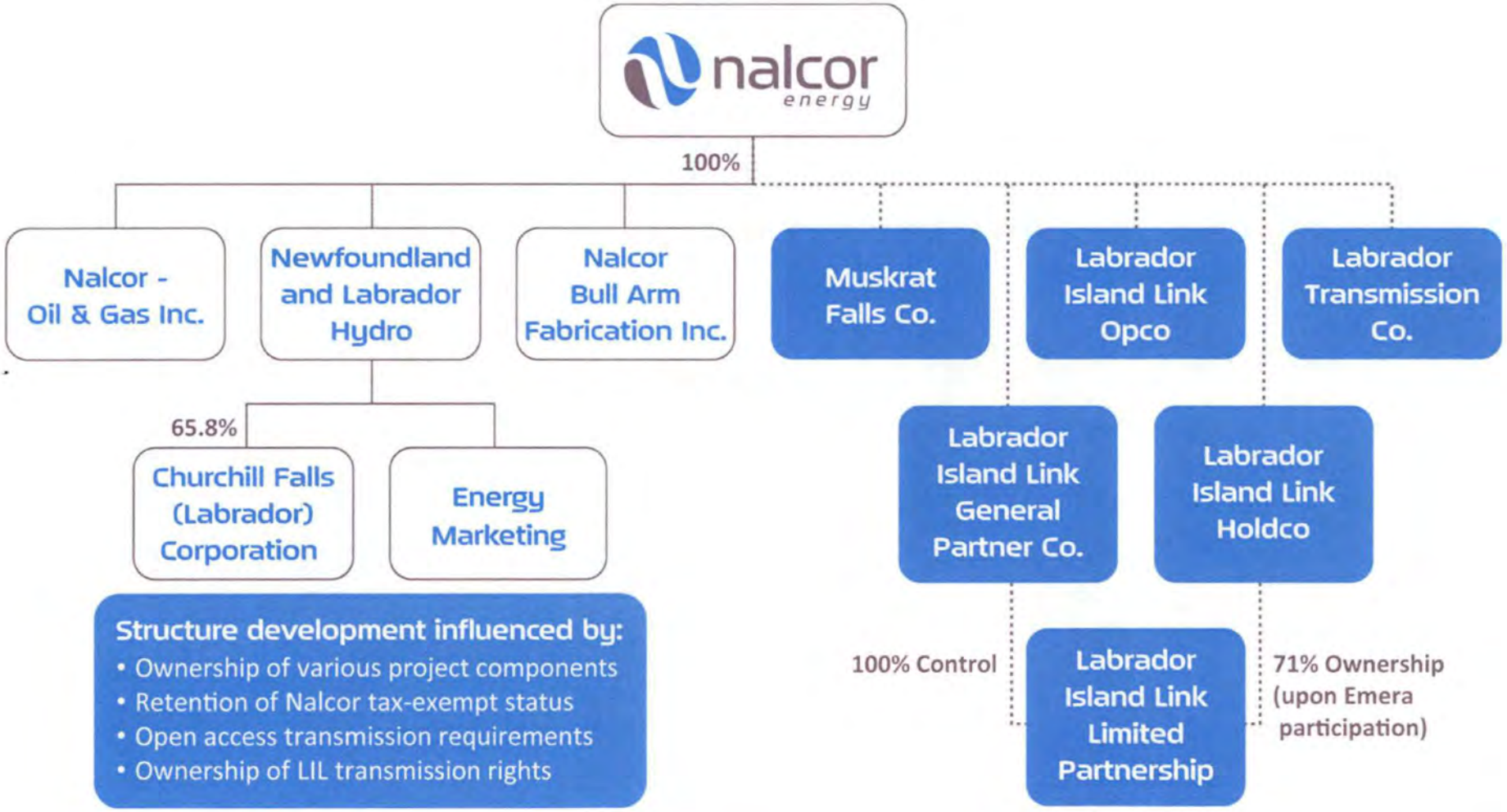
Nalcor's Future Corporate Structure



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Investment Grade Rating Highlights

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Investment Grade Rating Highlights

✓ Robust business case

- Least cost source of new generation
- $40+ billion nominal ($2.2+ billion PV) preference over Isolated Island scenario
- Eliminates rate volatility and provides improved reliability
- Hydro-electric generation provides the ability to store electricity, ease of dispatch, and facilitates development of other renewable energy
- Decline in electricity prices in real terms
- Business case confirmed by Navigant independent review report

✓ Attractive project attributes

- MF hydrology and site conditions make it one of the two lowest cost undeveloped hydro-electric projects (as per 1992 National Energy Board Report)
- The MF project attributes favorably impact MF costs compared to other hydro projects
- Proven hydro-electric and transmission technology

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Investment Grade Rating Highlights (continued)

✓ High quality regulated revenues

- Government commitment to ensure cost recovery from NLH regulated customers
- Export sales are not required for debt servicing
- 50-year power supply and transmission contracts with NLH

✓ Assembled experienced team with mega-project expertise

- Team has extensive hydro-electric and transmission experience
- World-class tier 1 suppliers and contractors
- Disciplined project execution and risk management approach
- Assembled world-class project management experience including building and operating energy assets in Labrador
- Understanding and managing interdependencies is a key focus for the project team

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Investment Grade Rating Highlights (continued)

✓ Proven operating experience

- Operating over 6,000 MW of hydro-electric projects for over 40 years
- Built and operated over 4,800 km of transmission lines
- Experience in trading electricity in North American electricity markets

✓ Robust financial profile

- Debt fully amortized within life of contracts
- Delivering strong forecast debt service coverage ratios in base and stress cases
- Lenders protected from variations in hydrology

✓ Access to export markets via two transmission routes

- Partnership with Emera provides transmission routes into NS, NB and New England
- Supplemented by existing 265 MW firm HQTE transmission rights to New York

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Investment Grade Rating Highlights (continued)

✓ **Strong support from Shareholder – Government of NL**

- Lower Churchill fundamental to Energy Plan
- Shareholder commitment for sufficient equity to achieve project in-service
- Framework to ensure recovery of costs from NLH regulated customers (the "Government Assurance")

✓ **Projects supported by Innu – ratified IBA**

✓ **Projects supported and endorsed by Government of Canada**

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Project Execution

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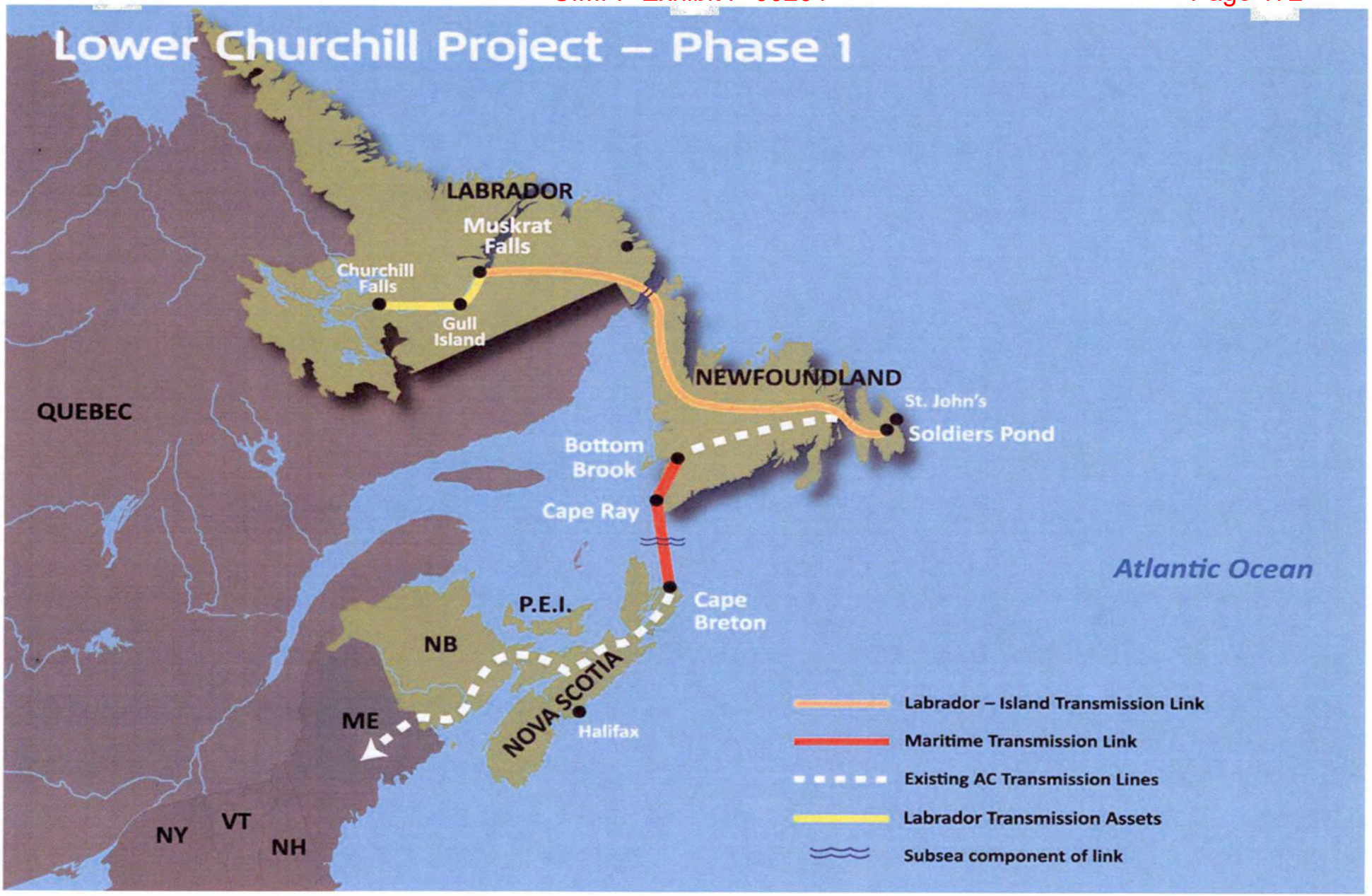

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Key Messages

1. World class project team in place
2. Applying project management best practices and front end loading
3. Schedule – clear line of sight through milestones to first power
4. Capital cost estimate – based on comprehensive process
5. Organization – equipped and structured to deliver
6. Contracting approach – appropriate risk allocations

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Mega-Project Success Factors

- ✓ Clear scope definition
- ✓ Solid project plan
- ✓ Realistic basis for cost estimates
- ✓ Optimal delivery/contracting strategy including early de-risking and risk allocation
- ✓ Application of proven technology
- ✓ Strong, owner team that includes functional expertise and offers continuity over the Projects
- ✓ Strong and effective project control during execution

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A Project Development Perspective

- MF
  - A large civil project but not overly complex to design and build
  - Uses tried and tested, proven equipment and technology supplied by world class suppliers such as Voith and ABB
  - Expected to attract world class contractors such as Skanska, PCL and PKS
  - Built at a single site with a dam ~760 m wide and ~35 m high on bedrock
  - ~35 km from a major town with all facilities and services, airport and port
- LTA
  - This transmission line follows existing right of way close to the Trans-Labrador Highway
  - Consistent with voltage class that NLH has used for many years
- LIL
  - This is a large, long, linear but not overly complex HVdc transmission project
  - Uses HVdc "classic/traditional" technology in use for over 40 years in Canada
  - Designed and supplied by world class suppliers such as ABB and Siemens
  - Strait of Belle Isle ("SOBI") crossing uses tried and tested installation methods
  - Subsea cables designed, manufactured and installed by companies with world class experience such as ABB, Nexans and Prysmian

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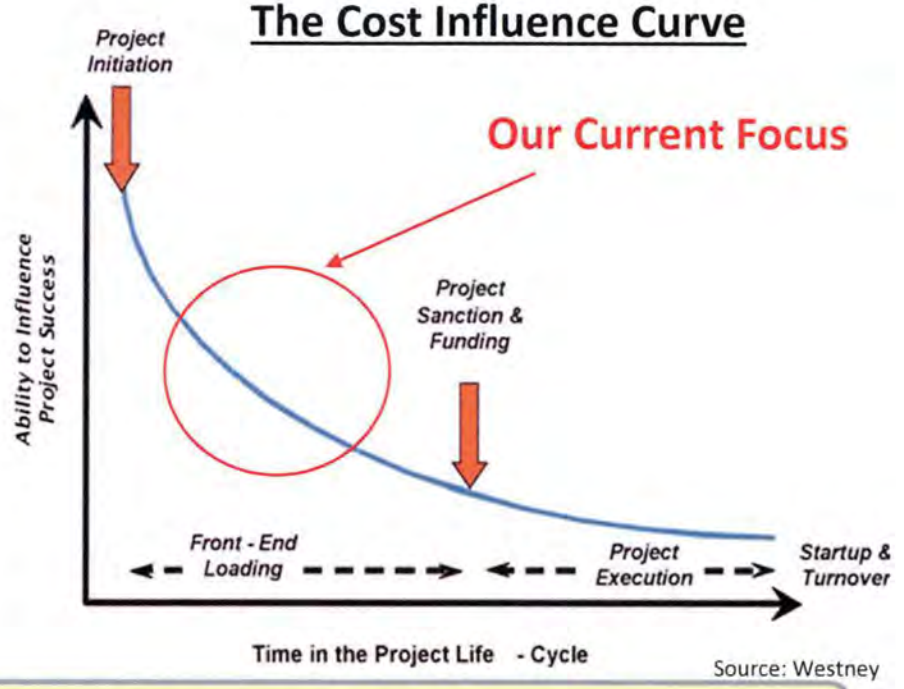
Front-End Loading - Influence on Project Outcome

- Front-end loading project definition and execution planning
- Early and continued focus on de-risking the projects
- Robust and disciplined project management with strong owner project controls
- Contracting strategies that minimize and optimally allocate risk
  - Nalcor is the Integrator
  - Engaged a world-class EPCM consultant (SNC)



Source: Westney

"Project is better prepared than a typical megaproject at end of Front-End Loading (FEL) 2," and the "Project has clear objectives and a well-developed project team that has closed the project scope and achieved optimal project definition."

