Nalcor – Lower Churchill Project

Overarching Contracting Strategy

LCP-PT-MD-0000-PM-ST-0002-01

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EXECUTIVE SUMMARY

Phase I of the Lower Churchill Project (LCP) is comprised of four (4) projects executed under Special Purpose Vehicles (SPV), namely:

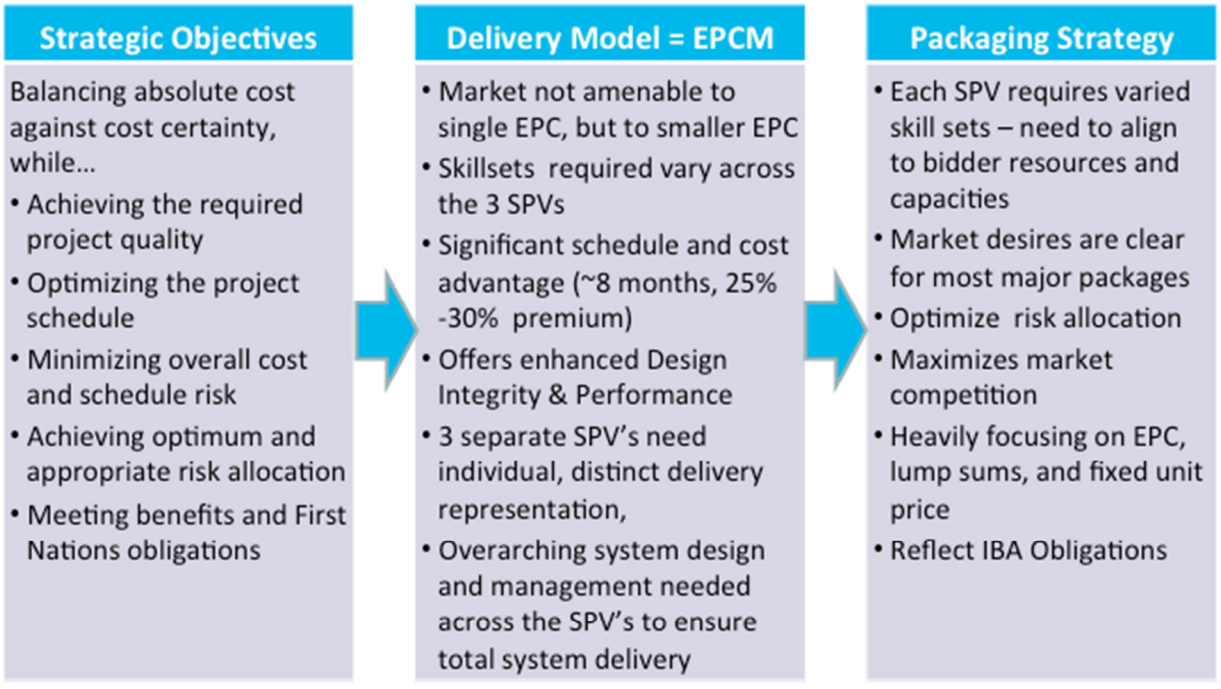
- Muskrat Falls Generation Project
- Labrador Transmission Assets Project
- Labrador – Island Transmission Link Project (also referred to as "Labrador-Island Link Project"
- Maritime Link Project

This *Overarching Contracting Strategy* addresses the delivery of the first three (3) of these projects and is the result of several years of technical definition, input from the power industry, consultants, and suppliers and numerous strategy workshops, all focused on the selection of the most appropriate project delivery model as well as the optimum contracting strategies to engineer, procure and construct this important project.

Set within the control of Nalcor's Gateway Process, and having Nalcor's strategic objectives as a foundation, the Nalcor LCP Project Management Team implemented an established process to define selection criteria, identify options, select and then to validate a selected strategy prior to finalizing project delivery decisions.

At this stage of the Project (Gateway Phase 3 – Q1-2012), the overall Project Delivery Approach, in the form of an EPCM approach, has been selected and implemented, and the contract packaging strategies for the construction of the facilities is well advanced, as displayed in Figure 1.

Figure 1: Optimizing Project Delivery



Overall Project Delivery Model

- An EPCM approach under Nalcor management has been selected for all project work scope other than the SOBI Crossing, which remains under Nalcor management.
- The market tests conducted confirmed that the large experienced contractors capable of executing the LCP are not amenable to an EPC arrangement for the Project of this scale and complexity.
- The LCP is not only a mega-project in terms of cost, but it is comprised of diverse physical components, ranging from heavy civil and transmission line construction, submarine cable supply & installation and sophisticated electro/mechanical equipment, all in a harsh northern environment. In addition, the LCP has the added complexities associated with permitting, labour the environment and aboriginal obligations. Due to this size and diversity, it is unlikely that sufficient competition, or best in class skill sets, could be ensured, to develop the LCP on an EPC basis.
- As three (3) separate projects, or Special Purpose Vehicles (SPV), individual representation is required to ensure project objectives are consistently managed for each. An EPCM delivery approach is very well-suited to support and manage this requirement.
- As the LCP must work as one integrated system, an EPCM approach provides the overarching system design and management, which is necessary across the SPV's.

Contract Packaging

- Each SPV requires varied skill sets which is recognized in the packaging strategies developed to date.
- Development of contract packages has been heavily focused on EPC and lump sum type of contracts. Where necessary, fixed unit price type contracts are considered, with emphasis on establishing firm quantities prior to contract award.
- Packaging strategies that align with bidder resources and capabilities thus maximizes market competition.
- Packaging has been optimized with respect to interfaces.
- Nalcor's focus is on integration management and optimal risk allocation.
- Meeting Nalcor's benefits and First Nations obligations.

Nalcor as Integrator

Nalcor and its EPCM Contractor, SNC-Lavalin Inc., will manage contract interfaces, resulting from the optimal balance between cost, execution risk and execution certainty. This will be accomplished through actions such as:

- Aligned interests of the Nalcor/SNC-Lavalin team;
- Ensuring appropriately sized and skilled owner/EPCM team;

- Keeping interfaces to single points where practical; and
- Implementing a rigorous project wide interface management process.

As contracting strategies are selected, they undergo review and validation prior to being finalized. This step is consistent with the strategy formulation process described herein and is necessary as construction plans are modified and as market intelligence develops. Accordingly, adjustments to the contracting strategies identified in Sections 11, 12 and 13 may take place during the Gateway Phase 3 of the Project.

This document does not consider strategies for commercial separation of the work, as will be required by the SPV's. Therefore this document should be read in the context that commercial separation will be implemented, as required, throughout the procurement process.

1.0 PURPOSE

The purpose of this *Overarching Contracting Strategy* is to outline the overall contractual strategy as implemented by Nalcor for development of Phase I of the lower Churchill River, including the Muskrat Falls Generation, Labrador Transmission Assets, and Labrador – Island Transmission Link. It includes an overview into the adopted process to determine this strategy, and insights into the reasons for selecting the overall management approach and contract packaging.

This *Overarching Contracting Strategy* was initially implemented during Gateway Phase 2 and as such can be considered a basis for the development of the overall post-Decision Gate 2 project management and execution philosophy as detailed in the Project Execution Plan (Scope and Approach), reference document no. LCP-PT-MD-0000-PM-PL-0001-01. It covers the way that all engineering, procurement, construction and management activities will be undertaken, including allocation of those activities into various sub-components and packages for execution efficiency. This *Overarching Contracting Strategy* also covers the way work will be allocated among contractors; the type of contractors that will be used, the type of contract (e.g. EPC, supply and install, construct to Owner's design) and the compensation structure (e.g. lump sum, reimbursable cost).

The optimum contract strategy is defined for each Project and reflects cost and schedule objectives, the level of scope definition, prevailing market conditions, technologies involved, risks to be managed, specialized skills and services required and the allocation of responsibilities between Nalcor and the contractors.

This *Overarching Contracting Strategy* document has been developed with consideration of outcomes from workshops / meetings held with LCP project personnel, input from outside consultants, data from Independent Project Analysis Inc. (IPA), review of lessons learned from other projects, and current market intelligence.

It must be noted that as contracting strategies are selected, they undergo review and validation prior to being finalized. This step is consistent with the strategy formulation process described herein and is necessary as construction plans are modified and as market intelligence develops. Accordingly, adjustments to the contracting strategies identified in Sections 11, 12 and 13 may take place during this phase of the Project.

This document does not consider strategies for commercial separation of the work, as will be required by the SPV's. Therefore this document should be read in the context that commercial separation will be implemented, as required, throughout the procurement process.

2.0 APPLICATION AND SCOPE

This *Overarching Contracting Strategy* was developed in Gateway Phases 2 and 3, and is applicable going forward as the Project progresses through the successive phases of the Gateway Process, reference document no. LCP-PT-MD-0000-PM-PR-0001-01, for the following "Projects" of the LCP Phase I:

- Muskrat Falls Generation Project
- Labrador Transmission Assets Project
- Labrador – Island Transmission Link Project

Another important element of the overall Lower Churchill Project is the Maritime Link Project, to which the project execution concepts contained herein are applicable and directly transferable. As design, construction and financing of the maritime Link Project is the responsibility of Emera Inc., this *Overarching Contracting Strategy* excludes specific details on how the Maritime Link Project will be planned or executed.

This *Overarching Contracting Strategy* is focused on the Engineering, Procurement, Fabrication, Construction, Commissioning and overall Project Management, and covers all project phases (from project identification through execution) up to First Power and to transmission of power to Soldiers Pond.

3.0 DEFINITIONS

Alliances	A single or multi party arrangement for contracting on a broad set of principles and a sharing of a risk regime. Can be combined with several of the above remuneration schemes, but typically reimbursable with a sliding scale profit triggered off performance criteria and a liability cap.
Bonus-Penalty	A special contractual arrangement usually between a client and a contractor wherein the contractor is guaranteed a bonus, usually a fixed sum of money, for meeting specified criteria (e.g. each day the project is completed ahead of a specified schedule and/or below a specified cost, or for each increment improvement over meeting a specified performance guarantee such as a guarantee of efficiency of a turbine or transformer) and agrees to pay a similar amount as liquidated damages for failing to meet the specified criteria (e.g. each day of completion after the schedule date or over a specified cost, or failing to meet a specified performance guarantee), up to a specified maximum either way. The amount required to be paid for failing to meet the specified criteria is normally characterized as liquidated damages
Component	The initial framing of the LCP considered three major work elements, Power Generation, HVdc Specialties and Overland Transmission, which are referred to as “Components.” These distinct work elements helped to focus attention on the engineering and technical competencies required to deliver the overall Project.
Cost Plus Fixed Fee (CPFF), Cost Plus Award Fee (CPAF), Cost Plus Incentive Fee (CPIF), Multiplier	Provides for the payment of allowable incurred costs to the extent prescribed in the contract. The contractor agrees to provide its best effort to complete the required contract effort. These contracts include an estimate of total cost for the purpose of obligating funds and establishing a ceiling that the contractor cannot exceed (except at its own risk) for the original scope of work without the approval of the client. Fee or profit is determined on the basis of a fixed percentage of the negotiated total cost (Fixed Fee), award of amounts based on a judgmental evaluation by the client (Award Fee), or an initially negotiated fee to be adjusted later by a formula on the relationship of total allowable costs to total target costs.
Decision Gates	A Decision Gate is a predefined moment in time where the Gatekeeper has to make appropriate decisions whether to move to the next stage, make a temporary hold or to terminate the project. The option to repeat and modify the current stage is considered an undesirable option unless caused by changes in business conditions.