- Independent Project Analysts, August 2010

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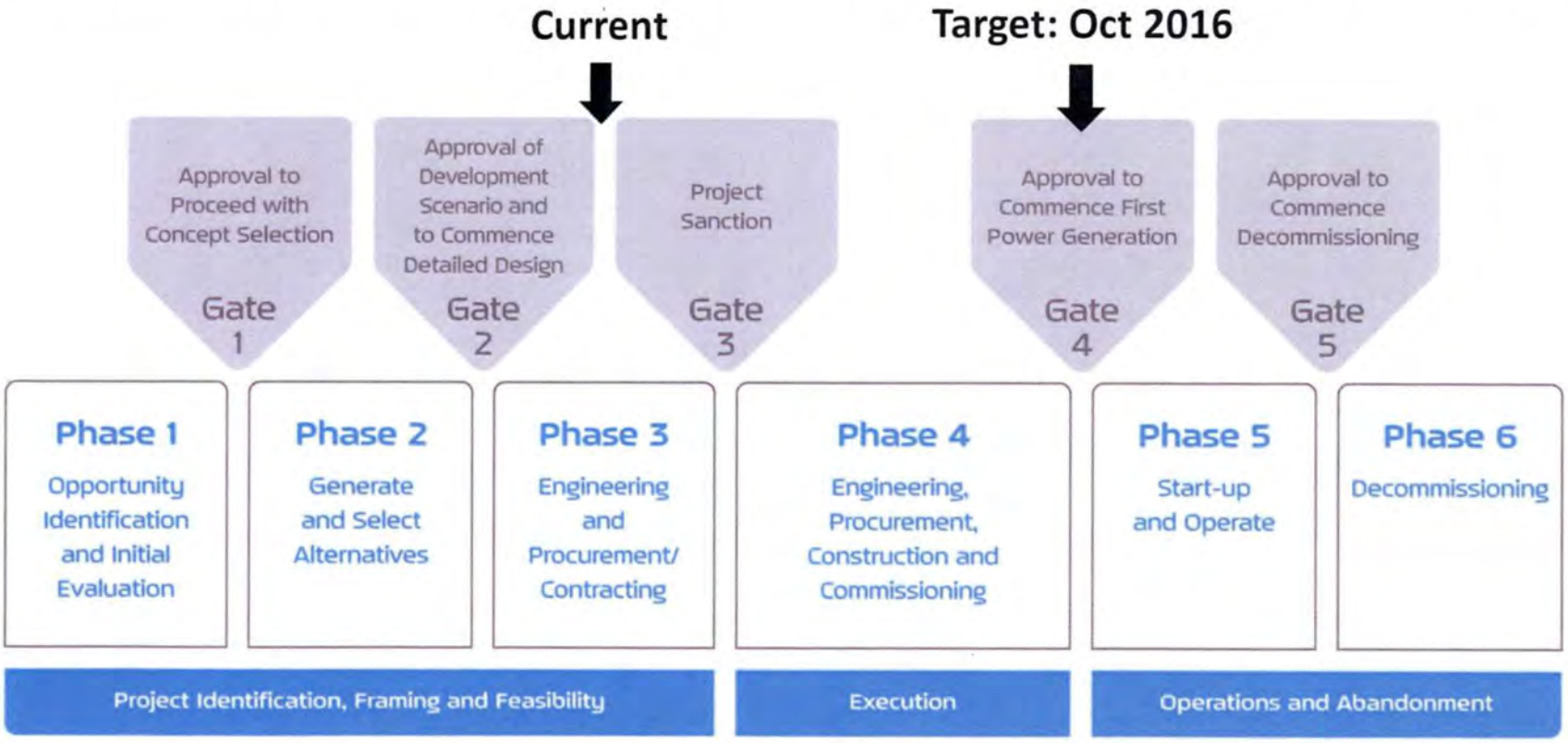
Stage-Gate Process

- Nalcor is implementing the Projects using a disciplined Stage-Gate Process
- DG2 was achieved in late 2010 and work toward DG3 is currently under way and is projected for completion Q2-2012
- Gatekeeper is Nalcor CEO in consultation with Nalcor Board of Directors and agreement with Shareholder



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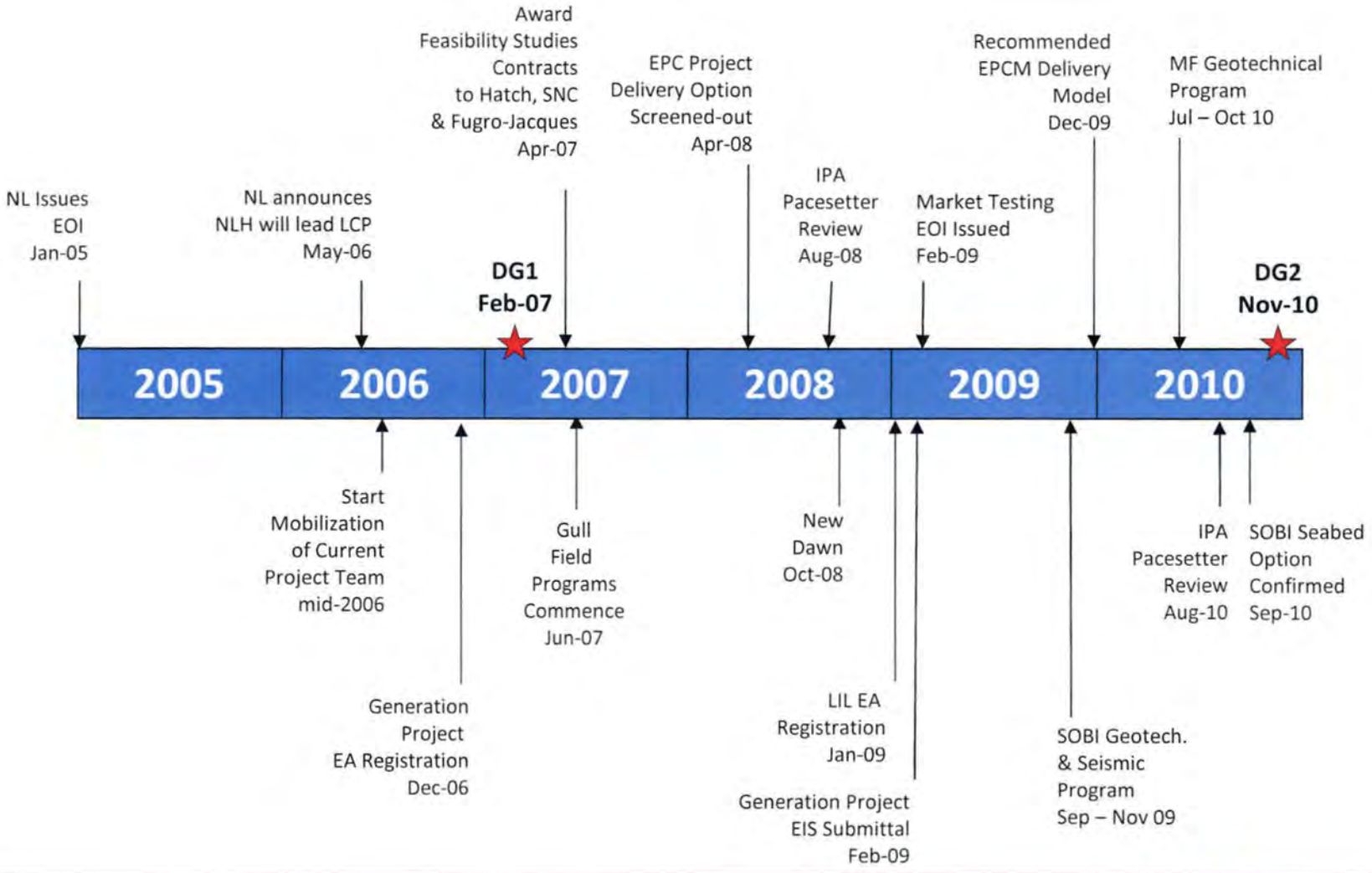
Key Project Achievements



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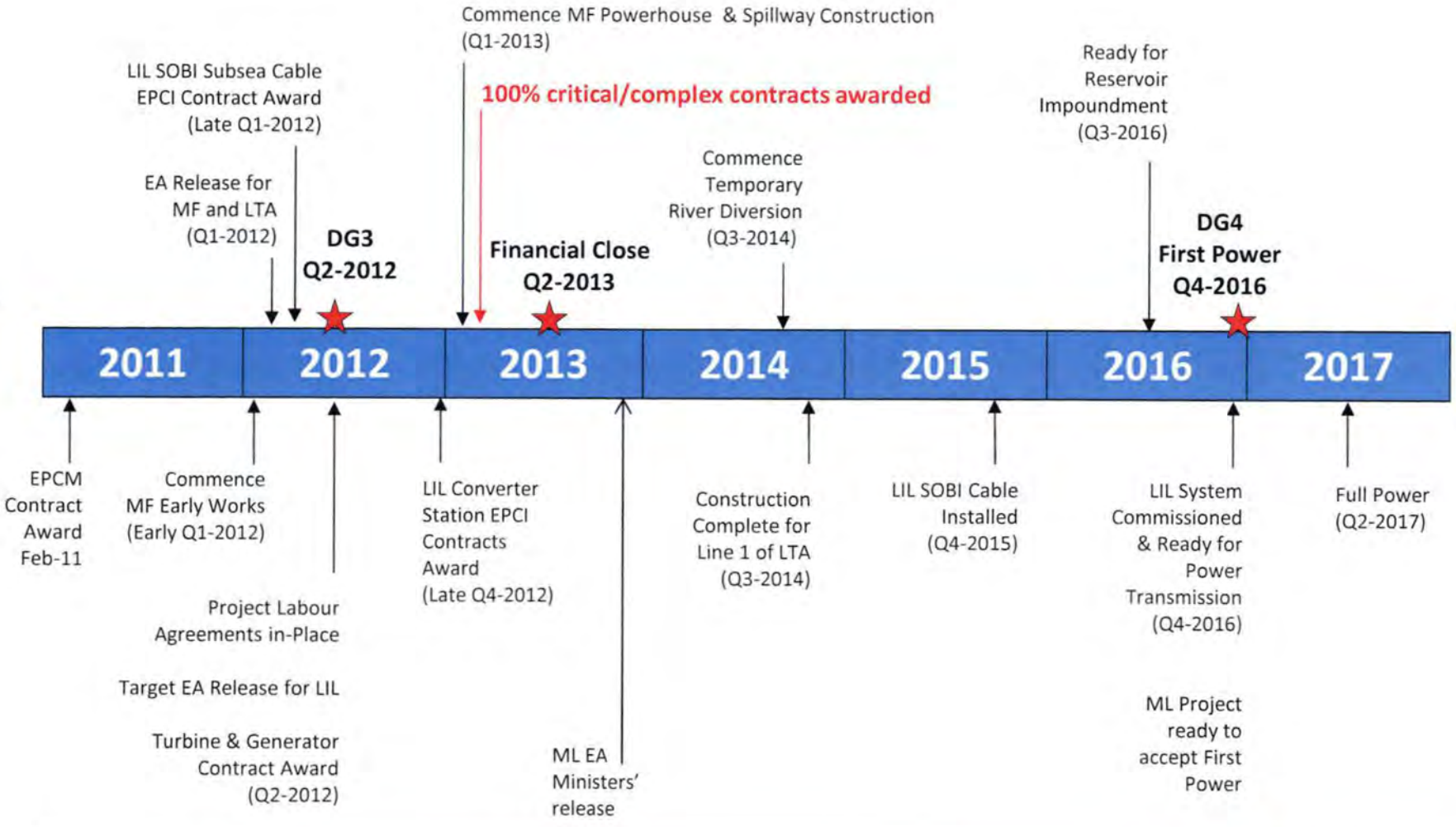
Project Milestones



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Establishing the Cost Estimate

The accuracy of the cost estimate is a function of the engineering, procurement and contracting carried out as shown below

- AACEI* Class 4 Estimate
- Some site investigation work
- Concept selected and feasibility work complete
- Project scope defined
- Quantities estimated based on previous studies
- Estimate based on earlier feasibility studies escalated and updated with latest data
- The estimate reflects the Basis of Design approved at DG2

- AACEI* Class 3 Estimate
- Includes latest geotechnical analysis
- Quantities based on 3D model and detailed engineering work
- Includes actual bid costs for SOBI cable contract, T&G sets and LTA plus updated market intelligence and quotes
- Labour rates will be updated based on Labour Agreement
- The estimate reflects the Basis of Design at DG3

- AACEI* Class 2 Estimate
- Includes 100% of all critical/complex PO's and contracts which amount to 80% of all contracts
- Firm quantities with EPC, lump sum and fixed unit price contracts as appropriate
- The estimate reflects the DG3 Basis of Design plus any approved project changes as per Management of Change process

* **AACEI** - Association for the Advancement of Cost Engineering International

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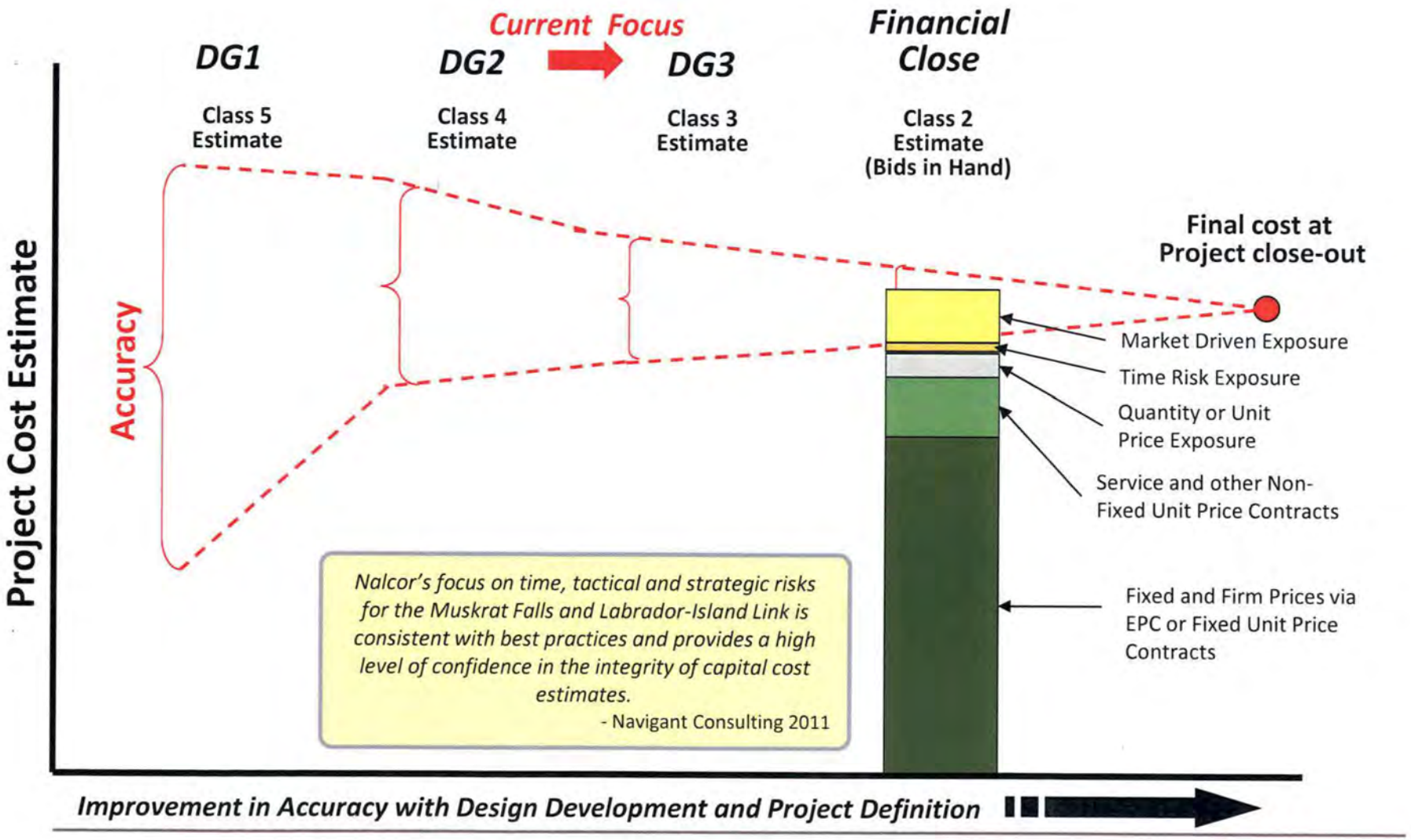
Establishing a Sound Cost Basis