EPC Contract

Engineer, Procure, Construct (sometimes referred to as Turnkey or Design-Build)

- Involves an owner contracting all work (engineering, construction, supply and installation activities) for implementation of an entire project, or of a specific part of that project, to an EPC Contractor.
- Owner provides only a conceptual layout of the project and a statement of the minimum requirements, typically in the form of an extensive functional specification, leaving the optimization and subsequent detailed design to the EPC contractor.

EPCM Contract

EPCM – Engineering, Procurement, Construction Management

- Involves an owner contracting with an Engineering, Procurement and Construction Management contractor who is responsible for the engineering, design and technical specifications for the project (either itself or through its sub-consultants), for the procurement on behalf of the owner of multiple contracts between the owner and contractors and suppliers for construction, equipment, materials and supplies, and for the administration and management of those contracts. The contracts tendered by the EPCM Contractor on behalf of the owner may include EPC Contracts for specific items, typically major equipment packages such as turbines and generators, transformers, gates, etc.
- EPCM Contractor can also be authorized by the owner to act as the Owner's Agent (e.g. to allow the EPCM Contractor to execute contracts and change orders in its own name as Owner's Agent for and on behalf of the owner). Note: This is not the case for the LCP.

Escalation

Provision for changes in price levels driven by economic conditions. Includes inflation.

Gatekeeper

The person responsible for making the decision at the Decision Gate of the Gateway Process.

Guarantee Maximum (Target Price) Contract

A fixed-price form of contract where a contractor agrees to perform all services and work as defined in the contract document guaranteeing that the total cost to the client will not exceed a stipulated maximum figure or, in the case of a Target Price Contract, that cost savings or cost over-runs from the Target Price will be shared up to a stipulated maximum figure. Quite often, these types of contracts will contain special share-of-the-saving arrangements to provide incentive to the contractor to minimize costs below the stipulated maximum.

Lump Sum

A fixed-price form of contract where a contractor agrees to perform all services and work as specified by the contract for a fixed amount. The type of contract may vary from constructing or supplying equipment to a detailed design and specification provided by the owner to a turn-key

	arrangement such as an EPC Contract where the contractor is also responsible for detailed design and guarantees quality, quantity and yield on a process plant or other installation.
Project	Sub-division of the LCP Projects contained in the Work Breakdown Structure into components to assist with the planning, executing and controlling of the work. Projects include: Muskrat Falls Generation, Labrador – Transmission Assets, Labrador – Island Transmission Link, and Maritime Link.
Project Management Team	The Project Management Team (PMT) is led by the Project Director and is made up of project leaders and key functional representatives. The PMT meets periodically to identify issues that may affect cost and schedule and to determine how such issues should be resolved.
Purchase Order	A Contract with a provider of goods, equipment, materials or services with a desired delivery time and with specific quantities and prices.
Requisition	Documents the internal review and authorization process; to be secured prior to procuring goods and services. A requisition form initiates the purchasing or contracting process, which will result in the issue of a Financial Commitment document; i.e. Contract, PO, WTO/PAA or Variation.
Risk	An uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives.
Special Purpose Vehicle (SPV)	Is a legal entity (usually a limited company or some type) created to fulfill narrow, specific or temporary objectives. SPVs are typically used by companies to isolate the firm from financial risk. A company will transfer assets to the SPV for management or use the SPV to finance a large project thereby achieving a narrow set of goals without putting the entire firm at risk. SPVs are also commonly used in complex financings to separate different layers of equity infusion. In addition, they are commonly used to own a single asset and associated permits and contract rights (such as an apartment building or a power plant), to allow for easier transfer of that asset.
Strategic Risk	Identified background risks that are outside of the controllable scope of the project team, typically pertaining to external issues such as enterprise-level issues, governance, financial markets, stakeholders, hyperinflation, and regulatory approvals. Managing these risks requires significant effort and influence by the Gatekeeper with external stakeholders. Strategic risk is also referred to as the risk of failure of the general execution plan.

Time and Materials Contract	Provides for acquiring supplies or services on the basis of direct labor hours at specified hourly rates that include raw rate, indirect rates and profit; expenses are reimbursed at actual cost, plus any agreed upon markup or profit on expenses. Resembles cost-reimbursement contracts because they pay the contractor for actual hours worked and for all allowable expenses.
Unit Price Contract	A fixed-price form of contract where a contractor will be paid at an agreed upon unit rate for services performed. For example, bulk excavation will be paid for at the unit price agreed upon. Often used as a means to ensure costs can be controlled and predicted in situations where final quantities may vary depending on final design or on field conditions encountered.
Work Breakdown Structure	A grouping of work elements that organizes and defines all components of the Project. The WBS is a multi-level framework that organizes and graphically displays elements representing work in logical relationships. It divides the entire Project into its component elements in order to establish a framework for effective management control of the Project scope, schedule and budget.

4.0 ABBREVIATIONS AND ACRONYMS

In this document the following terms shall have the meanings set forth below and for clarity are shown with all letters capitalized. The definitions cover the singular as well as the plural.

AACEI	Association for Advancement of Cost Engineering International
CF(L)Co.	Churchill Falls (Labrador) Corporation
DG	Decision Gate
EA	Environmental Assessment
E&O	Professional Errors and Omissions (Insurance)
EPC	Engineer, Procure & Construct
EPCI	Engineer, Procure, Construct & Install
EPCm	Engineering, Procurement and Construction with Management not Construction Management
EPCM	Engineering, Procurement and Construction Management
FEL	Front End Loading
HDD	Horizontal Directional Drilling
HVac	High Voltage Alternating Current
HVdc	High Voltage Direct Current
IBA	Impacts and Benefits Agreement
IPA	Independent Project Analysis Inc.
LCP	Lower Churchill Project
LITL or LIL	Labrador – Island Transmission Link, also referred to as Labrador-Island Link
LTA	Labrador Transmission Assets
MF	Muskrat Falls (Generating Facility)
NE	Nalcor (the Owner)
NE-LCP	Nalcor Lower Churchill Project
NLH	Newfoundland and Labrador Hydro
PMT	Project Management Team
PO	Purchase Order
RFI	Request for Information
RFP	Request for Proposal
RFQ	Request for Quotation
ROW	Right Of Way
SLI	SNC-Lavalin Inc.
SPV	Special Purpose Vehicle
SOBI	Strait of Belle Isle
T's and C's	Terms and Conditions
TL	Transmission Lines
T&DI	Technical and Design Integrity
T&M	Time and Materials
WBS	Work Breakdown Structure

5.0 REFERENCE DOCUMENTS AND/OR ASSOCIATED FORMS

LCP-PT-MD-0000-PM-LS-0001-01	Project Dictionary
LCP-PT-MD-0000-PM-PL-0005-01	Project Governance Plan
LCP-PT-MD-0000-PM-PR-0001-01	Gateway Process
LCP-PT-MD-0000-PM-CH-0001-01	Project Charter
LCP-PT-MD-0000-PM-PL-0001-01	Project Execution Plan (Scope and Approach)
LCP-PT-ED-0000-EP-SH-0003-01	Management Summary Schedule (Phase I)
LCP-PT-ED-0000-EN-RP-0001-01	Basis of Design
LCP-PT-MD-0000-PR-PL-0001-01	Procurement Management Plan
LCP-PT-MD-0000-RI-PL-0001-01	Project Risk Management Plan
LCP-PT-MD-0000-PR-PL-0001-01	Procurement Management Plan
LCP-PT-MD-0000-HS-PL-0001-01	Health and Safety Management Plan
MSD-RI-004	Risk Management Philosophy
LCP-PT-MD-0000-PM-PH-0001-01	Operations and Maintenance Philosophy
LCP-PT-MD-PC-BD-0001-01	LCP Asset Schematic by Project
LCP-PT-ED-0000-EN-PH-0015-01	Design Philosophy for Equipment Criticality, Reliability, Redundancy and Spare Parts
LCP-SN-CD-0000-PM-LS-0001-01	Package Dictionaries

6.0 PROJECT DESCRIPTION

As detailed in Lower Churchill Project – Basis of Design, reference document no. LCP-PT-ED-0000-EN-RP-0001-01, the scope of the physical facilities to be constructed under Phase I of the lower Churchill River development is highlighted in Figure 2 and includes the four projects listed below. In addition, a summary of key project milestones is provided in Table 1 below.

Muskrat Falls Generation

- 824 MW powerhouse with 4 Kaplan turbines and supporting balance of plant
- 5-bay vertical gated spillway with overflow RCC dams acting as secondary spillway
- Temporary construction infrastructure including accommodations complex

Labrador – Island Transmission Link

- HVac to HVdc and HVac to HVdc converter stations and associated switch / filter yards at both Muskrat Falls and Soldier's Pond operating at 350 kV (Note: Approved Project Change Notice PCN-0015 increased the operating voltage to from DG2 basis of 320 kV to the current 350 kV)
- 900 MW Capacity (Note: Approved Project Change Notice PCN-0016 has introduced the required for total system overload for the Labrador – Island Transmission Link)
- 1080 km HVdc Overhead Transmission Line
- Shore / Pond Electrodes at SOBI and Dowden's Point
- 3 Mass Impregnated Cables crossing the SOBI utilizing Horizontal Directional Drilling (HDD) for landfall protection and rock berms for deep water protection
- Island System Upgrades, including three 150 MWar inertia synchronous condensers

Labrador Transmission Assets

- 2 x 315 kV HVac 263 km transmission lines connecting Muskrat Falls Generating Facility and Churchill Falls Generating Facility (Note: Approved Project Change Notice PCN-0018 decreased the operating voltage from the DG2 basis of 345 kV)
- Switchyards at both Muskrat Falls and Churchill Falls to facilitate the connection of the 315kV feed

Maritime Link Project

- As indicated earlier, this Project has been excluded from this document

A general description of these Projects can be found in Section 8.0 of the Project Execution Plan (Scope and Approach), reference document no. LCP-PT-MD-0000-PM-PL-0001-01. In addition, an overall development schedule is contained in Management Summary Schedule (Phase I), reference document no. LCP-PT-ED-0000-EP-SH-0003-01.

Figure 2: Lower Churchill Project – Phase I

Table 1: Summary of Key Project Milestones

Milestone	DG2 Basis	Actual (A)
Gate 2 Approval	Nov-2010	18-Nov-2010 (A)
Award EPCM Agreement for Project	Dec-2010	3-Feb-2011 (A)
Environmental Assessment Release for Generation Project	Aug-2011	
Decision Gate 3 Approval	Dec-2011	
Environmental Release for Labrador-Island Transmission Link	Apr-2012	
Muskrat Falls to Churchill Falls Transmission Interconnect Ready for Power Transmission	Aug-2016	
First Commercial Power from Muskrat Falls	Oct-2016	
Labrador-Island Transmission System Ready for Power Transmission	Jan-2017	
Full Commercial Power Available from Muskrat Falls	May-2017	

7.0 MAJOR CONTRACTING STRATEGY FORMULATION STEPS

7.1 Mandating Nalcor as Development Lead

The Project Charter, reference document LCP-PT-MD-0000-PM-CH-0001-01, clearly defines the goals and objectives with respect to the development of the hydro potential of the lower Churchill River. These goals and objectives strategically anchor to specific policy commitments made by the Government of the Newfoundland and Labrador (GNL) in the Newfoundland and Labrador Energy Plan (Energy Plan), a comprehensive energy policy for Newfoundland and Labrador, released in September 2007.