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MF Capital Cost is Driven by Favourable Construction Characteristics

Key Element	Muskrat Falls Site Characteristics
Geotechnical and Hydrology Conditions	• Competent bedrock (Canadian Shield) exposed/near surface • Minimal overburden to remove and dispose of • Conditions validated by comprehensive site investigations • Large Churchill Falls reservoir to call upon, to enable operational flexibility
Physical Layout	• No additional structures (ie. dykes) required to create the Reservoir– basically "filling up the river valley", leveraging Churchill Falls reservoir – no land purchase issues • Reliable and predictable flows leading to smaller variations in operating water levels • All power structures located at one main site • Simple/robust/conventional designs for major permanent structures • Conventional or roller-compacted concrete founded on bedrock • Generally low-profile dam structures (30 to 40 m high) • No underground works (MF has surface powerhouse) • No temporary spillway facilities to be constructed • Diversion uses existing topography and permanent structures (ie. spillway) rather than expensive temporary structures (eg. diversion tunnels) • Conventional tried and tested equipment • Access by road from Trans-Labrador Highway and close to Goose Bay

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MF Capital Cost is Driven by Favourable Construction Characteristics

Key Element	Muskrat Falls Site Characteristics
Constructability	• All construction materials primarily sourced from site excavations • Very good material balance leading to minimal excess material/spoils • Mostly conventional concreting methods and equipment, in dry conditions

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LCP Phase I Estimate – Key Points

- Detailed bottom-up estimate carried out
- Capital Cost Estimate Report issued at DG2 which fully documents the assumptions, pricing, risks and contingency which support the capital cost estimate
- Estimate validated by independent, expert, external consultants
- Estimate included quotes from suppliers and equipment manufacturers
- Escalation factors validated by external consultants
- Detailed engineering work is underway and the base estimate, escalation and contingency for MF, LTA and LIL will be updated to reflect the expenditures since DG2

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LCP Phase I Estimate - MF

- A detailed bottom-up estimate approach at DG2 was used
- The DG2 estimate is based on engineering reports using calculated quantities, unit costs, wage rates, construction consumable costs, construction fleet costs, major permanent equipment quotes and historical production rates
- In addition for some areas such as the balance of plant and spillway gates, third party benchmarks from constructed plants combined with current unit costs have formed the basis of the estimates
- The quantities of bulk excavation, fill and concrete estimates come from a combination of sources, interpretation of the site layouts by experienced consultants and experts
- Currently engineering work continues and a 3D CAD model of MF is being built, a physical model of the facilities is being constructed and hydraulic flow modeling and optimization of the structures is underway
- The detailed engineering work underway by SNC will result in greater accuracy in the quantities of overburden removal, rock excavation, concrete and fills required to arrive at a Class 3 estimate

LCP Phase I Estimate - LIL and LTA

- The overland transmission estimate has its foundation in the studies carried out between 2007 and 2010 which included site investigations and desk top studies
- Nalcor's transmission estimating norms were combined with productivity norms from RSW Inc. (now Aecom) based on their Northern Quebec experiences including logistics, construction methods and constraints
- Vendor quotations have been obtained for major hardware including overhead conductors, insulators, converter stations and subsea cables and have been incorporated in the estimate
- The detailed engineering work underway by SNC will result in greater accuracy in the overall material quantities required, number and type of towers, final distances, foundation design and access roads to arrive at a Class 3 estimate

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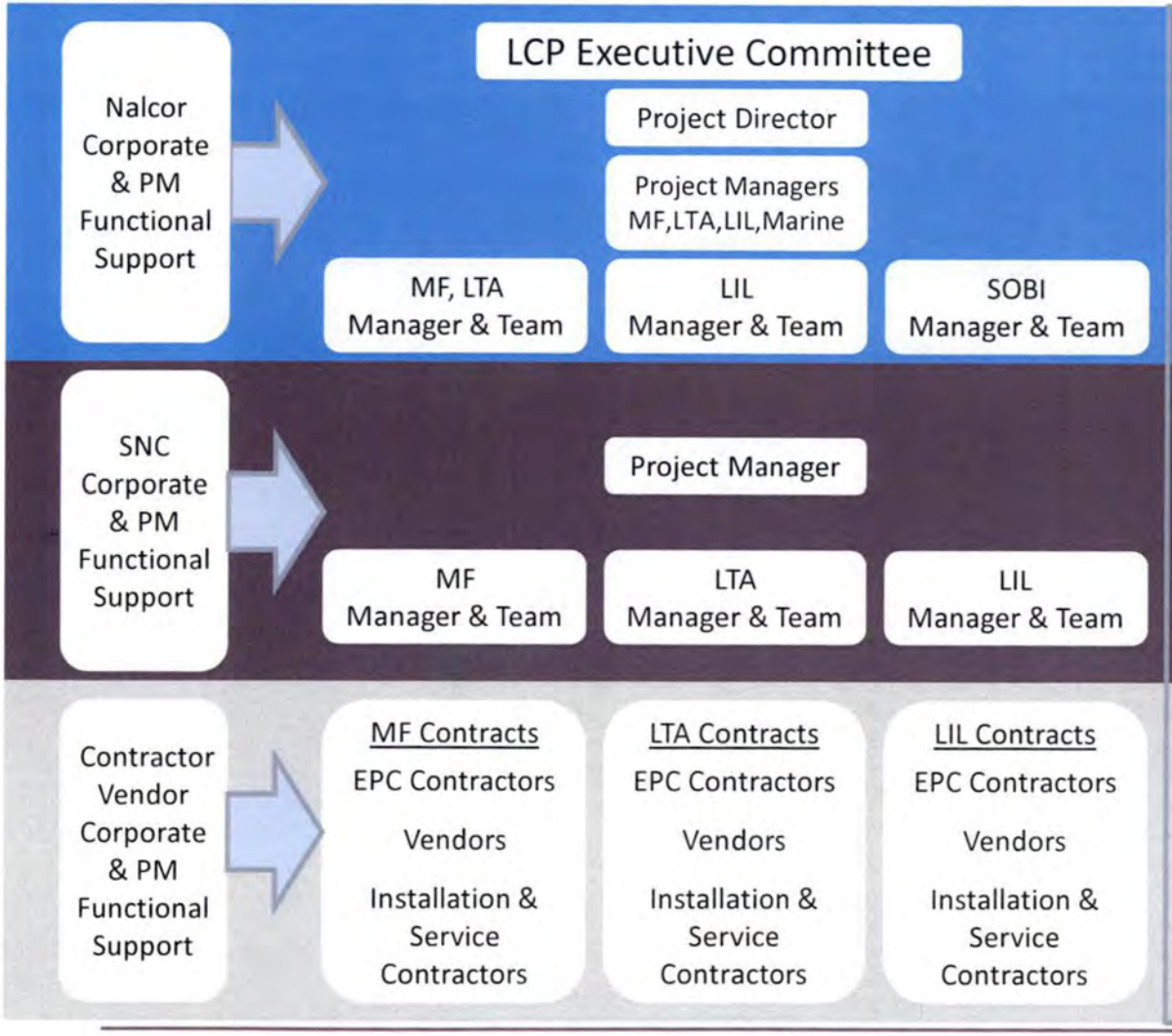
Organizational Structure



Nalcor provides:

+ Strong Owner direction, guidance & leadership
+ Overall integration
+ 35 years operational experience
+ 30 years front end loading, PM best practices
+ Responsibility for finance, aboriginal, regulatory, insurance, environmental approvals, Shareholder, marine works, governance and decision making

SNC provides:

+ World class track record of hydro-electric and transmission project execution
+ Extensive corporate resources to call on
+ Strong corporate support for Projects
+ Commitment to Project Excellence

Contractors & Vendors provide:

+ Only top quality, reputable Tier 1's will be selected to bid
+ Only those with sound financial basis will be chosen
+ Compliance with contract format, terms and conditions

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Optimizing Project Delivery

Strategic Objectives

Balancing absolute cost against cost certainty, while…

- Achieving the required project quality
- Optimizing the project schedule
- Minimizing overall cost and schedule risk
- Achieving optimum and appropriate risk allocation
- Meeting benefits and First Nations obligations

Decision 1: Delivery Model = EPCM

- Market not amenable to single EPC, but to smaller EPC
- Skillsets required vary across the 3 SPVs
- Significant schedule and cost advantage (~8 months, 25% - 30% premium)
- Offers enhanced Design Integrity & Performance
- 3 separate SPV's need individual, distinct delivery representation,
- Overarching system design and management needed across the SPV's to ensure total system delivery

Decision 2: Packaging Strategy

- Each SPV requires varied skill sets – need to align to bidder resources and capacities
- Market desires are clear for most major packages
- Optimize risk allocation
- Maximizes market competition
- Heavily focusing on EPC, lump sums, and fixed unit price
- Reflect IBA Obligations

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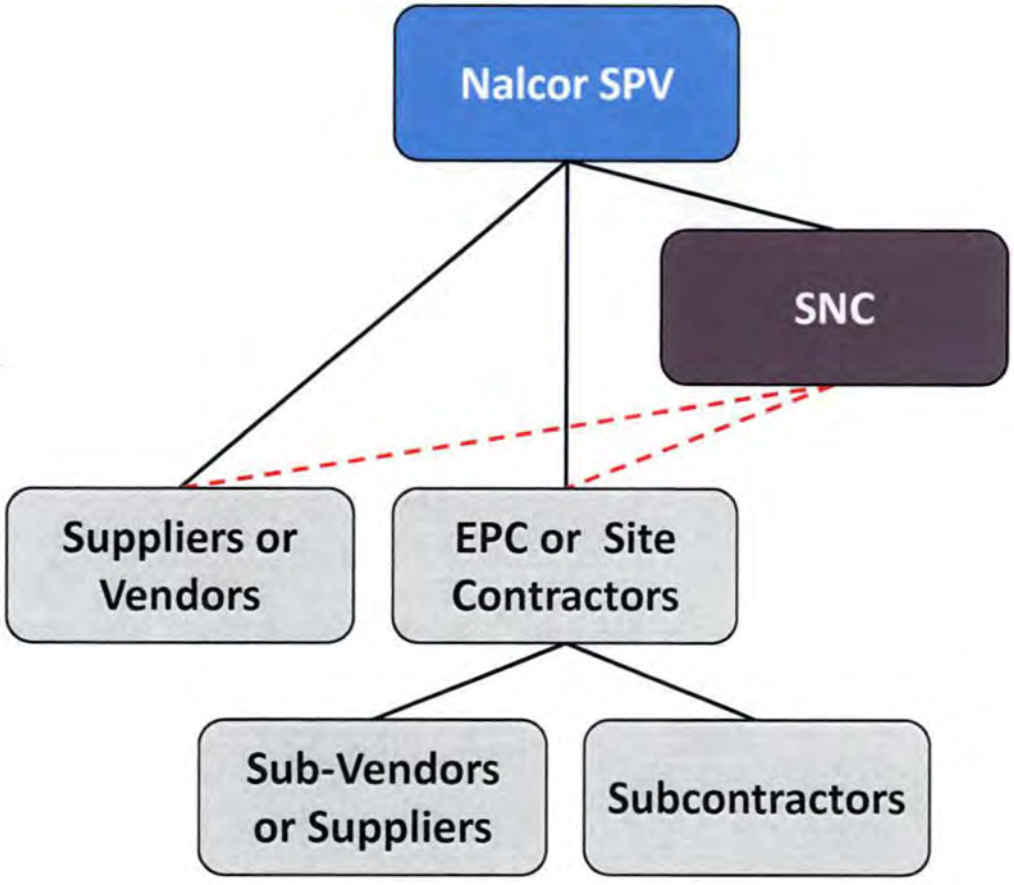
Typical SPV Delivery Structure



SNC performs detailed engineering, procurement and construction management services

Agreements are between Nalcor SPV and Contractors

The EPCM Consultant acts as representative for the Nalcor SPV in both procurement and construction management activities

Note: The above is not applicable for SOBI Crossing, where Nalcor provides all procurement and construction management for this specialized scope.

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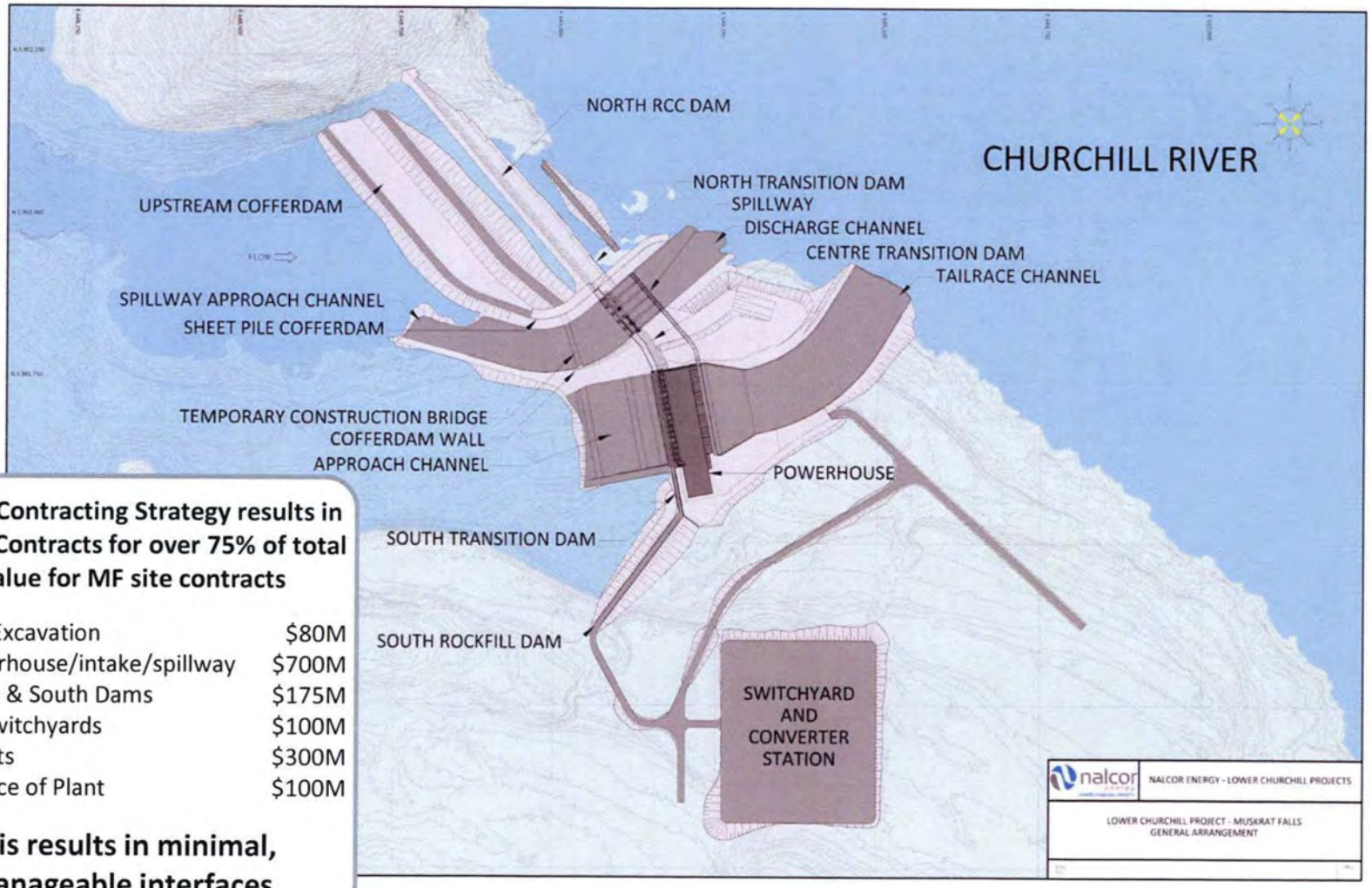
MF Plant Layout