The Energy Plan envisions a future where "our energy resources contribute to a vibrant and sustainable Newfoundland and Labrador where people are proud to live and work, the standard of living is high, and the environment is protected now and into the future; and to ensure that the people of Newfoundland and Labrador take pride and ownership in our energy resources and strategically develop them in such a way that returns maximize benefits to the Province for generations to come"[1].

Nalcor's role as the development manager of this hydro potential was affirmed in May 2006 by the Government of Newfoundland and Labrador after the completion of an Expression of Interest and Proposals process, which was initiated in January 2005.[2] The objective of this process was to identify potential proponents interested in participating in development of the lower Churchill River resource, while maintaining GNL's commitment of developing the Lower Churchill resource under the best possible arrangement for the people of the Province.[3] This choice was considered "best approach to develop the Lower Churchill hydro resource that would ensure maximum benefits and returns to the people of Newfoundland and Labrador."[4]

The decision for Nalcor to lead the development of the hydro potential of the lower Churchill River is reaffirmed within the release of the Energy Plan and includes the following policy directive relevant to the Project:

- The Government of Newfoundland and Labrador will lead the development of the Lower Churchill Hydroelectric Project, through the Energy Corporation (Nalcor).[5]

These policy directives to Nalcor substantiate the Business Objectives for the Project, which including developing the Project as the least-cost long-term supply of electricity for Newfoundland and Labrador.

Consistent with the above, Lower Churchill Project business unit of Nalcor was established, translating the GNL's objectives of the hydro development into an execution framework

1 Energy Plan, Page 2.

2 Department of Natural Resources, GNL, News Release, 8-May-2006

3 Department of Natural Resources, Government of Newfoundland and Labrador News Release and Background, 10-Jan-2005

4 Department of Natural Resources, GNL, News Release, 8-May-2006

5 Energy Plan, Page 32.

centered on a *modus operandi* directed towards "balancing absolute cost against cost predictability". This statement underscores the fundamental approach taken by Nalcor to develop the Project, including establishment of the contracting approach.

7.2 Implementing the Gateway Process

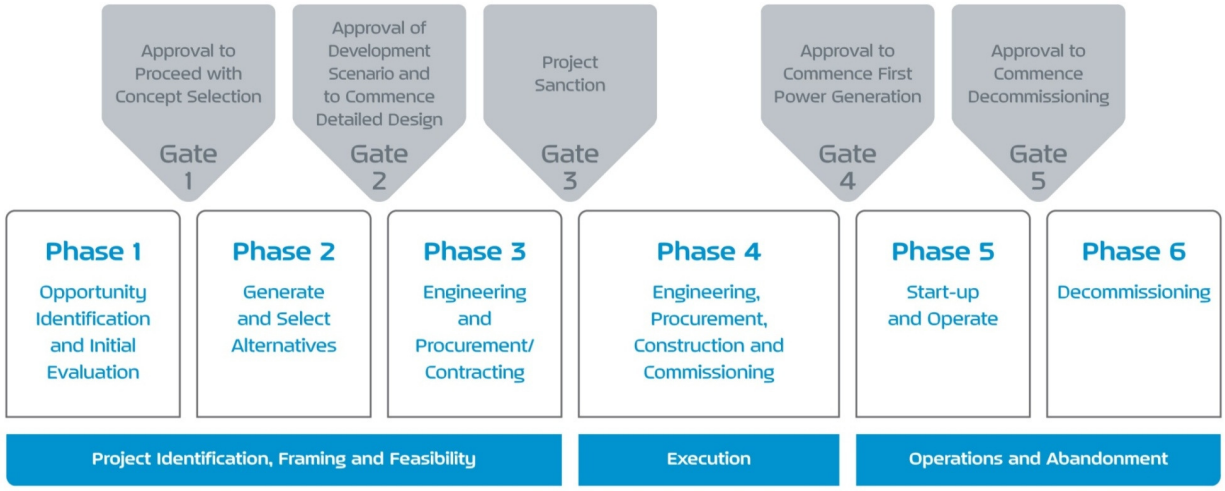
Quality assurance for decision making, as a mechanism to improve project predictability, has been incorporated within the planning and execution of the Project by implementing Nalcor's structured stage-gate process – the Gateway Process, reference LCP-PT-MD-0000-PM-PR-0001-01 Gateway Process.

As depicted in Figure 3, the Gateway Process divides the lifecycle of the Project into several phases starting at opportunity identification and concluding at start-up of the production facility. Each Phase has a list of pre-defined Key Deliverables deemed essential to recommend a risk-informed decision at the end of that Phase, referred to as a Decision Gate, to the Gatekeeper. Stewardship against this implementation approach is a key component in the development of the overall contracting strategy.

The objectives of this Gateway Process include:

- Providing a process to enable best value-adding potential to be captured and utilized;
- Providing a mechanism for the Nalcor Leadership Team to verify readiness to move from one phase to another in a systematic manner during the lifecycle of a project;
- Demonstrating due diligence checks and balances are being applied during the execution of the project; and
- Providing a means to pre-define "readiness" deliverables required for a project to progress from one project phase to the next (i.e. decision gate reviews).

Figure 3: Gateway Process

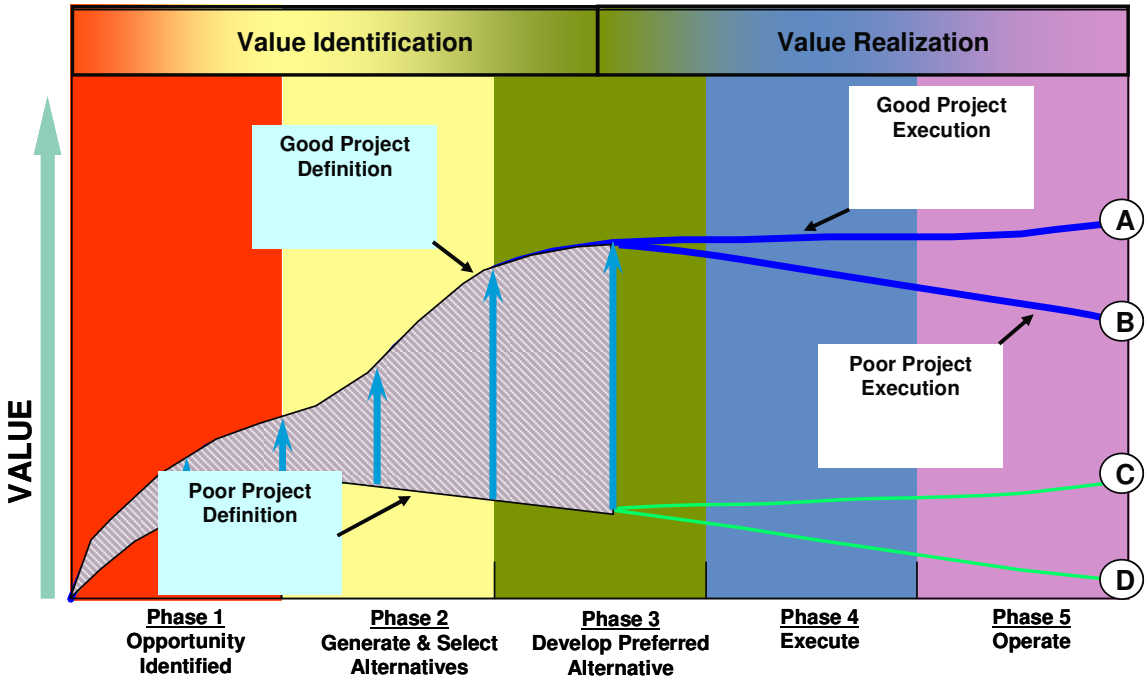


Due diligence reviews are required prior to the decision at each Decision Gate. The due diligence review provides an independent review of the status, progress, plans, issues and risks on each key area of the Project, then integrates these into the overall assessment of project risk exposure. Intermittently within each Phase, independent health checks or checkpoints may be performed in order to confirm that the Project is progressing according to plan.

During Gateway Phase 2, the completion of a significant amount of feasibility-level engineering and project planning work was undertaken. As a result of this work, the overarching Project definition is now in place as detailed in LCP-PT-ED-0000-EN-RP-0001-01 Basis of Design. At the end of Gateway Phase 2, referred to as Decision Gate 2, the decision was made to develop the Muskrat Falls Generation Facility prior to development of the Gull Island Generation Facility, with a transmission link to the Island of Newfoundland (i.e. Labrador – Island Transmission Link) and an interconnection to the Churchill Falls generating station (i.e. Labrador Transmission Assets). This was considered the lowest cost option to meet the island's energy needs. The Maritime Link will be developed as a means to monetize energy not required on the island.

Consistent with best-practice and lessons learned from other mega-projects, the Lower Churchill Project has been planned using a front-end loading approach where concentrated, focussed effort is made to identify value enhancing opportunities that can be realized during the execution phase as illustrated in Figure 4. This is viewed as a key mechanism to ensure capital predictability. One of the key value enhancing opportunities is the selection of the optimal project delivery and contracting strategy method for the LCP. Section 7.4 provides an overview of the Contacting Strategy Evaluation Process used to complete this task.

Figure 4: Value Identification and Realization



7.3 Contracting Strategy Guidelines

The contract strategy outlined in this document has been designed in compliance with Nalcor's Corporate Obligations (*Legislation*), Business Direction (*Mission, Values, Principles & Objectives*) and Governance Structure (*Roles & Responsibilities, Controls & Reporting).* Accordingly, the following has been considered in the development of the contracting strategy:

- Clear alignment between contracting strategy and value drivers for the Project
- Shareholder alignment
- Implications of the Benefits Plan with the Province of Newfoundland & Labrador
- Comprehensive contracting procedures ready for execution phase
- Project work is never to be delayed by Owner contracting activity
- Contracting lessons learned from other projects are learned
- Contract execution will be well tracked and controlled - "no surprises"
- Contracting risks are well understood and will be appropriately allocated and managed
- Commitments made in Impacts and Benefits Agreement with the Innu Nation
- Realistic and anticipated requirements of financial markets

7.4 Contracting Strategy Formulation Process

This *Overarching Contracting Strategy* has been formulated following a typical strategic planning framework, depicted in Figure 5, and includes seven (7) steps:

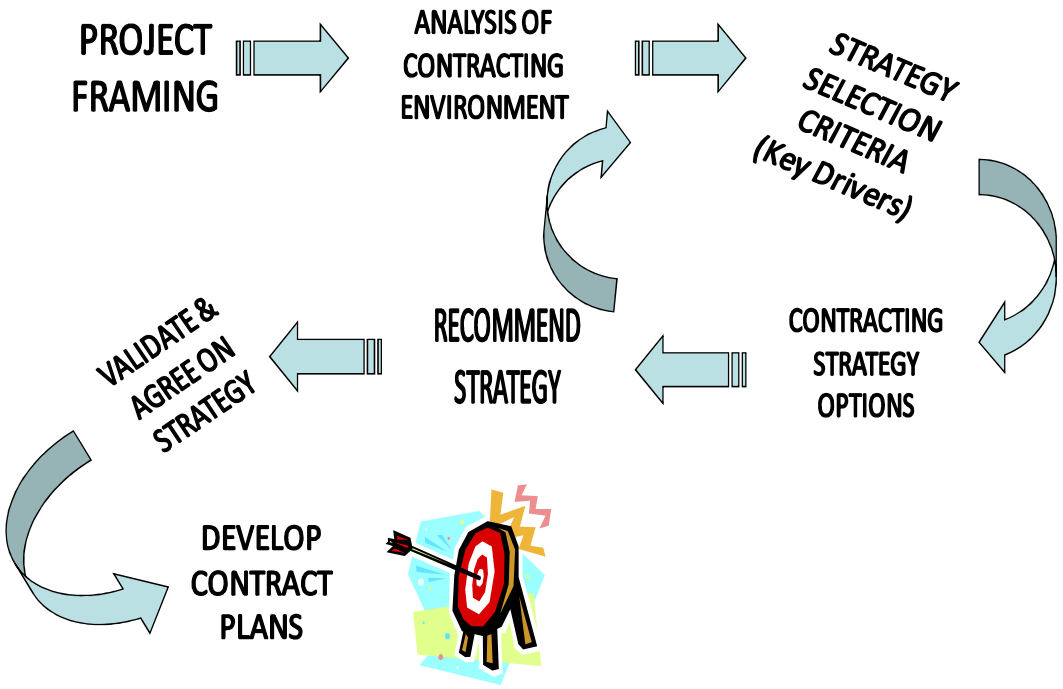
1. Project Framing
2. Analysis of Contracting Environment
3. Strategy Selection Criteria – Key Drivers
4. Contracting Strategy Options
5. Recommend Strategy
6. Validate and Agree upon Strategy
7. Contracting Plans

Implementation of this Strategy Formulation Process involved a two-step decision process.

- **Decision 1**: Selection of the overall contracting model to be used for Project Delivery – use of EPC, EPCM or Integrated Team (refer to Section 9.0 for this decision process).

- **Decision 2**: Pending the outcome of Step 1, selection of the contracting strategy for the physical supply and construction activities (refer to Sections 10.0, 11.0 & 12.0 for this decision process).

Figure 5: Contracting Strategy Formulation Process



In consideration of the framing of the Project into its major Components of work, the Strategy Formulation Process involves an analysis of the current contracting environment including review of past lessons learned from other owners and contractors, input from outside consultants, IPA data and market intelligence. Strategy selection criteria in the form of drivers are then defined and are used to test all contracting strategy options for acceptability. If the various contracting strategy options do not meet the requirements of the selection criteria, a plan to mitigate the risks would need to be put in place in the validation stage. A market validation of the available options can then facilitate the tuning of the final strategy to balance what the Owner desires and what the market is able to deliver.

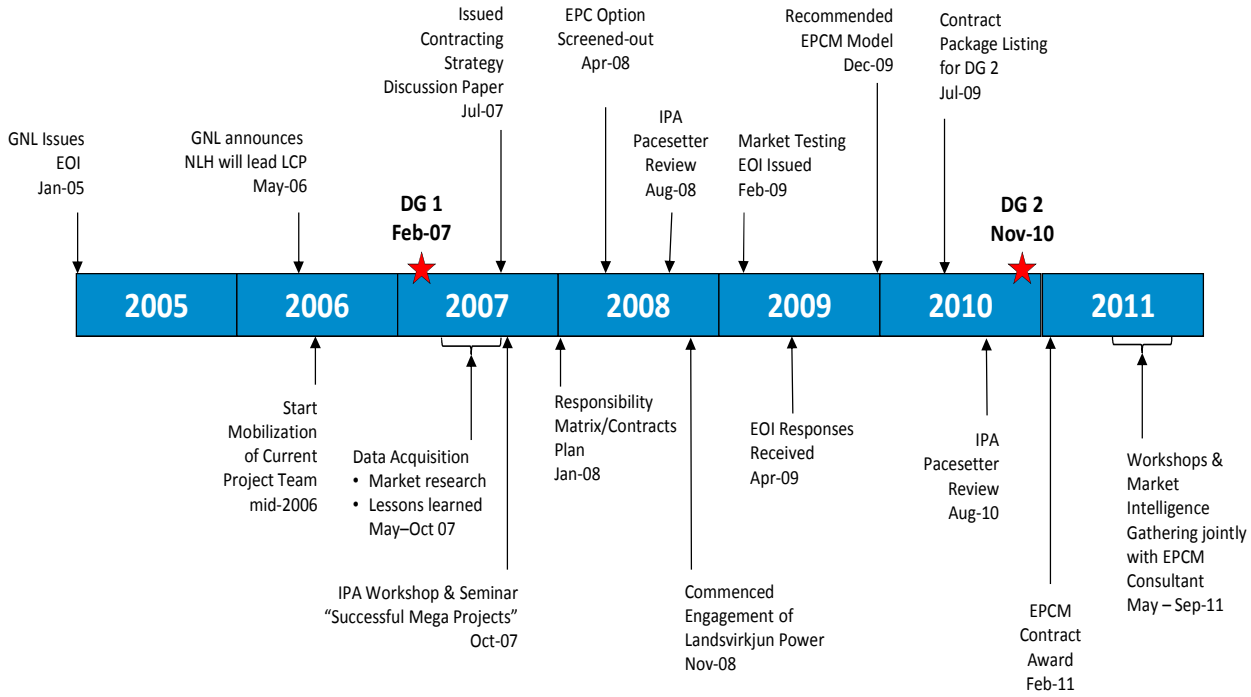
7.5 Major Formulation Steps & Timeline

The major steps in the development of this *Overarching Contracting Strategy* are illustrated in Figure 6 and listed below.

A critical decision made early in the implementation of this process that set the stage for selecting the delivery strategy, was the decision that the LCP would be an Owner-managed project for many reasons, including:

- The strategic importance of the LCP to the Province.
- Project scale, including duration, complexity resulting from the diversity of project scope, and the implications that its development would have on the existing Isolated Island system and Nalcor's balance sheet.
- The need to manage critical interface with existing power generation and isolated transmission system.
- The strategic importance of managing the complexities of establishing the "right" labour Project Labour Agreement, and the potential risks involved if not administered properly.
- The need to strategically manage multiple, parallel environmental assessment processes and ensure minimal hindrance on the LCP execution strategy.
- Ensure all benefit obligations to the Innu Nation and Government of Newfoundland & Labrador are adhered too.
- Ensure complexities and requirements of Project financing, including Federal Loan Guarantee, are managed.
- Manage and mitigate certain risks to balance cost and predictability (i.e. minimize paying premiums for risk transfer).
- Maintain schedule for development without paying a design uncertainty premium or giving up complete design control.
- Ensure the varied construction and design skill sets required to execute the project are done by best in class.

Figure 6: Major Contracting Strategy Formulation Steps



2005

- January: Government of Newfoundland and Labrador issued Expressions for Interests and Proposals for development of the lower Churchill River's hydro potential.

2006

- May: Government of Newfoundland and Labrador announces that it will, through Newfoundland & Labrador Hydro, lead the development of the lower Churchill River.

2007

- February: LCP passes through Decision Gate 1.
- March: Awarded contracts to three engineering consultant firms (Fugro Jacques Geosurveys Inc, Hatch Energy, and SNC-Lavalin) for engineering support services for the Lower Churchill Project.
- Spring: Gathered and consolidated relevant lessons learnt with respect to East Coast megaprojects.
- July: Preliminary contracting and execution strategy unveiled as a discussion paper. Recommended that LCP be an owner-managed project by Newfoundland & Labrador Hydro.

- October: Hosted IPA Megaprojects Seminar. Focused on acquiring recent lessons learnt from megaproject execution.
- October: Meetings with Manitoba Hydro and BC Hydro in Winnipeg to explore hydro project development options.
- December: Westney Consulting Group is engaged as LCP risk consultant to help identify strategic risks that the Project must consider going forward.

2008

- January: Early Contracts Plan and Responsibility Assignment Matrix available.
- April: Based upon key drivers, market intelligence, and lessons learnt Option 3 (EPC) was screened out as a viable project delivery model.
- Spring / Summer: Data gathering to validate recommendation. Met with major industry contractors to hear what they viewed as preferred options to execute the project.
- August: IPA conducted its Pacesetter Evaluation on the Project. Concluded project was well on-track to optimize Front-Ending Loading prior to Project Sanction.
- November: Visited Landsvirkjun Power in Iceland to explore execution approach and gather lessons learnt for Karahnjukar Hydro Project.

2009

- February: Market Testing Expression of Interest (EOI) issued to six (6) companies (Option 1).
- April: Responses received from EOI issued.
- December: Recommendation made to utilize Option 2 (EPCM Model) as preferred project delivery model.

2010

- July: Issued a Request for Proposals (RFP) to engineering and project management companies for the Lower Churchill Project's detailed engineering design, procurement and construction management work (EPCM Services).
- July: Contract Package Listing available for DG 2.
- August: IPA conducted its Pacesetter Evaluation on the Project. Concluded project on-track for "best-in-class" Front-Ending Loading prior to Project Sanction.
- November: LCP passes through Decision Gate 2.

2011

- February: EPCM Services awarded to SNC-Lavalin Inc.
- May thru September: Construction execution and contracting strategy workshops

- September: Performance security strategy workshop
- May thru September: Continued market surveys, contractor interviews, and pre-qualification activities

7.6 Risk Philosophy

With respect to contracting for the Project, Nalcor's approach is to achieve balanced / optimal allocation of risk and liability, which is realistic in today's market and consistent with the Project Risk Management Philosophy, reference document no. MSD-RI-004.

A cornerstone of this Risk Management Philosophy is the view that many risks are multi-dimensional and complex requiring creative solutions. Cost effectively managing risks will require risks to be allocated to the party who is best positioned to manage them through a process of Risk Brokering (see Figure 7). This process of Risk Allocation will be featured significantly through the procurement process for the project's supply and construction contracts.

Forcing contractors to assume all financial risks / liabilities could risk both reduction in competition and excessive cost premiums. Experience has shown that passing all risks to contractors does not ensure completion on schedule or that there will be no claims or cost over-runs. For example, utilizing an EPCM approach and breaking the work into logical contract packages can allow an owner actively managing a project to be pro-active in pursuing mitigation measures as soon as events occur that could jeopardize cost, schedule or performance certainty, thereby reducing the impact and providing greater assurance that cost, schedule and performance requirements will be met. Risk for errors in design, fabrication and installation of equipment will still be passed down to the respective suppliers or to the EPCM Contractor where possible, (i.e., liquidated damages, errors and omission insurance).

Figure 7: Parties to Risk Allocation

The recommended Contract Strategy allows the Owner to be part of the team and have major input into the execution of the project and input into any mitigation plans to reduce project risks. The strategy allows for the Project to be broken down into smaller packages so as to attract sufficient contractors to competitively bid on the work to ensure best value for the Owner. This approach will require more project management by the Owner's team and will improve the likelihood of a successful project from a quality, cost and schedule perspective.