The MF Contracting Strategy results in 6 major Contracts for over 75% of total $ value for MF site contracts

1.	Bulk Excavation	$80M
2.	Powerhouse/intake/spillway	$700M
3.	North & South Dams	$175M
4.	MF Switchyards	$100M
5.	TG sets	$300M
6.	Balance of Plant	$100M

This results in minimal, manageable interfaces

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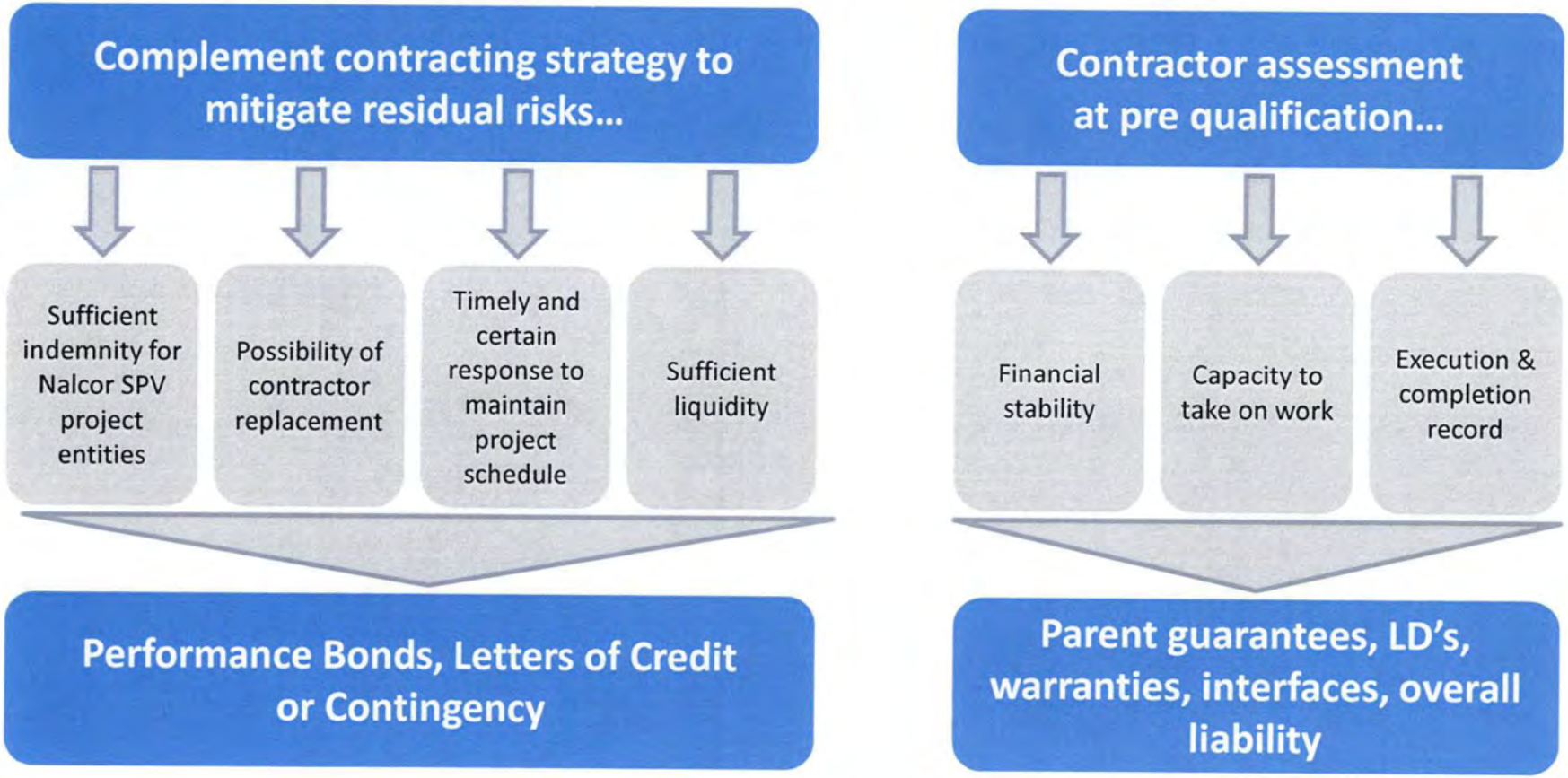
Performance Security Strategy



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Insurance Strategy

Insurance Strategy Highlights

- Owner Insurance Program
- One program serving three Nalcor project components
  - Cost and administrative efficiency
  - Each project entity full named insured under the policy
- Phased coverage as projects progress, starting in 2012

Phase I - Early Works Placement (2012-2013)

- Builders Risk
- Base Wrap-Up Liability
- Base Pollution Liability

Phase II - Full Policy Placement (2013-2017)

- Builders Risk
- Delayed Start-Up ("DSU") (optional LIL/LTA)
- Additional Wrap-Up Liability
- Additional Pollution Liability
- Marine Builders Risk (SOBI)
- Marine DSU (optional SOBI)

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Insurance Approach

The insurance strategy for the Projects will be implemented in co-operation with Nalcor's insurance advisor, AON, as outlined below:

Placement Phase	Policy Type	MF	LTA	LIL
Early Works	Builders Risk	Yes	As required	As required (HDD only)
	Base Wrap-Up Liability	Early works only	Base Limits 2012-17	Base Limits 2012-17
	Base Pollution Liability	Early works only	Base Limits 2012-17	Base Limits 2012-17
Full Policy	Full Builders Risk	Yes - All	Yes - with sublimit on towers/lines	Yes - with sublimit on towers/lines (excludes SOBI marine)
	Additional Wrap-Up Liability	Yes - All	Yes	Yes
	Additional Pollution Liability	Yes - All	Yes	Yes
	Marine Builders Risk	N/A	N/A	SOBI only
	Delayed Start-Up	To be determined based on cost	Optional	Optional
	Marine Delayed Start-Up	N/A	N/A	Optional

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Ensuring Resource Availability

Strategic Objectives	Key Enablers	Specific Tactics
Predictable labour costs **Avoid Labour Disruptions** **Acquire Skilled Labour** **Enhance Labour Productivity**	**Project Labour Agreement** **Special Project Order** **Labour Acquisition Plan**	**Productivity** • Productivity Action Plan established • Best in class labour agreement language • Right union for right job • Ensuring large contractor pool and supervision • No strike, no lock out **Acquisition Plan** • Labour requirements & constraints understood • Multiple unions with name hire provisions • Key skilled training ongoing • Atlantic Canada focused • Leverage large hydro trade in Quebec • Attractive rates, camp, turn around, etc. • Temporary foreign workers option **Cost** • Estimates based upon current NL mega-projects labour agreements plus escalation • Labour cost variables benchmarked • Costs fixed for the duration

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Proven Technology

Proven technology, no serial #1's and no scale-ups ensure operational integrity

MF	LTA	LIL
• Low-head, no penstocks concrete powerhouse founded on Canadian Shield • Proven, model tested Kaplan turbines well within flow and head range • Design philosophies based on over 40 years of hydro-electric and transmission engineering, construction and operations • Conservative efficiency targets supported by equipment redundancy • Core Nalcor technology	• Conventional AC technology • Extension of existing Labrador transmission system • Core Nalcor capability – existing lines up to 735 kv	• LCC HVDC technology used in Canada for 40+ years • Mass impregnated submarine cables • SOBI cable protection methods proven offshore east coast • Typical HVdc overland transmission • Standard HDD technology well with the boundary of design for size and distance

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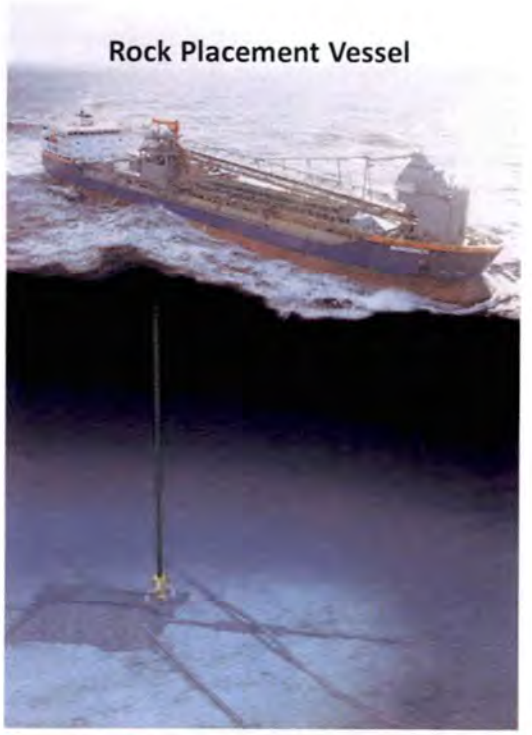
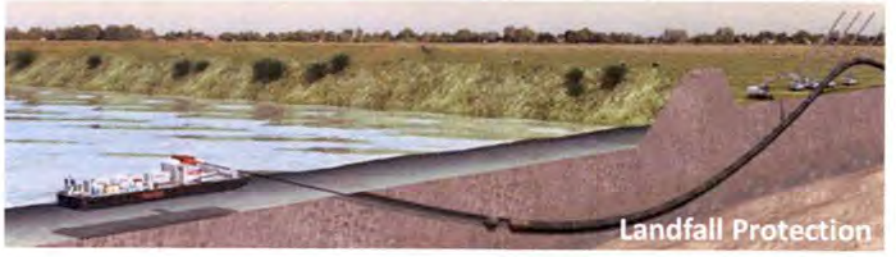
SOBI Crossing - A "Deeper" Look

Selected solution for the SOBI cable crossing builds upon team's extensive experience in the design and installation of subsea infrastructure in harsh environments combined with learnings from global cable projects.

- Each of the 3 submarine cables will have a dedicated HDD conduit to protect the cable from shore and pack ice at the landfall points
- The conduits will take each cable to a water depth of between 60 m to 80 m, thus avoiding iceberg scour
- The cables will then be laid on the seabed and each protected with a separate rock berm which will protect against fishing gear and dropped objects





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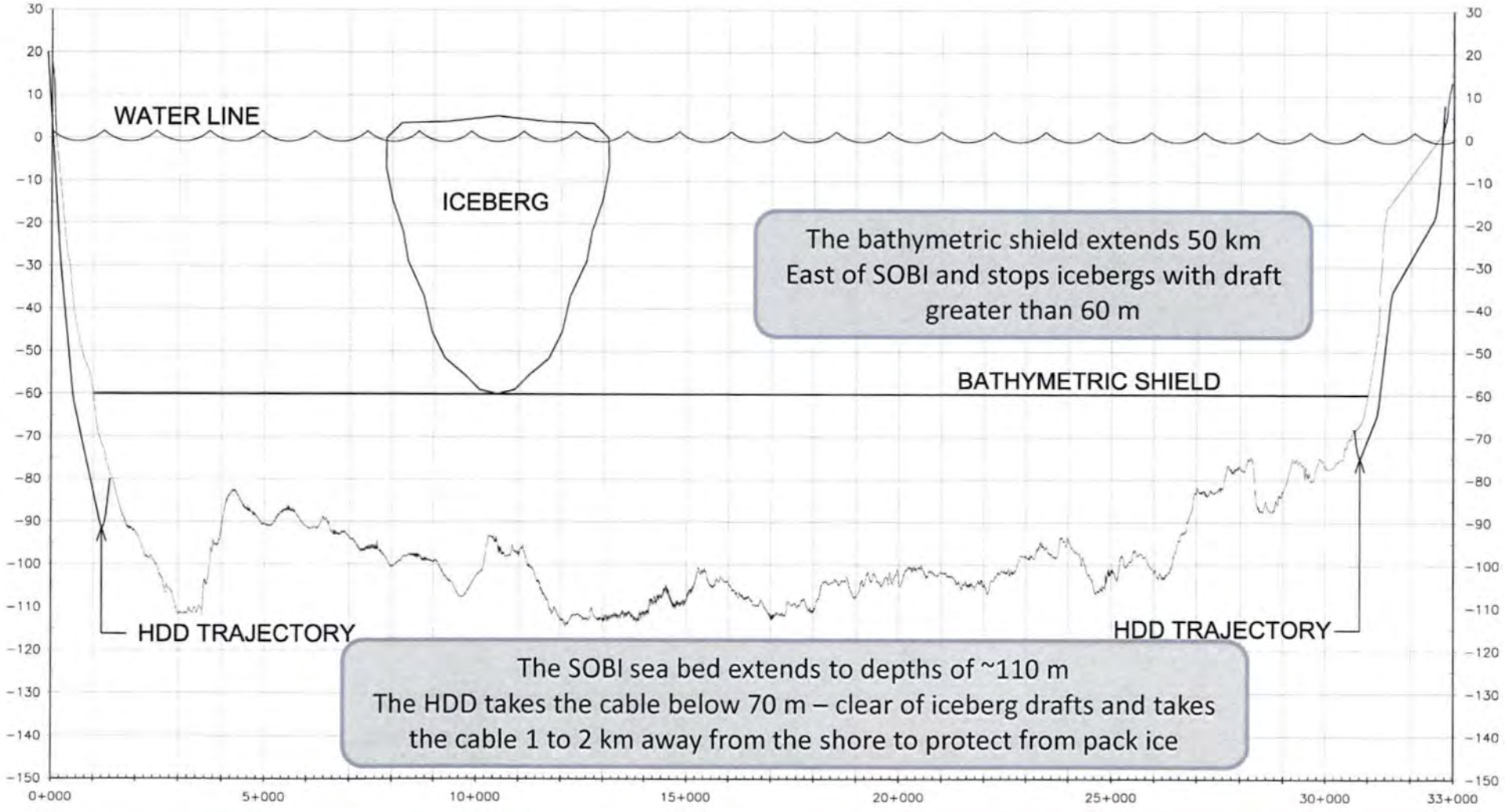
SOBI - Iceberg and Pack Ice Protection



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Strategic De-risking

Risk management is achieved via disciplined management process

Achieved

- Selection of robust LCC HVdc technology with overload capacity
- SOBI consists of 3 cables including a redundant or spare cable each in separate seabed routes
- Secured SNC, a world class EPCM contractor
- Extensive geotechnical baseline
- IBA and land claims with Innu Nation
- Pilot program for Horizontal Directional Drilling ("HDD") to confirm production rates prior to bid
- Turbine model efficiency testing program in order to guarantee turbine efficiency and power output