Consistent with Nalcor's Project Risk Management Philosophy, Nalcor has made a considerable effort to strategically de-risk the project with respect to technology selection and chosen execution strategies (see Figures 8 & 9). Going forward, the identification and management of project risks will continue to be a key focus of the management team.

Figure 8: Early Focus on Strategically De-Risking the Project

Achieved	Going Forward
• 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-L, a world class EPCM contractor • Extensive geotechnical baseline • IBA and Land Claims with Innu Nation • Pilot program for Horizontal Directional Drilling to confirm production rates prior to bid • Turbine model efficiency testing program in order to guarantee turbine efficiency and power output	• 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

Figure 9: Building On Proven Technology

MF	LTA	LIL
• Low-head, no penstocks concrete powerhouse founded on Canadian Shield • Proven, model tested Kaplan turbines well within flow and head raqnge • 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

8.0 OVERALL PROJECT DELIVERY METHOD SELECTION

8.1 Introduction

A key initial step in the development of this *Overarching Contracting Strategy* is the selection of the overall project delivery method (i.e. **Decision 1** in Section 7.4). The LCP is not only a mega-project in terms of cost, but it is comprised of diverse physical components, ranging from heavy civil and transmission line construction, river diversion, submarine cable installation, environmental sensitivities and mitigation measures and sophisticated electro/mechanical equipment, all in a harsh and remote northern environment. In addition, the LCP has the added complexities associated with permitting, labour and aboriginal obligations. Due to this size and diversity, it is unlikely that sufficient competition, or best in class skill sets, could be ensured, for any one or group of entities, to develop the LCP on an EPC basis. The configuration of the LCP however, lends itself to the division of the Project into major work elements for project execution, making EPC, EPCM, and Integrated Team approaches all feasible options.

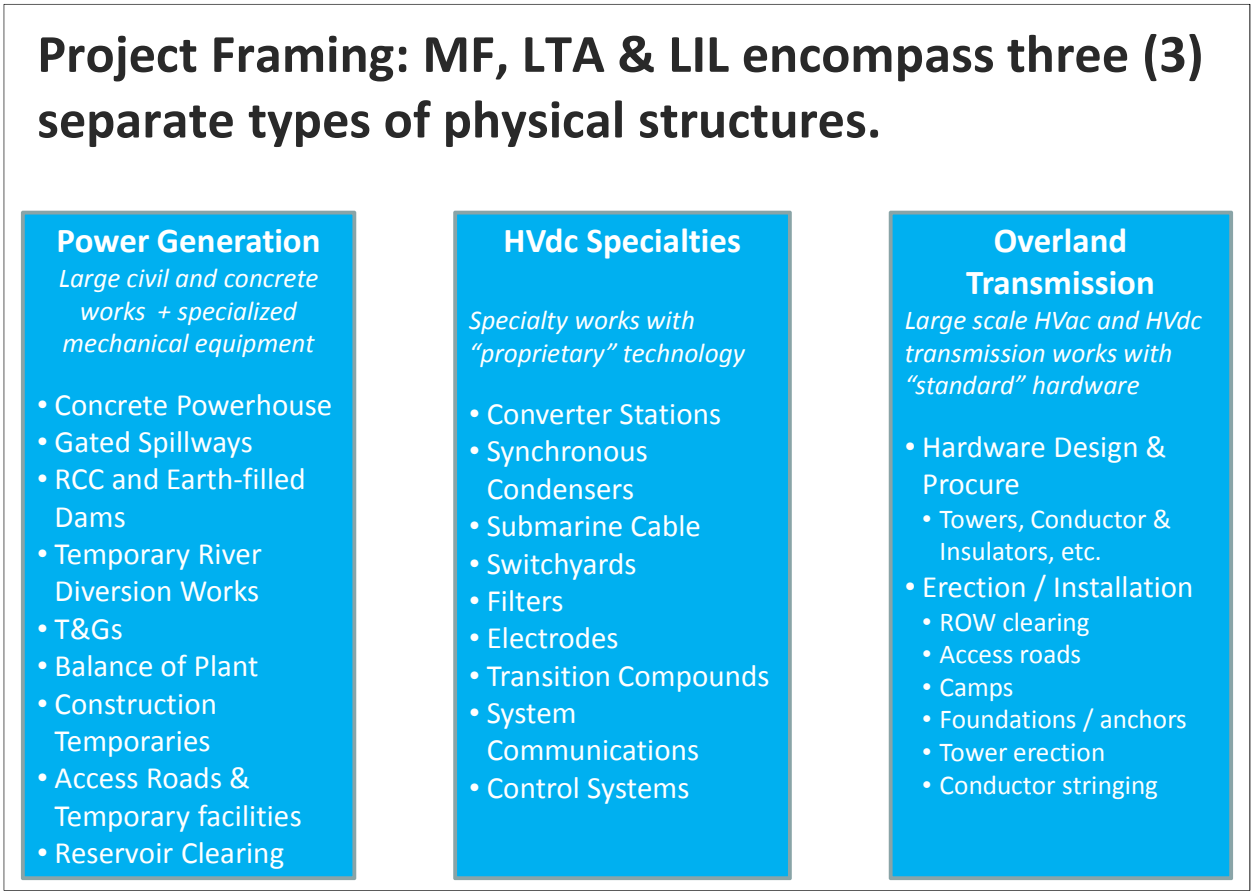
Following a great deal of effort, including research, analysis and consultation, Nalcor selected an EPCM delivery approach for all project components other than the SOBI Crossing, which will be managed directly by Nalcor under a lump sum EPC arrangements.

This Section provides the background and rationale in support of this important decision. It should be noted that to a large extent, the selection of the overall delivery strategy followed the same process and utilized many of the same guidelines, drivers and selection criteria which are also being considered for the contracting strategies within each Project.

8.2 Project Framing

Consistent with the Contracting Strategy Formulation Process, the development of this *Overarching Contracting Strategy* was initiated with the framing of the Project into three (3) major work elements which helped to focus attention on the particular engineering and technical competencies required to deliver the overall project (see Figure 10). These major work elements provide a basis upon which the overall contracting strategy can be developed. It should be noted the HVdc Specialties work has been further sub-divided into two (2) groups to reflect inherent uniqueness of the work, for which Group 2 lends itself to EPC/EPCI contracts.

Figure 10: Project Framing – Major Work Elements



8.3 Analysis of Contracting Environment

A key step in the Contracting Strategy Formulation Process was conducting an analysis of the contracting environment, which encompasses all aspects of the delivery model. In undertaking this key step, Nalcor undertook an extensive investigation, compilation and analysis of lessons learnt and best practices with respect to delivery of power and transmission projects, as well as megaprojects, including those listed below:

- Newfoundland and Labrador (and Atlantic Canada) megaproject execution lessons learnt (i.e. Hibernia, Terra Nova, White Rose, Sable Energy, Voisey's Bay, etc.).
- Lessons learnt from the highly successful development of Churchill Falls Generating Facility lead by Brinco under an EPCM arrangement with Acres Canada Bechtel.
- Hydro development project lessons learnt from across Canada sourced from BC Hydro, Manitoba Hydro, Hydro Quebec (including the SEBJ experience), and Ontario Power Generation.
- Recent international hydro megaproject lessons learnt from Iceland.

- Hydro industry trends in Canada through participation in the Canadian Electrical Utilities Project Management Network Group.
- Mega-project industry trends through the involvement of Independent Project Analysis Inc. and Westney Consulting Group.
- Lessons learnt from various industry associations including AACE International and PMI.
- Insights from Nalcor's financial advisors for the Project – PWC (Pricewaterhouse Coopers) and strategic legal advisor Fasken Martineau DuMoulin

These lessons learnt were augmented by market intelligence gathering from the contracting community. In particular, Nalcor has paid close attention to the lessons learnt from recent large scale projects and from other Canadian power utilities, current market conditions, recent industry trends and market intelligence gathered from a variety of sources, and requirements for project financing. A summary of these findings is provided below. Concurrent with this activity, feasibility level engineering studies and investigations were being performed by three (3) consultants - Fugro Jacques Geosurveys Inc, Hatch Energy (with RSW and Statnett), and SNC-Lavalin, providing key data to reaffirm our views of the capabilities of major hydro and transmission consultants.

Relevant Lessons Learned

- Owner involvement / direction / control is paramount
- Integrated teams are more successful / team integration drives predictability
- Ensure contract size is manageable and does not exceed contractor capability, put interface risk in correct place
- Contractors need to stay within their expertise
- Rigorous Contractor selection process necessary
- Robust Front End Loading (FEL) is a key driver for project success
- Avoid a managing contractor- Owner managed preferable
- Avoid one strategy fits all for the contracting packages as the contracting environment varies between the different scopes of work
- Contractor alignment required
- Process (Gates) need to be followed

Recent Industry Trends

- Recent high oil prices stimulated significant oil sands developments, which, when combined with other mega projects across Canada have resulted in a tight contractor and engineering supply market
- Smaller packages work better
- Commercial Terms and Conditions strongly in favor of the Owner will limit bidder competition and drive costs up

- Mixed commercial strategy recommended - shared risk management between Company and Contractor
- Consolidation of major hydro equipment suppliers
- Limited number of "bankable" equipment suppliers
- In more recent years, to reflect market reality that engineering companies do not now have the necessary permanent staff resources for full EPCM services (most personnel utilized by engineering companies now are project hires / consultants or partners), trend is for the Owner organization to become more of an EPCM organization for mega (including hydro) projects.

Key IPA Published Findings

- Megaprojects with large EPC lump sum contracting schemes fail more often than non- lump sum schemes [6]
- Maintaining continuity of the FEED contractor into the execution does not help, and may hurt. [7]
- Strong, sizeable owner teams actively managing the project are almost necessary for project success. [8]
- Owner's hoping to execute successful megaprojects "on the cheap" will be disappointed. [9]
- Risk premium for large "international" projects is 10 to 15 percent of the base estimate.[10]
- Mandating EPC lump sum to meet government requirements translates into 20 plus percent increase over a non-lump sum EPC. [11]
- Risk premiums tend to increase with onerous local content requirements (e.g. man-hour targets, harsh environments / climate, concurrent large projects in the region, high potential for labour shortages). [12]

- Risk premiums can be significantly reduced by the Owner assuming some of the risk; in particular those risks outside the contractor's control (i.e. strategic risk). [13]

IPA's Cost, Profit and Risk Study was focused towards increasing awareness of the need for Owners to assume more risk in order to achieve their capital cost targets. IPA suggests a number of methods, reference Table 2, to effectively assume and manage risk:

[6] Independent Project Analysts, Contract, Teams and Success in Megaprojects, November 2003
[7] IPA, November 2003
[8] IPA, November 2003
[9] IPA, November 2003
[10] IPA, Cost, Profit and Risk Study, 2006
[11] IPA, 2006
[12] IPA, 2006
[13] IPA, 2006

Table 2: IPA's Recommended Tactics for the Owner to Effectively Assume and Manage Risk [14]

Owner leads permitting tasks	• Maintain a permit tracking register • Work closely with authorities to identify the information required for permits
Owner performs risk identification/analysis methods	• Conduct risk analysis workshops • Identify, develop, and implement risk mitigation strategies • Develop a risk review register that is kept current and is used to monitor and measure the progress of the risk mitigation strategies
Strong owner project controls	• Owner team has the project control resources that can develop control policies and ensure the policies are being applied • Owner frequently reviews progress with an established reporting format
Owner is actively involved in resource planning for labor-short environments	• Owner team conducts labor availability, cost, and productivity analyses • Team discusses and finalizes negotiations with local authorities around labor-sourcing strategy
Develop a detailed owner schedule	• Owner estimate must be detailed, networked, and resource-loaded • The contractor's schedule in the bid package cannot substitute for the owner's schedule
Develop a detailed owner cost estimate	• Cost estimate is detailed enough to thoroughly validate the contractor bids to ensure they are realistic • Studies are performed on the local material and labor prices and on logistics/transportation
Interface management is led by the owner	• Owner develops and executes an interface management plan that covers both internal and external interfaces • Multiple contract packages require adequate planning and resources to effectively manage
Community issues are an owner responsibility	• Owners actively monitor and are aware of community/regional issues that can impact the project • Owners sponsor community programs to provide training/employment • Owners manage government/community expectations regarding infrastructure, local content, and environmentally sensitive issues

[14] IPA, 2006

Lenders Perspective

- Lump sum and EPC type contracts are viewed in the financial markets as providing price, schedule and performance certainty.
- The single EPC approach is not a mandatory requirement in all cases if cost, performance and schedule certainty can be provided by other means to ensure certainty of repayment of loans and a reasonable return on equity – complex mega-projects may require other, more appropriate solutions.
- Incentives, liquidated damages and appropriately allocated risks are viewed as positive factors and help to gain price, performance and schedule certainty – e.g. completion bonuses, LD's.
- Creditworthy, experienced contractors and suppliers with substantial financial and other resources are essential.
- Project Management team (integrator) must have aligned incentives to finish the project on time and on cost targets.
- Engineering, Project Management and Construction Contractors must be experienced and have a solid reputation and name.
- Lenders may be convinced of a delivery method other than EPC but will need to have lender's engineer support and verification that the alternate delivery method is appropriate to effectively manage and control risks, cost, performance and schedule.
- Risks associated with cost over-runs, delays, performance shortfalls and lack of availability must be adequately covered, either by imposing liquidated damages on contractors, by appropriate contingencies and reserves, or by additional available equity.
- Lenders do not like to see changes in delivery approach. It is important to make the appropriate decision on delivery approach and continue to support it.

8.4 Strategic Guidelines

Phase I of the development of the lower Churchill River is a complex megaproject. As a "run-of-river" development with forecast energy value of 4.9 terawatt hours/yr. and a 75 year life expectancy, high availability and maintainability is mandatory and must be built into the completed project.

In evaluating the various delivery approaches available, Nalcor looked for alignment with agreed project drivers and selection criteria as detailed below. For the selection of the overall delivery approach, Nalcor also considered the following important factors:

- Ensuring a balance between absolute cost and cost predictability in order to deliver the lowest long-term cost of energy to meet the Island's energy needs;
- The need to deliver the maximum benefits to the Province;

- Nalcor's total commitment to Safety;
- Complexities of developing a project Labour Agreement, and the potential risks involved if not administered properly;
- Project scale, including duration, complexity, diversity of components & contractor skills, and the required financial capacity of contractors;
- Nalcor's governance requirements, policies and objectives, including the need to demonstrate continued adherence to sound decision making principles as guided by the Gateway Process;
- Tight development schedule, frustrated by weather windows and long lead procurement requirements;
- Aboriginal and Provincial benefits commitments;
- Outcome and timeline risks associated with the environmental assessment process
- Project financing, including prospective Federal Loan Guarantee, guidelines & requirements;
- Interface with existing power generation and transmission system operations;
- Recent industry trends and the level of interest displayed by competent contractors; and
- Nalcor's project management capability, including the technical depth of its resources.

8.5 Strategy Selection Criteria / Key Drivers

Using the above Strategic Guidelines, Nalcor developed a set of Key Drivers to be used as selection criteria in the valuation of the identified alternatives. These Key Drivers were:

- High FEL / Achievement of Project Definition prior to Project Sanction
- Cost & Schedule Predictability
- Design Integrity and Performance
- Alignment with Financial Strategy / Lenders Engineer requirements
- Optimal Allocation of Risk
- Alignment with contractor availability / capability (contractor appetite for megaproject)
- Compliance with the Commitment to Benefits
- Appropriate degree of Project Management by Owner

8.6 Contracting Strategy Options

With great consideration of the key lessons learned, industry trends and marketplace intelligence all available contracting strategy options were considered in the context of the

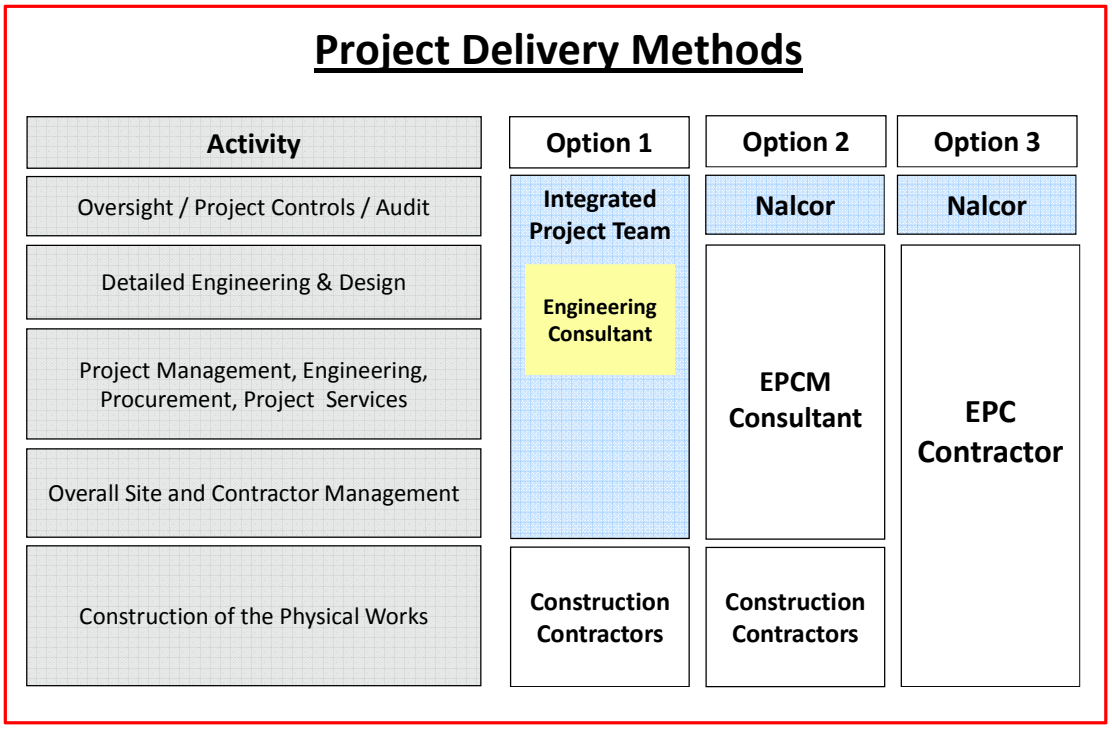
Strategic Guidelines and Key Drivers. From this extensive process, three (3) alternative project delivery options (reference Figure 11) were identified and evaluated:

Option 1: Owner's Integrated Management Team. Fully integrated project management team consisting of Owner, engineering **/** project support contractor(s), consultants and partners. Effectively an Owner's EPCM arrangement.
(Note: This is the arrangement used by Hydro-Quebec for the James Bay La Grande development, referred to as Societe d'Energie de la Baie James (SEBJ)).

Option 2: Owner Managed with an EPCM Contractor. Bid EPCM contract with Owner team managing /monitoring the EPCM Contractor.
(Note: This is arrangement used by Brinco in the Churchill Falls development).

Option 3: EPC(s) (Design Build variation). Based on completed Front-End Engineering and Design (FEED) results (e.g. comprehensive contract functional specifications).

Figure 11: Project Delivery Methods



8.7 Market Validation and Recommended Strategy

The validation of the contracting strategy selected has been performed through screening of international contractors during the period of 2008 and 2009. It was determined through this process that there was little interest within the EPC contractor marketplace for Option 3, creating the risk of no qualified bidders. Further, Nalcor concluded that if an EPC arrangement

could be successfully negotiated, it would attract significant risk premiums, while Nalcor would still have to backstop the identified strategic risks.

Nalcor also engaged Hatch Energy, under its March 2007 engineering services agreement, to undertake a FEED Deliverables study. The objective of this study was to determine the amount of additional FEED engineering that would be required in order to produce the required performance and functional specifications and drawings required for an EPC-type arrangement. Based on the results of this study, Nalcor concluded a decision to pursue Option 3, the EPC Option, would also increase the overall project duration, and thus the first power date.

In consideration of the above, Nalcor elected to focus its forward efforts on Options 1 and 2, including the issue of an Expression of Interest directed towards verifying industry appetite for either of Options 1 or 2. This extensive EOI was issued in April 2009 to six (6) companies: Bechtel, Black and Veatch, Hatch Energy, MWH, SNC-Lavalin Inc., and Washington Group.

The EOI responses indicated that the contractors were very experienced and favoured Option 2, over Option 1, and that Nalcor could leverage the proven methods, systems, processes, procedures of the contractor, rather than requiring Nalcor to develop project-specific methods, systems, processes and procedures as in Option 1. The responses also indicated slackening of resource restrictions that were in place pre-2008 – resulting in greater assurance that sufficiently resourced experienced teams would now be available. Also favouring Option 2, was the reality that Nalcor as Owner was experiencing significant growth which caused some internal competition for a limited resource base, hence the need to best leverage available resources to strategically manage the LCP.

Utilizing the strategy evaluation process described earlier, and in consideration of the above findings, Nalcor determined that the best Project Delivery Approach for the LCP was Option 2, i.e. a Nalcor managed EPCM contractor. This Option facilitates a high-performing Owner team with “management and control” versus “do” mandate, in order to maintain overall control of the Project by focused management of the EPCM Contractor, while placing a significant effort on the traditional owner-lead activities (e.g. financing, environmental assessment, permitting, power sales, regulatory, aboriginal agreements, project labour agreements).

In the EPCM Contract, which was awarded in December 2010, the EPCM Contractor performs engineering, procurement and construction management services. The EPCM Contractor's services commenced well before start of construction and will continue to project close-out. They will be available throughout the construction warranty period. The actual construction work is performed by one or more "Works Contractors" under the direction of the EPCM Contractor.

The EPCM Contractor acts as management representative of the Owner in both procurement and construction management activities. The EPCM Contract recognizes that they will procure materials and equipment on behalf of the SPV who will be the contracting entity for all Works Contracts.

The EPCM model allows the Owner to be more involved in managing project execution, as well as activities such as safety, quality, labour relations, IBA obligations and permitting.