Going Forward

- Using geotechnical results from bulk excavation to achieve firmer prices on powerhouse contract
- Physical model testing to confirm MF plant layout and hydraulics
- Contracting that optimizes competition and synergies
- Early award of bulk excavation contract to protect schedule
- Confirming long-lead deliveries and prices
- Cost certainty through EPC/EPCI and fixed unit price contracts
- Project labour agreements
- System engineering/integration focus

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Maintaining Control During Execution

- We have explained how we have established our performance baseline (cost; schedule; de-risking)
- We have also explained how our organization is structured to follow through with the project management best practices, cost, schedule, risk and management of change
- During project execution, we will be exercising control by analysis of cost and schedule trends, progress reports and taking corrective actions as required to keep us on track

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Project Structure & Key Agreements

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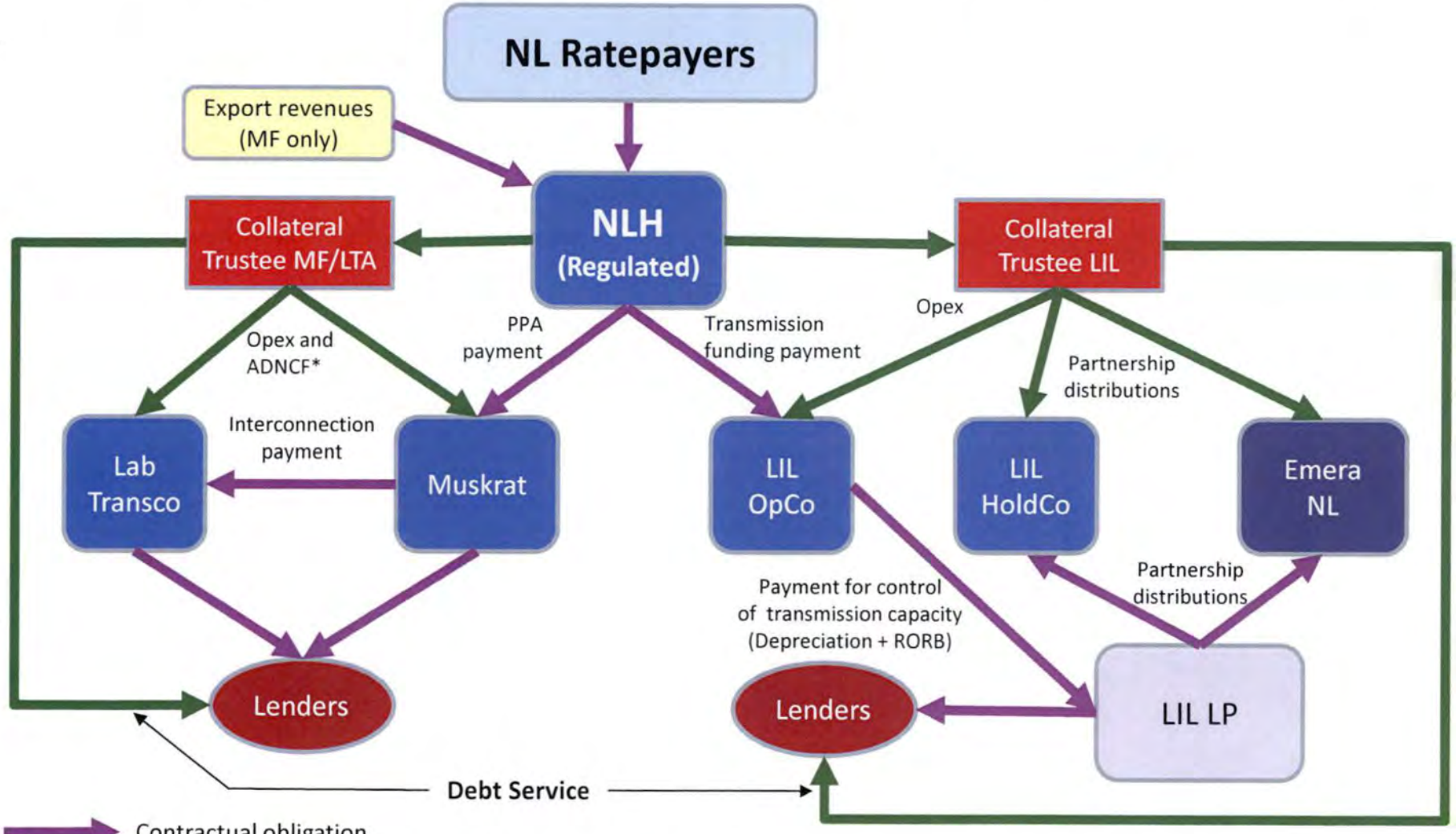
Structure – Key Operating Cash Flows



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Muskrat-NLH PPA - Base Block

Parameter	NLH Base Block Design

Pricing mechanism	• Escalating supply price in dollars per MWh
	  ○ Applied to defined energy requirement over PPA term
	  ○ Pricing segmented into two portions – capital and operating
	• Capital portion recovers all capital and financing costs, escalates at a fixed 2% annually
	• Operating and maintenance costs are passed through to NLH as incurred – regulatory lag risk, if any, borne by NLH

Risk allocation	• Base Block payment is unaffected by variations in energy delivered that may be caused by changes in hydrology or operations • If Muskrat does not deliver Base Block as scheduled, Muskrat has an obligation to keep NLH economically whole • Lenders' debt service requirements have absolute priority

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Muskrat-NLH PPA - Base Block (continued)

Factor	NLH	Muskrat
Rights	• Receive Base Block requirements (seasonality reflected) • Be kept economically whole in case of non-delivery of Base Block as scheduled	• Receive Base Block payments via NLH PPA
Obligations	• Make Base Block payments	• Provide Base Block requirements; or • Keep NLH economically whole
Benefits	• Ratepayer value per Island Supply business case	• Firm minimum payments not subject to changes in hydrology and operations
Resources	• Cost recovery through Government Assurance • Access to external markets to buy and sell power as required	• "Wet" years to offset "dry" years • Based on our analysis, over time, there develops a significant margin between debt service and funds available for debt service

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Key Agreements

Agreement	Key Provisions
Muskrat - NLH PPA	• NLH purchases all Muskrat output excluding NS Block • Base Block: based on 2% escalating supply price and pre-determined volume; take-or-pay, with minimum payment obligation; recovers all MF capital, operating & maintenance and financing costs (including debt service costs and defined equity IRR) plus any applicable taxes and fees • Costs recovered through Base Block also include 100% of costs relating to the LTA interconnection agreement (see below) • Additional Blocks (Supplemental + Residual): priced at market, whether consumed on the Island or exported via Energy Marketing • Variations in hydrology will not impact debt service capability of Base Block revenues • Initial term of 50 years
Lab Transco - Muskrat Interconnection Agreement	• Based on 2% escalating supply price ($/MWh of Base Block); recovers all LTA capital, operating & maintenance and financing costs (including debt service costs and defined equity IRR) plus any applicable taxes and fees • Initial term of 50 years

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Key Agreements (continued)

Agreement	Key Provisions
LIL OpCo - NLH Transmission Funding Agreement	• Facilitates NLH obtaining long term firm LIL transmission access • Recovers all LIL capital, operating & maintenance and financing costs (including debt service costs and regulated ROE) plus any applicable taxes and fees • LIL earns same regulated ROE as other NL utilities; however, its ROE is subject to a floor through the Government Assurance • O&M responsibility resides with LIL Opco, not LIL LP borrowing entity • 50 year initial term
LIL OpCo - LIL LP Transmission System Asset Lease	• Conveys transmission capacity operating control to LIL OpCo • Consideration paid by LIL OpCo equals LIL LP's capital costs (depreciation) plus Return on Rate Base (weighted average debt interest cost plus regulated ROE) • 50 year initial term

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Key Agreements (continued)

Agreement	Key Provisions
MF/LTA and LIL Collateral Trustee Agreements	• Cash flows directly from NLH to lender-approved trustees and are disbursed according to an agreed upon waterfall

Project entities' revenue requirements ensured through the Government Assurance

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Financing Strategy

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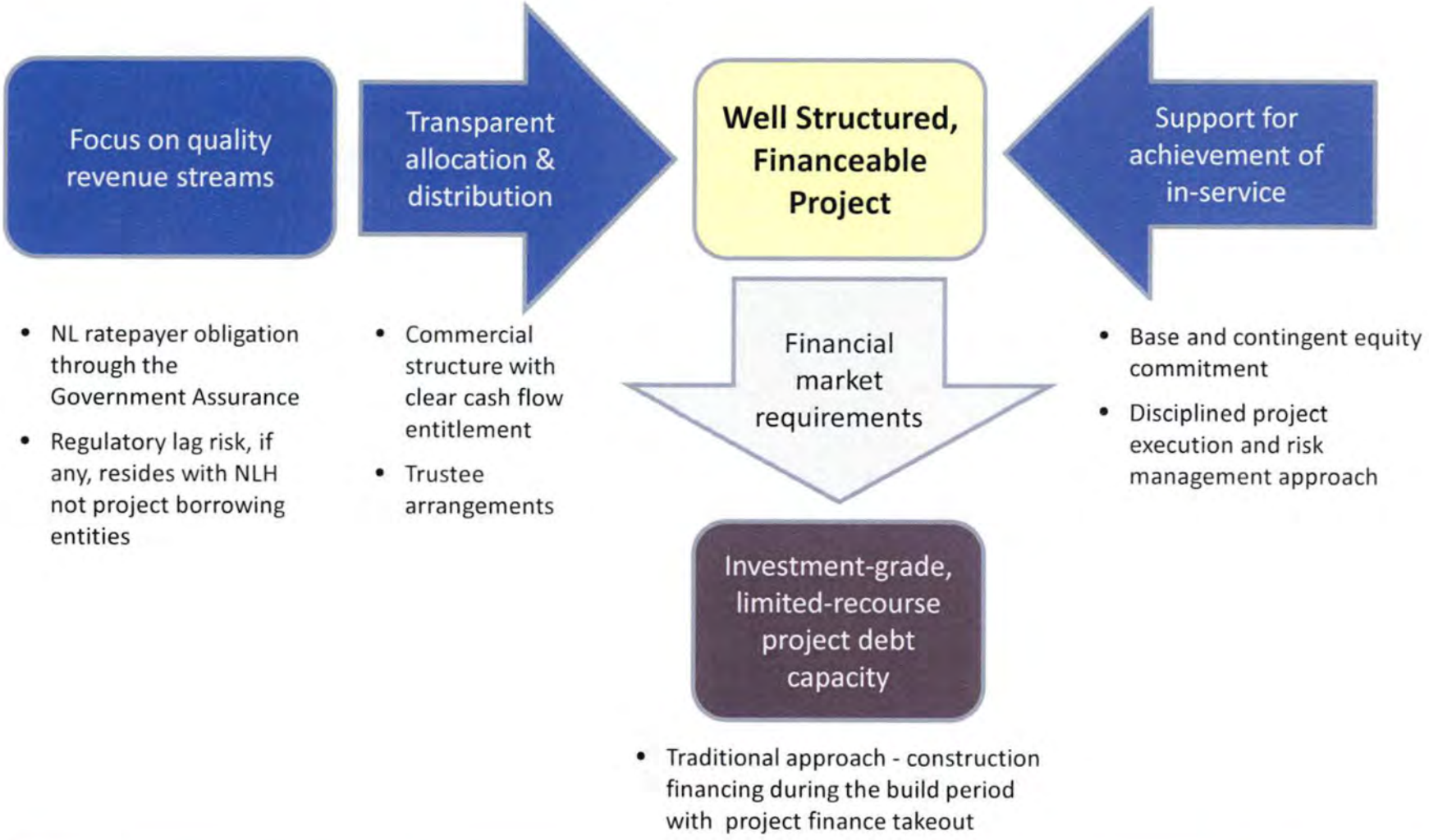
Financing Strategy



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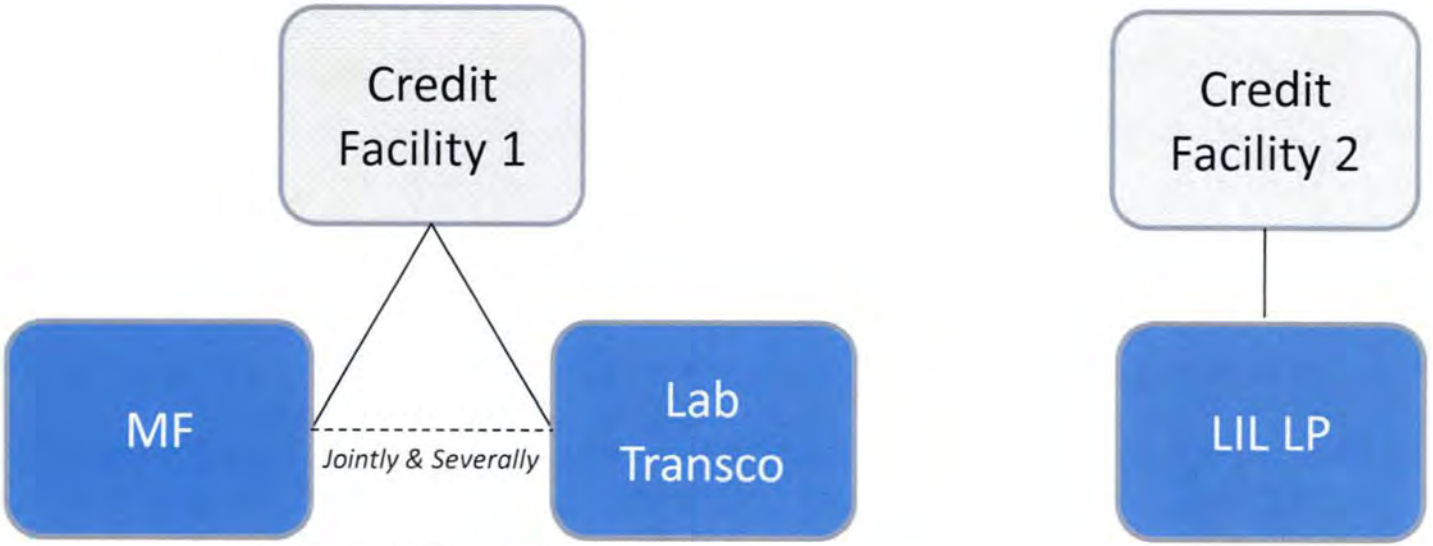
Proposed Debt Financing



- Debt = $1.76B
- D/E ratio = 60:40
- Min DSCR = 2.01
- Avg DSCR = 2.64

Combined

Debt = $1.94B

D/E ratio = 58:42

Min DSCR = 1.95

Avg DSCR = 2.69

- Debt = $0.17B
- D/E ratio = 42:58
- Min DSCR = 1.30
- Avg DSCR = 3.20

- Debt = $2.01B
- D/E ratio = 75:25
- Min DSCR = 1.37
- Avg DSCR = 1.41

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Sources and Uses

($ millions)	MF	LTA	LIL	Total
Sources:				
Equity invested before Financial Close	980	17	303	1,300
Equity Post Financial Close	196	228	195	619
AFUDC* on Equity	N/A	N/A	174	174
Debt	1,764	177	2,014	3,955
Revenue before in-service/debt amortization	433	41	0	475
Total Sources	**3,372**	**464**	**2,686**	**6,522**
Uses:				
Engineering, procurement and construction expenditures	2,473	396	2,060	4,929
Interest During Construction/AFUDC* & Fees	613	57	536	1,206
Reserves pre-funded	138	7	90	235
Operating costs, Innu payments and other	148	4	0	152
Total Uses	**3,372**	**464**	**2,686**	**6,522**