From the market validation it was also verified that none of the contractors responding to the request for EOI had the experience or capability to lead the SOBI cable crossing, which is specialized work. Concurrent with this EOI process, the Project Team was completing a crossing option investigation in order to select the Seabed or Cable Conduit options; a decision was made to use the former option in September 2010. In consideration of the experiences of the EOI respondents, lessons learnt and experiences from East Coast marine installation programs, and in consideration of the need to engage specialist niche contractors for this component, Nalcor decided to exclude this from the EPCM scope and have it executed through a series of EPC / EPCI contracts managed directly by Nalcor.

For the EPCM-led scope, NE-LCP PMT will provide focussed management and control over the overall project and the selected EPCM Contractor. The EPCM Contractor is responsible for the completion of all project engineering and detailed design, construction execution planning, procurement of permanent plant equipment, issue and management of all supply and construction contracts, and overall construction management for the Project, including custodian for the Project work sites, and Project Completions. The contractors will be responsible for the safe, timely and successful completion of their supply or construction.

8.8 Alignment with Key Drivers

A check of the recommended contracting strategy against the selection criteria and key drivers confirms that they are satisfied by the selection of an Owner led EPCM arrangement.

<u>High FEL / Achievement of Project Definition</u>

- The recommended strategy allows LCP team to set the schedule and define the level of definition that best fits:
  - Moving through each gate
  - Contracting strategy for each package
- Awarding construction management contract (under EPCM) early facilitates construction / constructability reviews early - improves cost and schedule predictability
- Recommended strategy will allow Owner to monitor and influence project definition and schedule within contract parameters

<u>Cost & Schedule Predictability</u>

- Strong Owner Project Controls organization is essential for “real-time” cost and schedule control / predictability
- In accordance with the above, achievement of an optimum level of engineering and definition will reduce aggregate risk
- Improved cost performance is best achieved with Owner actively involved in cost oversight and ability to take immediate action to actively mitigate and manage risks that may increase costs or cause delays

- Ensure proper resources (organization) are in place to manage and interact with Contractors
- Ensure right tools and processes are available to Owner's team
- Utilizing a combination of lump sum and unit price contracts will ensure alignment with project estimates and reduce risk of claims

Design Integrity and Performance

- Nalcor will have the ability to provide overall Technical and Design Integrity review of all technical deliverables produced by the EPCM Contractor
- EPCM Contractor will be responsible for overall system engineering function
- One EPCM contractor facilitates more effective management of technical interfaces and consistency in approach to suppliers and contractors

Alignment with Financial Strategy / Lenders Engineer

- Address financing requirements related to appropriate level of cost certainty through optimum level of engineering and definition prior to award of Works Contracts.
- Will engage engineering and support companies with strong reputations to demonstrate credibility in the financial markets.
- Contractor creditworthiness will be reviewed
- Must ensure strong project management team in place
- Ensure financial close requirements are met
- Fewer concerns about Nalcor capability

Optimal Allocation of Risk

- Strategy results in ability to allocate more risk and liability to Consultants through execution responsibility
- Design liability will be with engineering consultants
- Owner to accept some of the execution cost and schedule risk for engineering and construction management in EPCM but likely less than integrated team
- Risks can be managed with Independent Engineer / Expert Review Panels
- Risks for actual construction & equipment manufacturing will be with contractors
- Owner driven Risk Management process and techniques with full team involvement will occur. Better enables culture that supports proactive risk management, particularly identification and management of opportunities.

Alignment with Contractor Availability / Capability (Contractor Appetite for Mega Projects)

- As market testing had suggested, there was strong interest by major EPCM contractors who were qualified and who had the capacity to undertake this project
- Strong competition assured competitive bids and pricing

Alignment with Provincial Policies / IBA Agreement

- Owner will still ensure that all benefits commitments are passed onto contractors and sub-contractors through contractual arrangements.

- The strategy still promotes opportunity for LCP to better avail of existing NL expertise and capability to further embellish the team (ref. offshore industry as an example wherein NL capability is now world-class).
- Still provides opportunity to ensure maximum benefits for Aboriginal groups
- Dedicated team, processes and monitoring still in place to manage benefits commitments

9.0 OVERALL CONTRACTING STRATEGY DESIGN

9.1 Introduction

As detailed above, the first decision in the development of this *Overarching Contracting Strategy* was the selection of the overall project delivery method (i.e. **Decision 1** in Section 7.4). As described in Section 8 above, the decision was made to proceed with a Nalcor led EPCM delivery approach for the majority of work whilst the delivery of the SOBI marine Crossing will be managed directly by Nalcor under a lump sum EPC contract.

The EPCM contract was awarded to SNC-Lavalin Inc. in February 2011 and is currently well underway.

The second decision in the development of this *Overarching Contracting Strategy* (i.e. **Decision 2** in Section 7.4) is the selection of the contracting strategy for the supply and construction activities related to the physical components within each of the Projects. These physical components and their association with their respective delivery method are illustrated below in Figure 12 Overall Implementation Approach.

Additional detail on this approach is provided in the Project Execution Plan (Scope and Approach), reference document no. LCP-PT-MD-0000-PM-PL-0001-01.

Within the context of Nalcor's contract strategy formulation process, and the selected project delivery approach, this Section provides an overview of the parameters within which detailed contracting plans have been established for all physical components of the project.

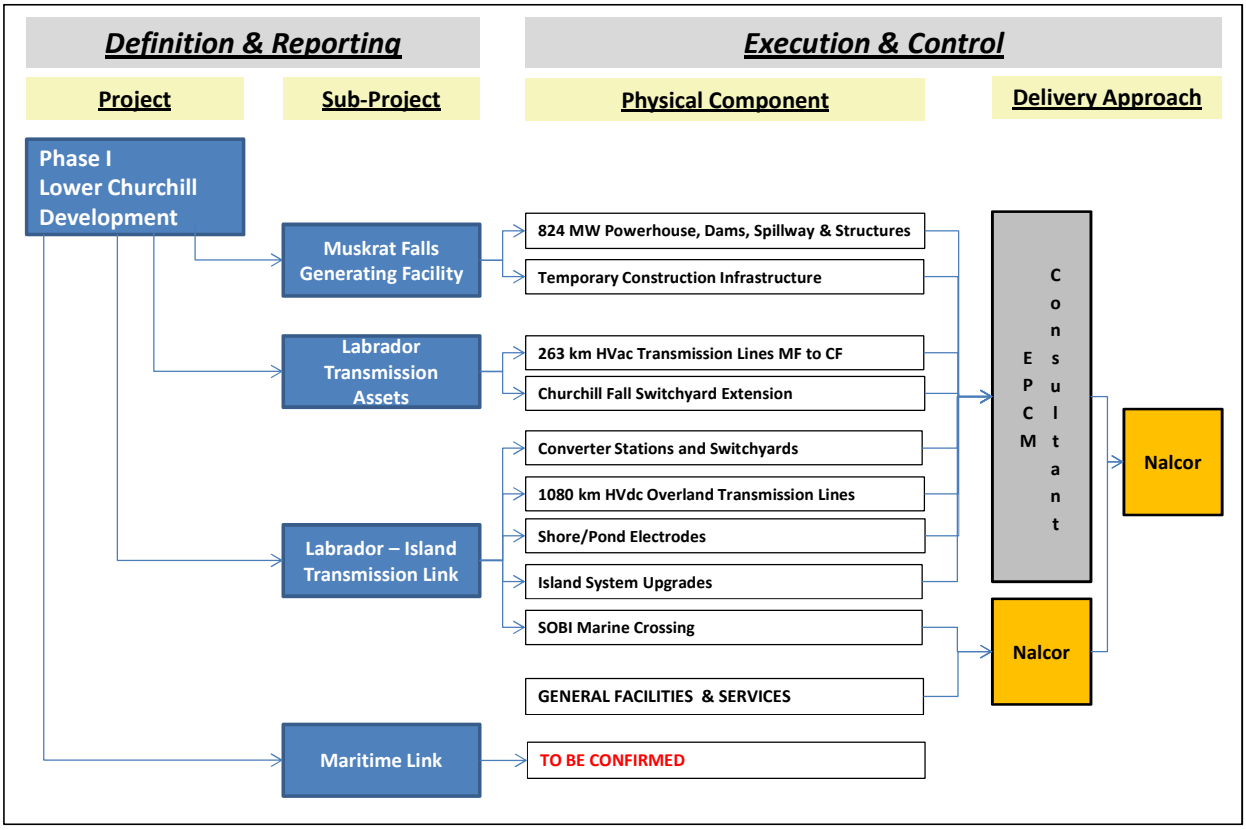
These include:

- General Procurement & Contracting Approach
- Procurement & Contracting Practices
- Contract Types

Details on the specific strategies adopted for major components are provided in Sections 11.0, 12.0 & 13.0.

It is noted that this document does not consider strategies for commercial separation of the work, as will be required by the SPV's. This document should be read; therefore, in the context that commercial separation will be implemented, as required, throughout the procurement process.

Figure 12: Overall Implementation Approach



9.2 General Procurement and Contracting Approach

The procurement and contracting approach to awarding all major contracts and purchase orders is developed and documented in the Procurement Management Plan, reference document no. LCP-PT-MD-0000-PR-PL-0001-01.

In accordance with LCP procurement policies & procedures, procurement activities to provide goods, materials, works, and/or services shall be through competitive bidding in reaching a contract award decision; unless a clearly defined and approved justification exists for using other sourcing methods. The competitive bidding method is based on the most economically advantageous tender, or value, considering cost, schedule, risk allocation, quality, safety etc.

The most economically advantageous bid criteria takes into consideration not only the economical offer but other factors such as acceptable technical solutions, quality and functional characteristics, local content, delivery, cost effectiveness, health, safety and environmental impact.

Nalcor will develop appropriate sources of supply of goods, materials, works, and/or services through the establishment and on-going review of qualified contractor and supplier lists.

Nalcor intends to maximise the use of standard contracting and procurement documents to ensure compliance with all Nalcor's finance, tax, legal, quality, support and control requirements, and the highest reasonable guidelines for environmental protection, health and safety and consistency of contractual requirements, obligations and liabilities.

Nalcor will purchase directly (through the EPCM contractor) a number of items that are either critical or involve large sums, in order to achieve the following benefits:

- Access to better economic conditions resulting from bulk purchasing power
- Reduce risk of schedule delays due to late delivery (in particular for long lead items)

In addition Nalcor may establish some frame agreements for the supply of selected items/material included in EP, EPF and EPC contracts, so as to guarantee uniformity in critical components (for maintenance, operability, etc.).

The main critical items to be purchased directly by Nalcor (through the EPCM consultant) include the following:

- Turbines & Generators
- Spillway, Intake & Powerhouse Gates
- Balance of Plant Hardware
- Transformers
- Converter Stations
- Transmission Tower Steel
- Transmission Line Conductor
- Insulators

9.3 Procurement and Contracting Practices

These practices have been developed to achieve satisfactory completion of all work within the schedule and to provide the maximum degree of protection of funds for the Project.

The basic contracting policies are influenced by the location, geography and climate of the project area, by the size of the project, and by the long distance transportation and communications requirements.

These policies are intended to:

- Ensure satisfactory completion on schedule and at the lowest cost compatible with quality and performance requirements, providing the maximum possible protection of capital and revenue.
- Response to market conditions prevalent in the contracting and supply community (e.g. capacity restrictions).
- Require contractors and suppliers to perform work or to furnish materials, equipment, plant and services principally on a fixed price or a unit price basis; cost type contracts are avoided whenever possible.
- Require contractors and suppliers to assume those business risks which they can define within reasonable limits including, but not limited to, material, construction

equipment charges, labour utilization and productivity, normal job risks and working conditions in the project area.