***AFUDC** – Allowance for Funds Used During Construction

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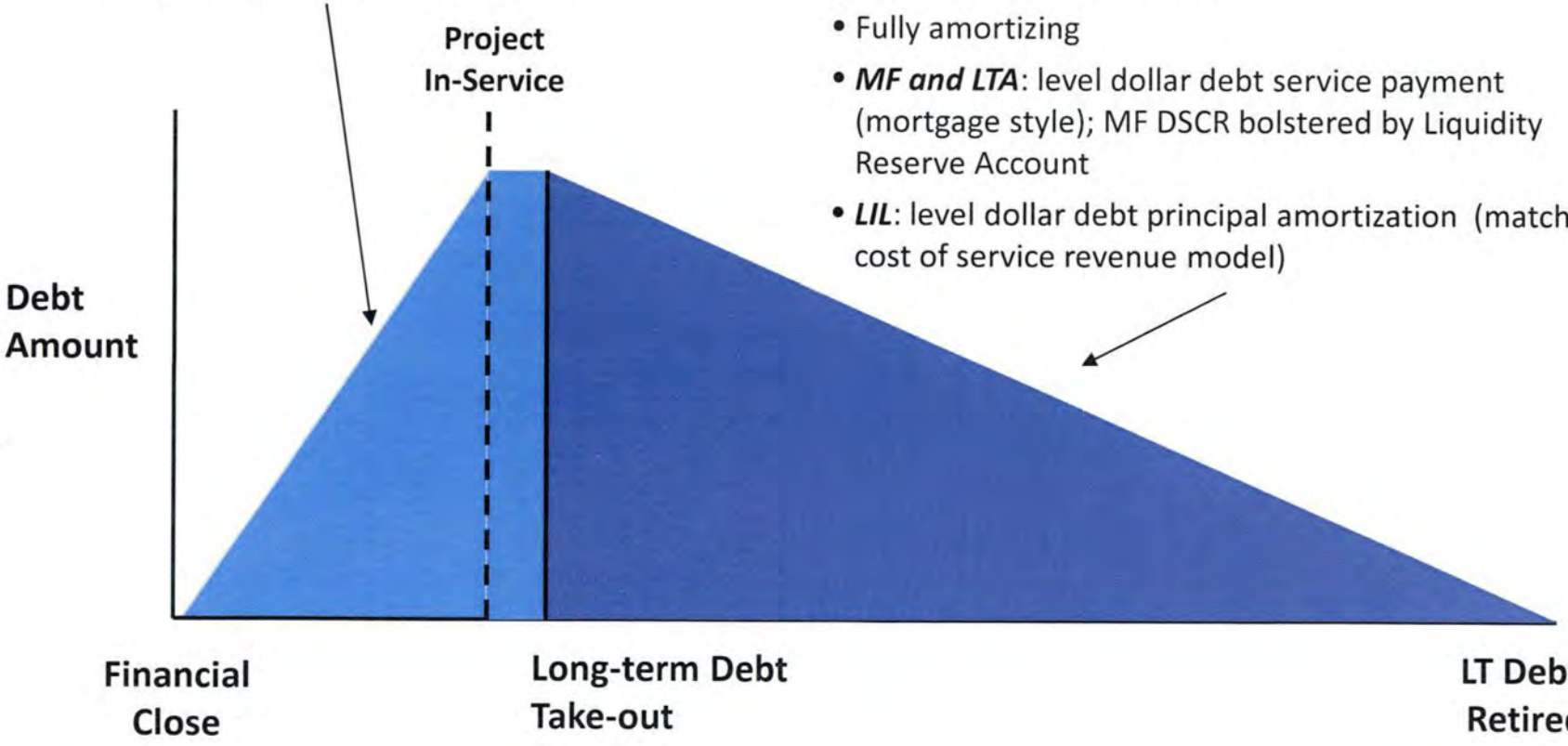
Proposed Approach to Debt Financing

(Not to scale)

Bank, commercial paper and/or vendor financing during the construction period

Long-term take-out at or up to two years after commencement of operations:

- Fully amortizing
- ***MF and LTA***: level dollar debt service payment (mortgage style); MF DSCR bolstered by Liquidity Reserve Account
- ***LIL***: level dollar debt principal amortization (matches cost of service revenue model)



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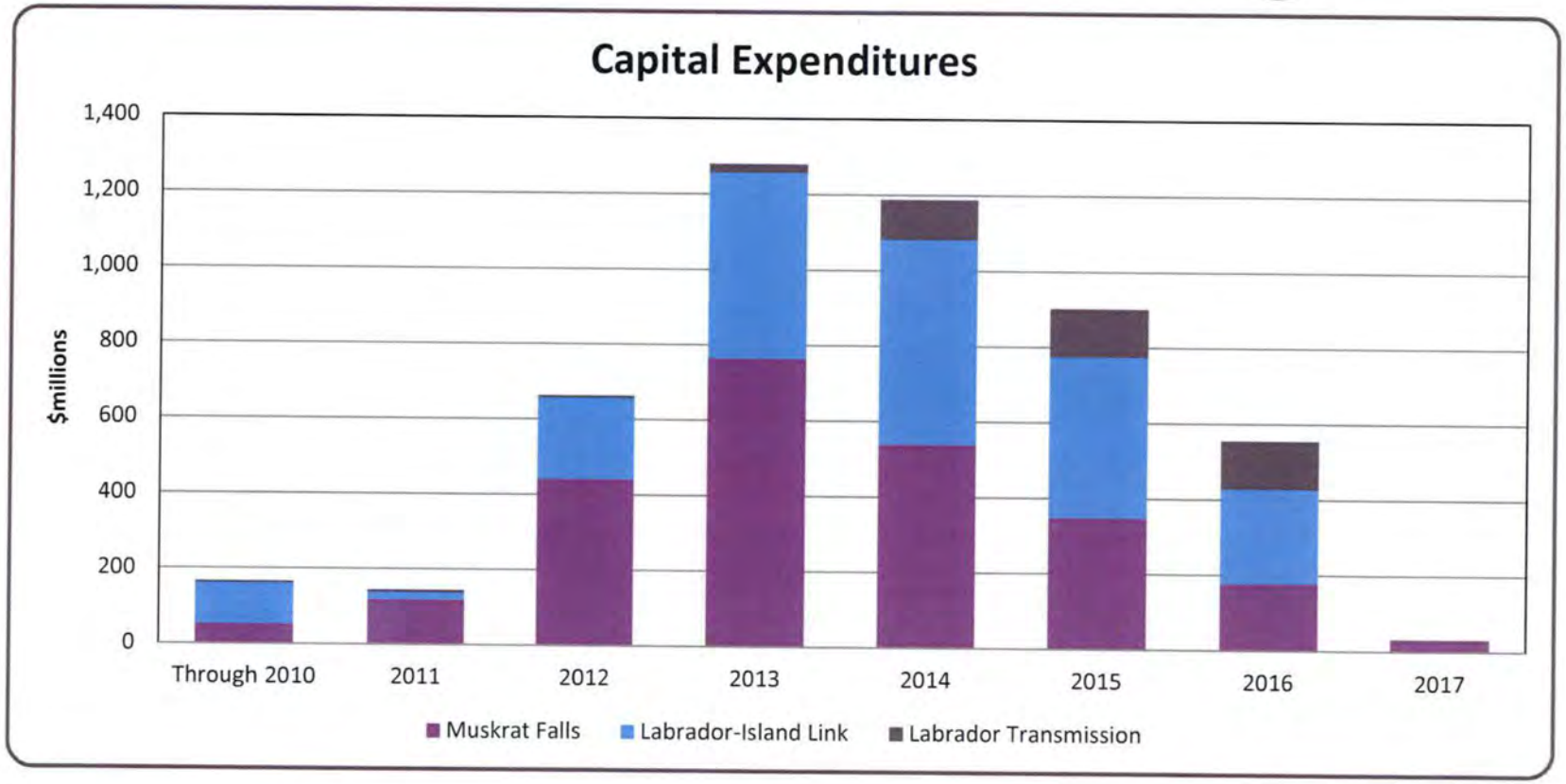
Capital Expenditures & Funding



Cumulative Debt & Equity ($ millions)

Equity	**$171**	**$324**	**$1,003**	**$1,474**	**$1,636**	**$1,846**	**$2,054**	**$2,093**
Debt	**$0**	**$0**	**$0**	**$1,008**	**$2,210**	**$3,152**	**$3,868**	**$3,955**

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Key Risks & Mitigation

Risk	Description	Mitigation
Construction Delays (All Projects)	Potential delays to critical path activities resulting in a delay to First or Full Power, caused by: • Physical damage event(s) • Force majeure event(s) • Contractor or equipment failure in performance or default	• Delayed Start-Up insurance in the case of physical damage events (where cost effective) • Only Tier 1 contractors and suppliers will be chosen based on detailed pre-qualification process and their performance will be monitored in the event replacement required • 1 year float in SOBI crossing schedule • SOBI Shoreline Protection pilot HDD program and seabed survey program underway • LTA delay remote possibility - conventional AC transmission along existing line corridors • Early issuance of SOBI subsea cable and turbine & generator RFP's
Construction Cost Overruns (All Projects)	Cost overruns resulting from delay risks (noted above) or the unfavorable impact of labour disruptions or productivity issues	• Strategic de-risking and contracting strategy facilitates realistic cost estimates and contractor performance • High quality camp, competitive rates and attractive rotation cycles closer to NL – there are approximately 16,000 NL workers commuting to Western Canada on rotation • Special Project Order and Labour Agreement will avoid strikes, lockouts and disruptions and will be designed to address productivity

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Key Risks & Mitigation (continued)

Risk	Description	Mitigation
Geotechnical Risk (MF and LIL)	Subsurface conditions materially worse than assumed, negatively impact project construction or operation	• Less potential cost impact due to 45 m high x 700 m wide dam at MF • Extensive geotechnical studies already performed at MF site over the past 20+ years - design and engineering modifications already made to address potential risks • Extensive geotechnical studies already performed for SOBI sea bed and HDD - design and engineering modifications already made to address potential risks
Environmental & Aboriginal (All Projects)	Environmental or aboriginal issues negatively impact the Projects	• MF/LTA EA on track for release in Q4-2011 • Innu IBA already ratified with signing ceremony in Q4-2011 • LIL EA release targeted for Q2-2012 to coincide with Sanction • Nalcor working closely with NL Government and aboriginal groups to identify labour requirements and align with training and education courses to meet demands
Hydrology (MF)	Decreased water flow results in lower generation	• Water management agreement • 50 years of hydrology studies • Curtailment of non-firm blocks • Variations in hydrology will not impact debt service capability of Base Block revenues

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Key Risks & Mitigation (continued)

Risk	Description	Mitigation
Interest Rate Risk (All Projects)	Fluctuations in interest rates negatively impacting debt service	• Full recovery through arrangements with NLH
Operating Risks (All Projects)	Natural hazards or equipment failures could result in business interruptions, liability for damage or regulatory action for non-compliance with laws	• Business interruption, property liability and D&O insurance • MF has 4 generating units • Installed spare cable across SOBI which can be quickly put in service • New equipment based on proven technology • NLH's 40+ years of operating experience
Inflation Risk (All Projects)	Increases or decreases in inflation may adversely impact operating costs	• Full recovery through arrangements with NLH
Regulatory Risk (All Projects)	Changes in government regulations materially affect the operation of MF/LTA	• Nalcor owned by Province of NL – strong support for the Projects

Government Assurance and Contingent Equity effectively "backstop" the mitigants described previously

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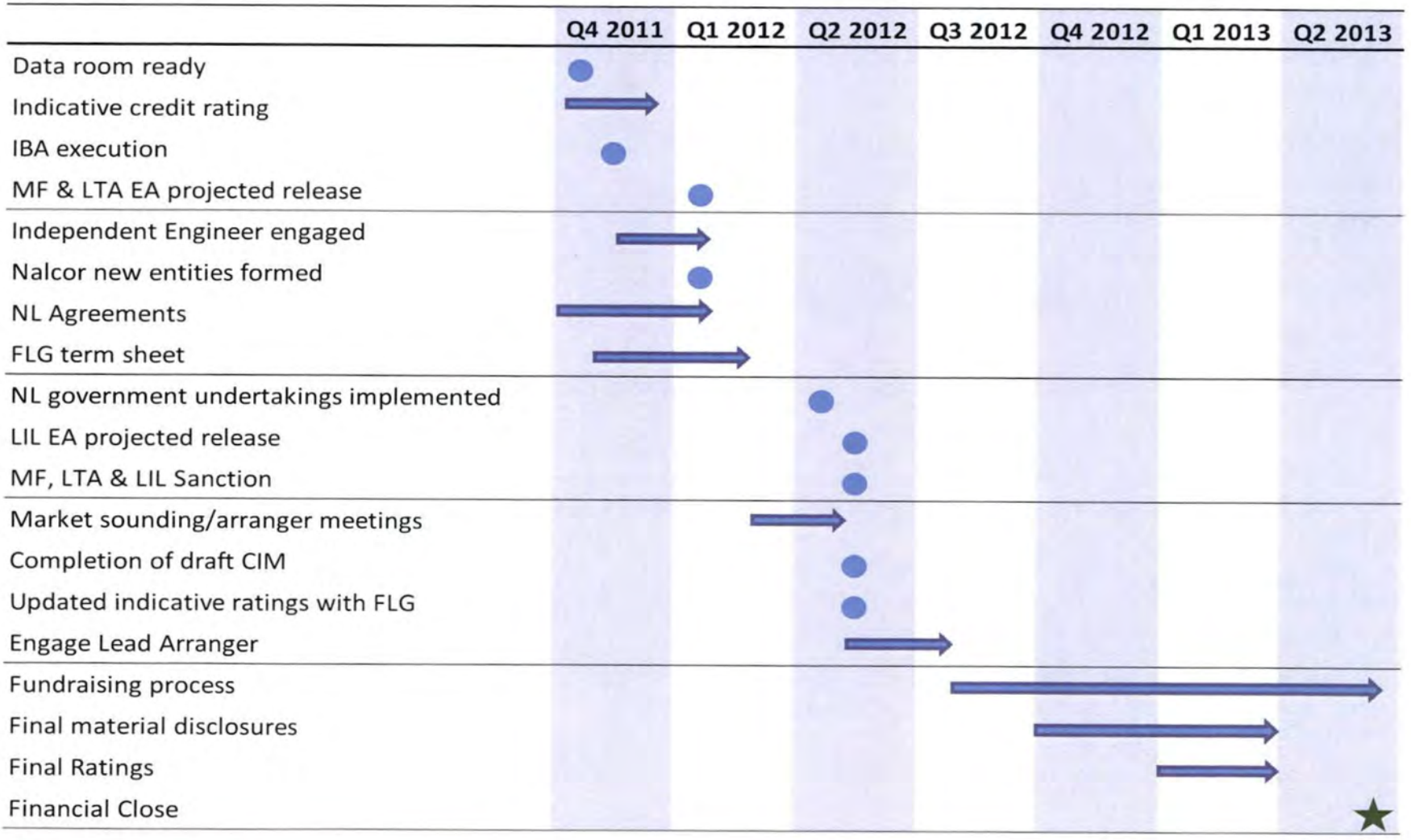
The Path to Financial Close



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Financial Metrics & Debt Service

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Financial Model Assumptions

Assumption	Base Case			Stress Case		
	MF	LTA	LIL	MF	LTA	LIL
Capital cost	DG2 $2.5 billion	DG2 $0.4 billion	DG2 $2.1 billion	DG2 +15% $2.8 billion	DG2 +15% $0.5 billion	DG2 +15% $2.4 billion
Operating cost	DG2 estimates			DG2 estimates +30%		
Interest rate	7.3%			7.8%		
Financing Fees (Construction phase)	1.70% arrangement 0.75% stand-by			1.70% arrangement 0.75% stand-by		
Financing Fees (Bond take-out)	2.50% arrangement			2.50% arrangement		
Hydrology (MF)	4.9 TWh per annum (average power)			First 10 years - 4.5 TWh per annum (firm power)		
Export sales (MF)	50% discount on PIRA[(1)]			No export revenue		
Regulated ROE (LIL)	9.5% (long-run rate)			8.4% (floor/current)		

[(1)] PIRA Long Term Forecast (Oct 2010) for 2010-2025; 2% thereafter

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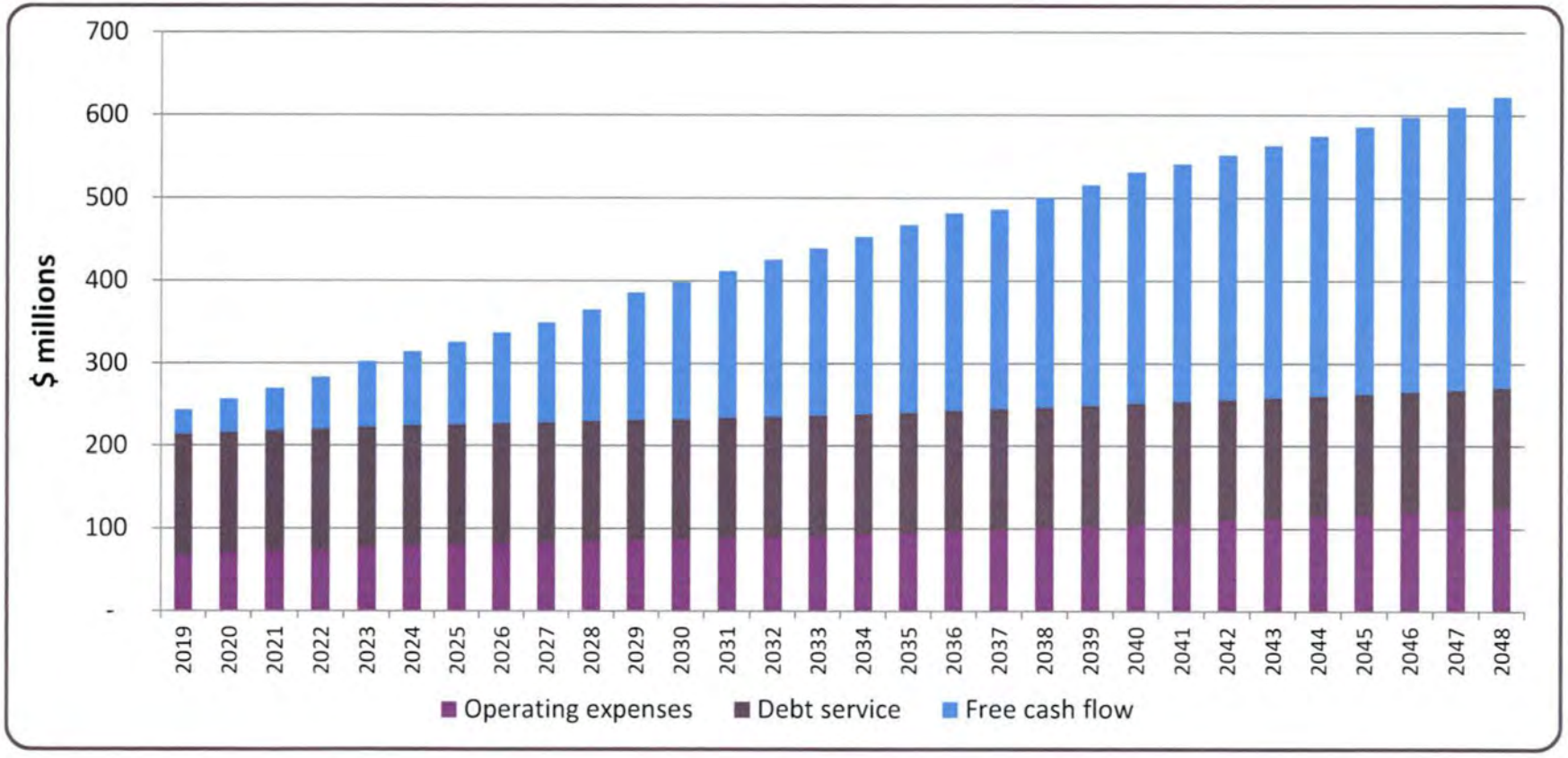
MF Revenue Profile - Base Case



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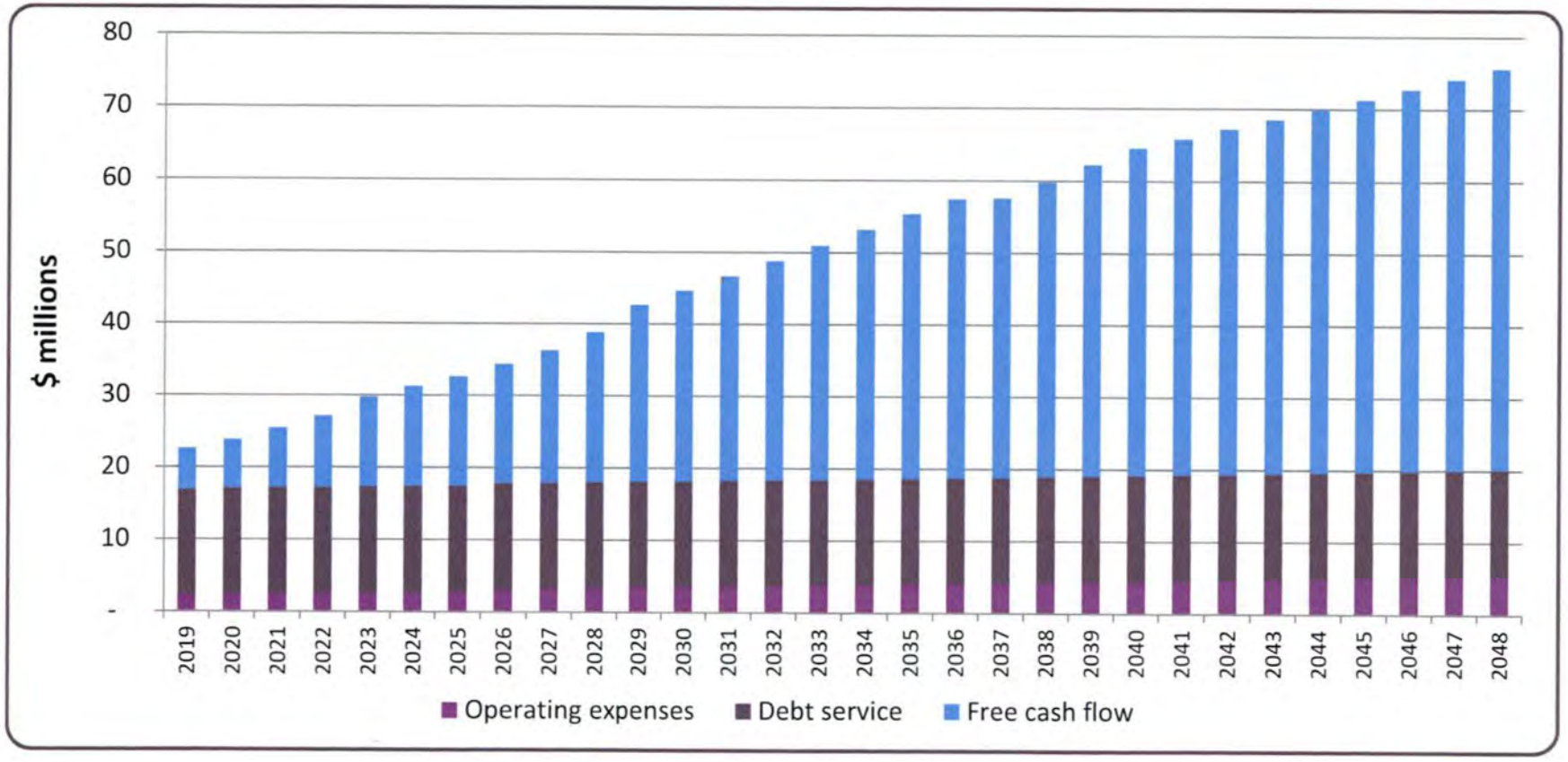
LTA Revenue Profile - Base Case



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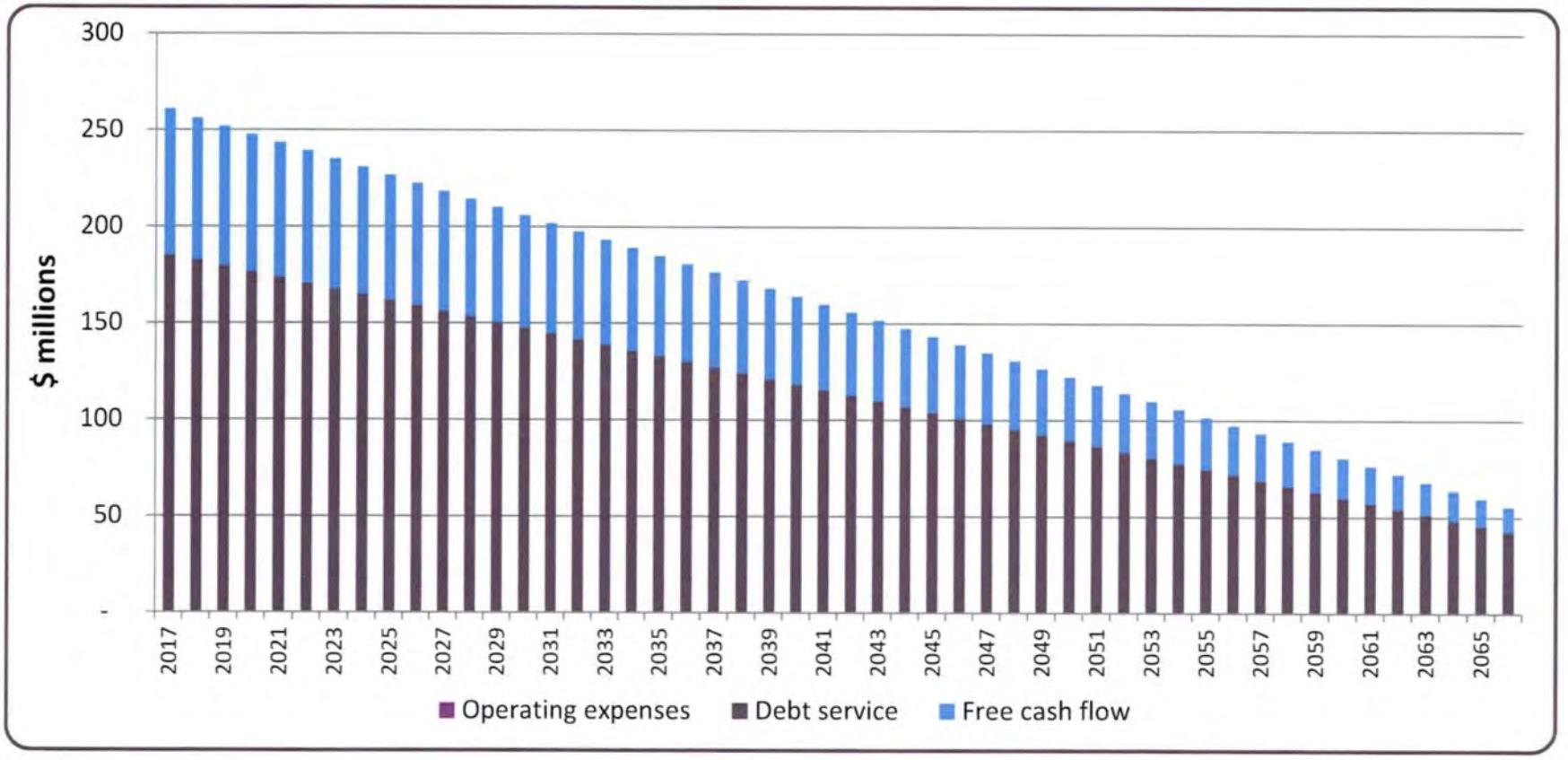
LIL Revenue Profile - Base Case



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Debt Service

Nalcor's proposed financial structure provides for robust debt service in both base and stress case conditions

$ millions (except ratios)

Case	Capex[1]	Debt	Equity	D/E ratio	IRR/ROE[2]	Min DSCR	Avg DSCR
Muskrat Falls							
DG2 Base Case	2,473	1,764	1,176	60:40	$8.8\%_{IRR}$	2.01	2.64
Stress Case	2,841	1,983	1,322	60:40	$8.1\%_{IRR}$	1.43	2.34
Labrador Transmission Assets							
DG2 Base Case	396	177	245	42:58	$8.4\%_{IRR}$	1.30	3.20
Stress Case	453	197	287	41:59	$8.4\%_{IRR}$	1.30	3.20
Labrador-Island Link							
DG2 Base Case	2,060	2,014	671	75:25Reg	9.5%ROE	1.37	1.41
Stress Case	2,362	2,311	770	75:25Reg	$8.4\%_{ROE}$	1.35	1.36

Notes:
1. Escalated in nominal dollars, not including financing costs
2. MF and LTA equity return based on IRR over service life while LIL based on regulated ROE subject to a "floor" value

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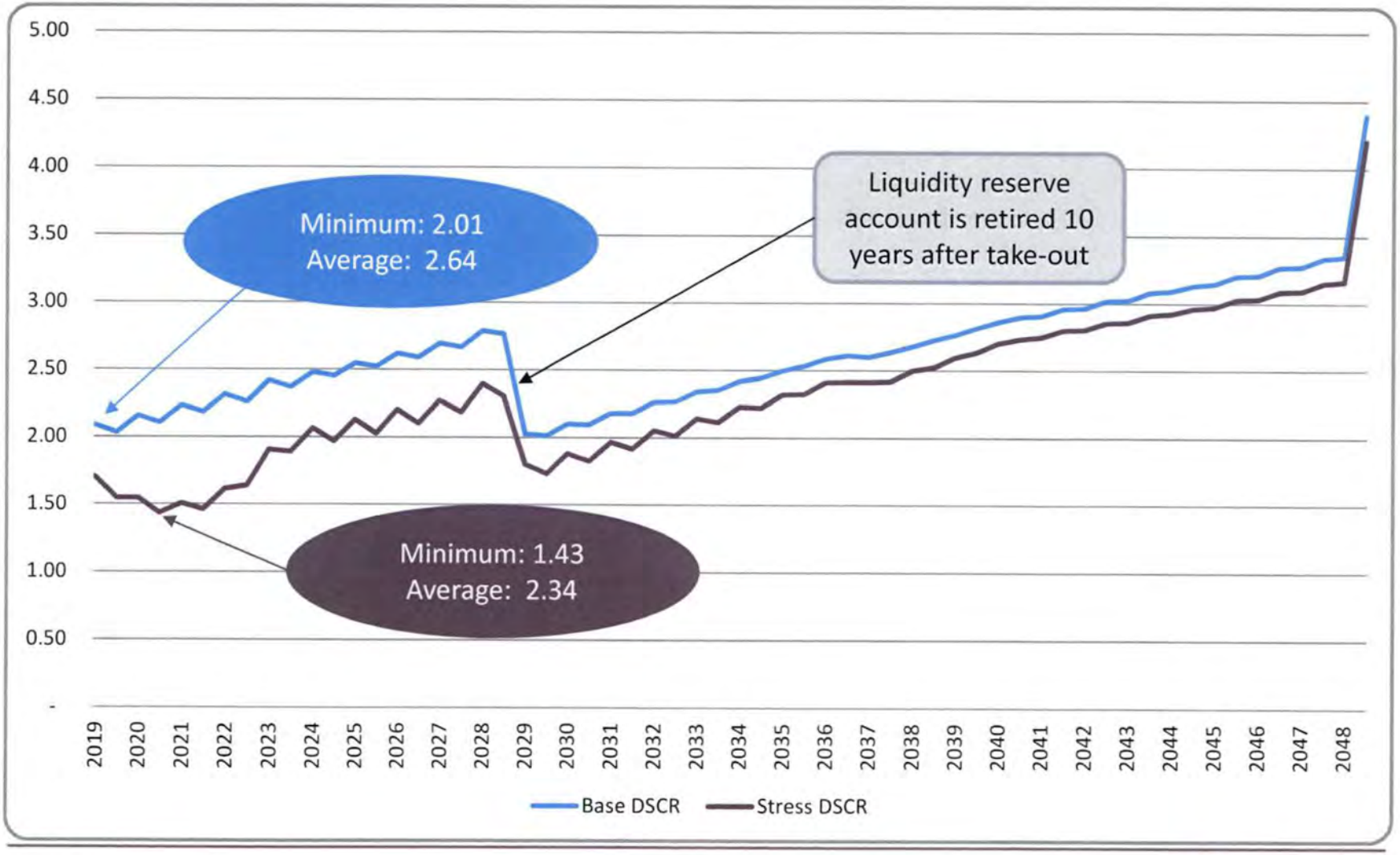
MF Debt Service Profile



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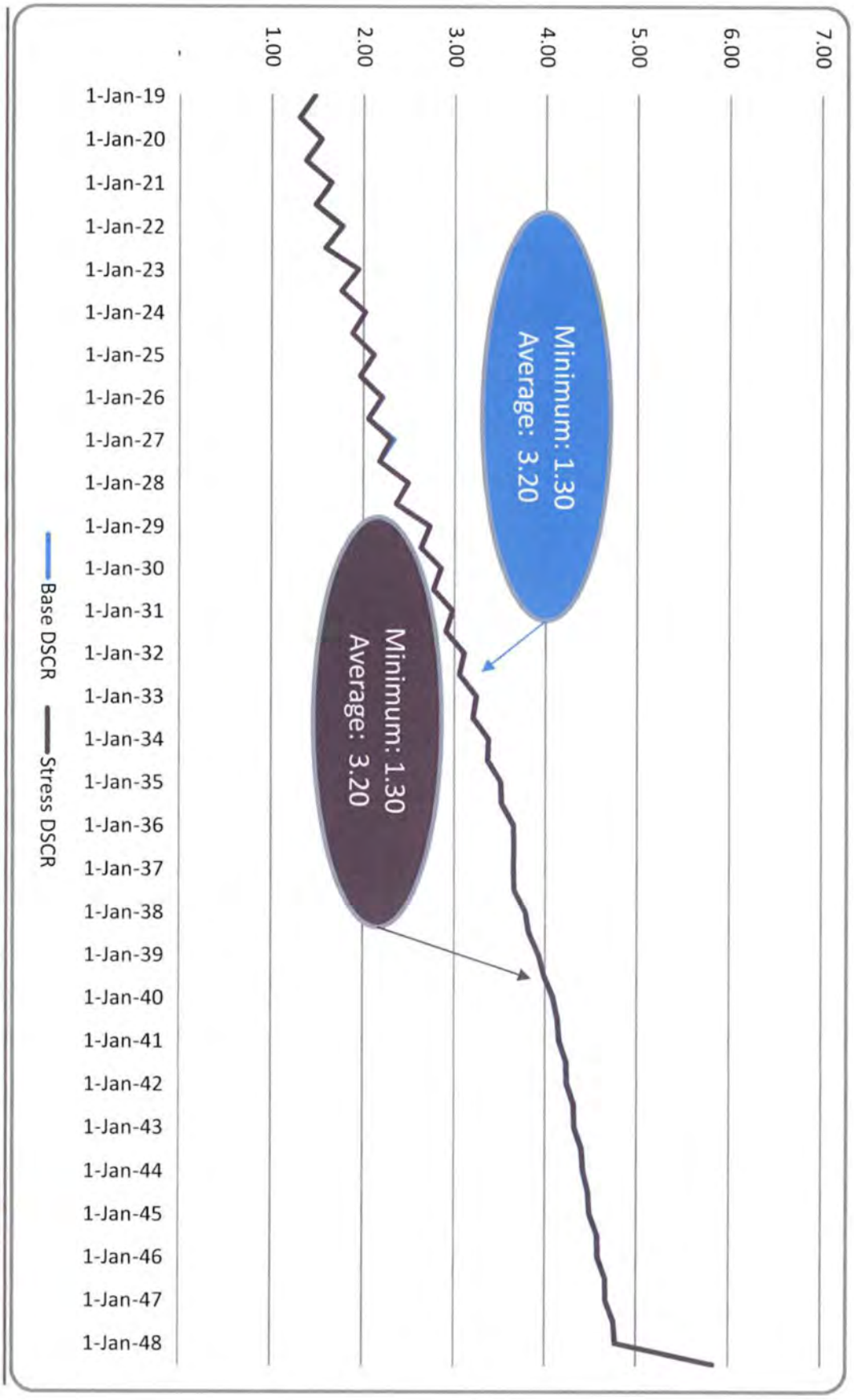
LTA Debt Service Profile



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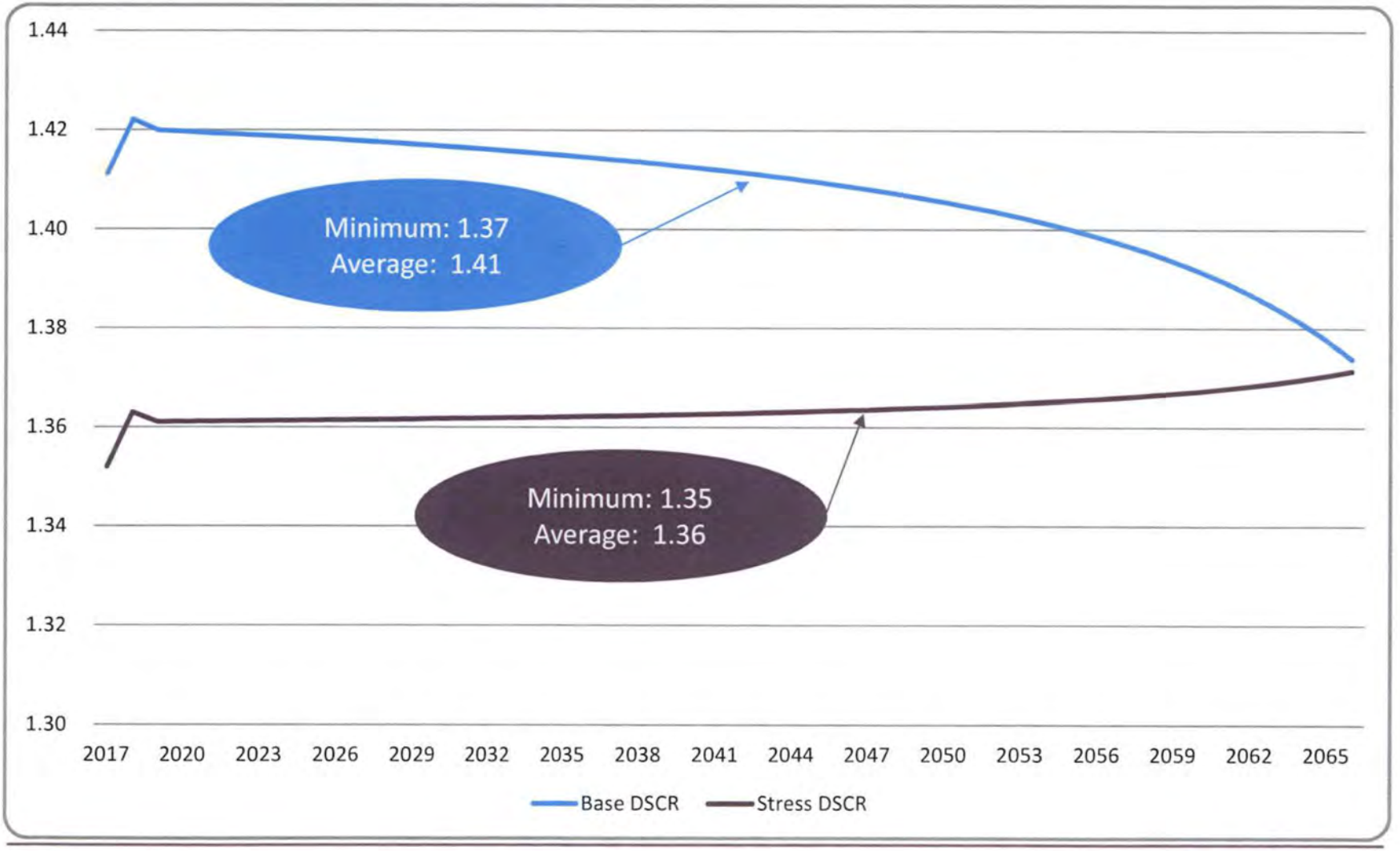
LIL Debt Service Profile



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Summary and Next Steps

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Summary

- ✓ Robust business case
- ✓ Attractive project attributes
- ✓ High quality regulated revenues
- ✓ Assembled experienced team with mega-project expertise
- ✓ Proven operating experience
- ✓ Robust financial profile
- ✓ Access to export markets via two transmission routes
- ✓ Strong support from Shareholder – Government of NL
- ✓ Projects supported by Innu – ratified IBA
- ✓ Projects supported and endorsed by Government of Canada

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Next Steps

Milestones	Date
Data Room Access	November 7
Financial Model Review Session (Toronto)	Week of November 7
Project Execution/Technical Session (St. John's)	Weeks of November 14/21
Progress Update before Ratings Committee	Week of November 28
Preliminary Rating Report	**December 22**

Contacts

- Executive: Derrick Sturge dsturge@nalcorenergy.com or 709-737-1292
- Rating Inquiries: Jim Meaney jamesmeaney@nalcorenergy.com or 709-737-4860
- Data Room: Auburn Warren auburnwarren@nalcorenergy.com or 709-737-1256

Information Request Protocols

- Send all indicative rating information requests to lcprating@nalcorenergy.com
- Nalcor will respond within 48 hours

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Questions?

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Appendix A:
Indicative Debt Term Sheets

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MF/LTA Indicative Debt Term Sheets page 1

Issuer:	• Muskrat Falls Generation Co & Labrador Transmission Co (the "Companies", borrowing jointly and severally)
Offering:	• Construction facility • Long-term project finance debt takeout
Amount:	• MF Tranche - $1.76 billion • LTA Tranche - $0.17 billion
Term:	• Construction facility - construction period plus up to 2 years • Long-term project finance debt – 30 years
Interest:	• [ ]
Repayment:	• Level dollar debt service payment with full amortization over term
Security	• Shares of the Companies • All of the Companies' presently held or after acquired real and personal property, including interests in material contracts
Redemption	• Market-appropriate – for example, higher of face or NPV using specified discount (GoC plus spread)
Ranking	• Senior
Flow of Funds	1. Operating expenses 2. Sustaining Capex 3. Principal + Interest on Debt 4. Establish/replenish debt service reserve account, as required 5. Sustaining Capex due within next 6 months 6. Balance retained or distributed by the Companies

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MF/LTA Indicative Debt Term Sheets page 2

Debt Service Reserve Account:	• 6 months forecasted debt service
Liquidity Reserve Account:	• $65 million at long-term project finance debt takeout, to remain for 10 years
Distribution Test:	• DSCR test pre and post 12 months
Key Covenants:	• Negative pledge • Minimum DSCR • Restrictions on distributions • Restriction on termination/modification of MF-NLH PPA and LTCo-MF Interconnection Agreement • Maintain appropriate insurance coverage
Events of Default:	• Termination of MF-NLH PPA and Lab Transco-MF Interconnection Agreement • Breach of minimum DSCR • Breach of material contracts • Bankruptcy of Labrador Transco, Muskrat or NLH • Failure of Nalcor to meet equity call

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LIL Indicative Debt Term Sheets page 1

Issuer:	• Labrador Island Link Limited Partnership (the "Company")
Offering:	• Construction facility • Long-term project finance debt
Amount:	• $2.01 billion
Term:	• Construction facility - construction period plus up to 2 years • Long-term project finance debt – 50 years
Interest:	• [ ]
Repayment:	• Level dollar debt principal amortization over term
Guarantee:	• LIL Opco to jointly and severally guarantee all of the Company's debt
Security	• All partnership units and LIL Opco's shares • All of the Company's and LIL Opco's presently held or after acquired real and personal property, including interests in material contracts
Redemption	• Market-appropriate – for example, higher of face or NPV using specified discount (GoC plus spread)
Ranking	• Senior
Flow of Funds	1. Operating expenses 2. Sustaining Capex 3. Principal + Interest on Debt 4. Establish/replenish debt service reserve account, as required 5. Sustaining Capex due within next 6 months 6. Balance retained or distributed by the Companies

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LIL Indicative Debt Term Sheets page 2

Debt Service Reserve Account:	• 6 months forecasted debt service
Distribution Test:	• DSCR test pre and post 12 months
Key Covenants:	• Negative pledge • Minimum DSCR • Restrictions on distributions • Restriction on termination/modification of LIL Opco-NLH Transmission Funding Agreement and LIL Opco-LIL LP Transmission System Asset Lease • Maintain appropriate insurance coverage
Events of Default:	• Termination of LIL Opco-NLH Transmission Funding Agreement and LIL Opco-LIL LP Transmission System Asset LeaseBreach of minimum DSCR • Breach of material contracts • Bankruptcy of LIL Opco, LIL LP or NLH • Failure of Nalcor to meet equity call

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