- Require contractors to coordinate their work with each other and minimize interface risks.

To implement the basic policies, contracting practices have been adopted:

- To generate and maintain the maximum degree of interest in the work by contractors and suppliers to encourage the greatest possible response from qualified bidders to invitations to tender. Achievement of this objective is facilitated by arrangement of work in contract packages which are dealt with in detail later in this section.
- To secure proposals for work on the most economic and realistic basis possible by providing as much bidding information as possible to prospective bidders. To this end, work is scheduled as necessary to obtain information and site data which will facilitate accurate bidding.
- To award the greatest possible proportion of contracts on a fixed price basis, although a considerable number have been awarded on a unit price basis and a few highly specialized items have been negotiated.
- To provide conditions and safeguards for performance, quality and reliability through carefully developed contract documents and specifications, and by effective administration of construction.
- To provide community and camp services which are compatible, within practical limitations, to normal living conditions in centres of employment.

9.4 Specific Contract Provisions

The above noted contracting policies and practices are implemented by providing the following provisions in the contract documents:

Escalation

For most contracts, where the amount of escalation in costs can be predicted, the full risk of cost escalation is assumed by the successful bidder. In a limited number of instances, where cost variations cannot be accurately assessed, as on long-term material supply and permanent equipment contracts, escalation and de-escalation provisions are incorporated in the contract. Such provisions are tied to cost indices which reflect variations in price level experienced by the contractors relative to bid prices.

Currency

Due to the nature of this work, it is expected that all suppliers and construction contractors will be international entities. While Canadian or US Dollars are Nalcor preferred currencies, proposals will be accepted in the Bidders preferred currencies. Currency risk will be evaluated by the corporate finance group and included as part of the proposal normalization process. In the event of award in a foreign currency the corporate finance group will take necessary measures to mitigate currency risk.

Taxes

Materials and equipment for the permanent works are exempt from the HST. Statutory exemption from provincial gasoline taxes and other provincial and municipal taxes is being considered by the Project.

Mobilization Payments

To take into account actual costs incurred by contractors for mobilization, payment for this phase of the work is specified in the contract documents to offset costs as they are incurred. To manage cash flow and protect Nalcor's interest, payments to contractors or suppliers in advance of performance of work is kept to a minimum.

Progress Payments

Full payment is made only after valuation and acceptance of completed work by SLI and/or Nalcor. Monthly progress payments are made for the value of work performed during each month on construction contracts, less a 10 percent retention (holdback) required by the Mechanics' Lien Act of Newfoundland. Where the accumulated retention would develop into a significant financial load on the contractor which, if anticipated, would inevitably be built into the bid prices, holdback may be reduced by Nalcor where the nature of the work is such that the amount of the holdback retained is out of all proportion to the exposure and risk of liability to claims of liens. Such contracts may contain a provision that, on completion of 50 percent of the work and subject to satisfactory performance by the contractor, payment may be approved for the full amount without additional deductions for the builder's lien holdback. Alternatively, contractors may be allowed to post letters of credit or early release of holdback bonds from an approved surety as security in lieu of and to stand in place of the builder's lien holdback, which is a common practice on many mega-projects.

Payment for materials and equipment obtained under purchase order or purchase contract is normally made only after delivery. Progress payments are, however, allowed for in cases where substantial manufacturing costs must be incurred over an extended period prior to delivery.

Performance Security

Nalcor's strategy for requiring performance security is designed to match available tools to the particular risks of the individual procurement contracts and packages. Procurement packages are categorized as: a) construction, b) equipment and fabricated material supply, c) commodity supply, and d) services. Each contract will be assessed as to degree of importance based on the following criteria;

- Estimated cost/budget: Is there certainty of design, quantities and conditions that lend themselves to a fixed price and completion date? What is the risk of extras or extensions of time, or will contractor build large contingencies for overruns? Will nature of progress payments potentially result in contractor overbilling for work actually supplied in the event of defaults, particularly if contractors require large mobilization payments?

- Criticality of meeting the schedule: What are the consequences of a contractor default putting the project off schedule? What damages can be recouped through the performance security.
- Replace ability of the contractor/supplier: How easily and quickly can the contractor or supplier be replaced? Will there be sufficient balance of contract funds available to replace seamlessly or will a loss or material delay result?
- Operational performance requirements of the contract: what are the consequences of an output gap or deficiencies in design or product performance? Will there be permanent adverse effects on the project?

Nalcor's Performance Security Strategy (see Figure 13) for each contract will consider these factors as well as address the following:

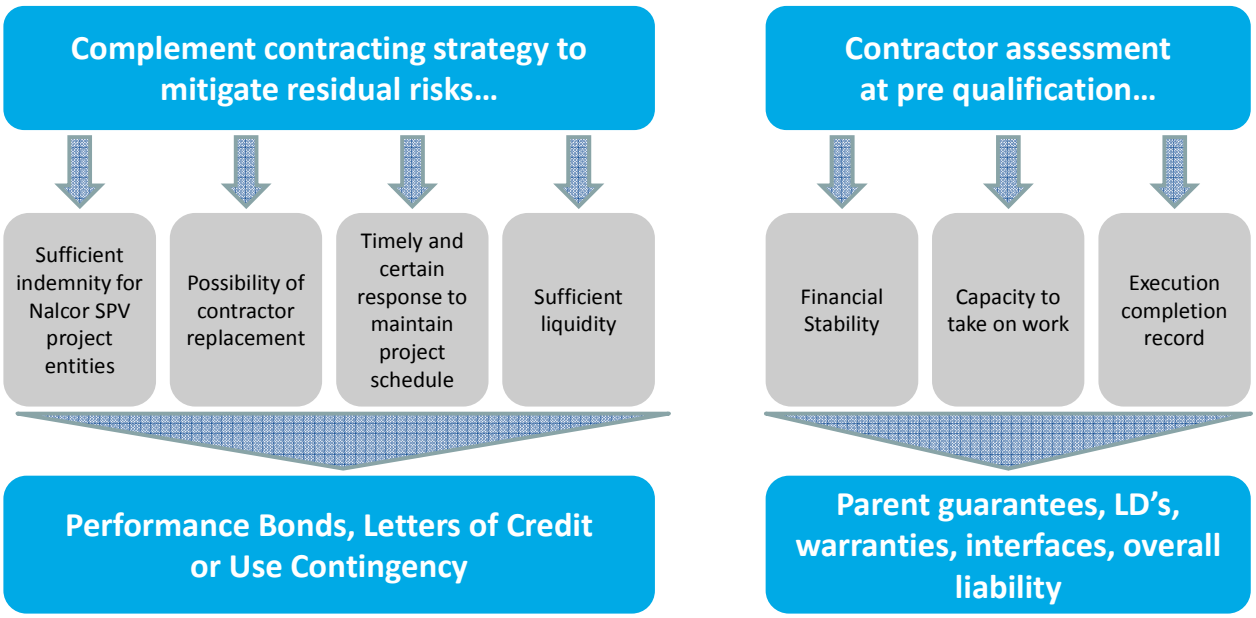
- Magnitude of potential loss to SPV on default and sufficiency of contractual indemnities.
- Availability and timing for obtaining replacement contractor if necessary.
- Extent of any potential delays to scheduled date for First Power.
- Liquidity

To guarantee satisfactory performance of each contractor's obligations at the contract price, performance security (a surety bond or a financial instrument such as a letter of credit or bank guarantee) and payment security (a labor and material payment bond or financial instrument) will be required on each construction contract except in unusual circumstances, such as contracts having a low value and risk.

To further mitigate the risk of potential contractor default, tenders will not be invited "at large" from the industry but only from those contractors who have, through a pre-qualification process, demonstrated they have, among other things, sufficient financial stability, available financial capacity, resources, experience and financial capital to successfully complete the contract. Only contractors who meet the requirements of LCP's Contractor Creditworthiness Evaluation Procedure, reference document no. LC-PPT-MD-0000-F1-PR-0003-01, will be eligible to bid for the contract, and the type and amount of security required will be assessed based on the risk profile of the contract based on a set of documented criteria. In addition, even though pre-qualified, the bidder selection process will further evaluate risk exposure and, if necessary, adjust the performance security required from the contractor if awarded the contract.

The type of performance security presently contemplated to be required for different contract packages is given in the Tables in subsequent sections of this document (e.g. Table 5 in Section 11.5).

Figure 13: Performance Security Strategy



Liquidated Damages

Provision for liquidated damages is incorporated in specific contracts to ensure satisfactory performance and to encourage on-time completion of work, or to compensate Nalcor for losses and costs incurred due to unsatisfactory performance, late completion or failure to meet guaranteed outcomes. Such provision is made only for contracts which lend themselves to this type of treatment, where the nature of the work and its control are amenable to this approach, and where bid prices will not be adjusted upwards to include a contingency substantially equal to the maximum liability for liquidated damages. Alternate means to provide incentives for early completion and for meeting performance guarantees will be examined contract by contract.

Warranties and Performance Guarantees

To ensure that equipment meets specifications, suppliers are required to give performance guarantees on such equipment wherever practical. Normal warranties of workmanship and that equipment and materials be free of defects are required from contractors and suppliers to avoid costs arising from defective work and to emphasize the need for reliability. Particularly strong warranties and guarantees are required for the turbine-generator units.

The following warranty provisions are included in the bid documents, contracts and purchase orders:

(a) A warranty for one (1) year after final acceptance of construction work against defective materials, workmanship and equipment, and the same warranty on remedial work and replacement equipment;
(b) A warranty against all defects in items procured on purchase orders; and

(c) A warranty for five (5) years after commissioning of each turbine and generator unit against defective design, materials and workmanship and the same warranty on remedial work and replacement equipment.

In addition to the warranty in (c) above additional guarantees are obtained for the turbine-generator units, as follows:

(a) Guarantees on a bonus-liquidated damage basis for: Completion to schedule; and Reliability of generating units for the first two years of operation, during which period malfunctions of such equipment are normally discovered.
(b) Guarantees on Output and Cavitation performance: Output of generating units will be guaranteed, with liquidated damages assessed on any shortfall; and Cavitation performance of turbines will be guaranteed, with obligations to repair or pay repair costs or liquidated damages for cavitation pitting damage in excess of specified limits.

The normal trade warranties obtained in the industry are typically available at no additional cost, although the one year warranty on remedial work and replacement equipment has led to slightly increased costs.

Insurance

Nalcor's project insurance strategy followed the analysis of the risks associated with the project and review of the various insurance protections available to mitigate such risks. The strategy results in a balance of risk control and risk financing as part of ongoing risk management exercise. During project execution, the team will employ risk control techniques including loss prevention, loss reduction and risk transfer. Loss prevention and loss reduction will be the ongoing focus of the projects risk management program. Some risks, however, will be contractually transferred to a third party, e.g. a subcontractor or other parties to the contract.

As depicted in Figure 14 below, one insurance program will be in place serving all three SPV's, providing phased coverage as the project progresses.

Figure 14: Insurance Strategy

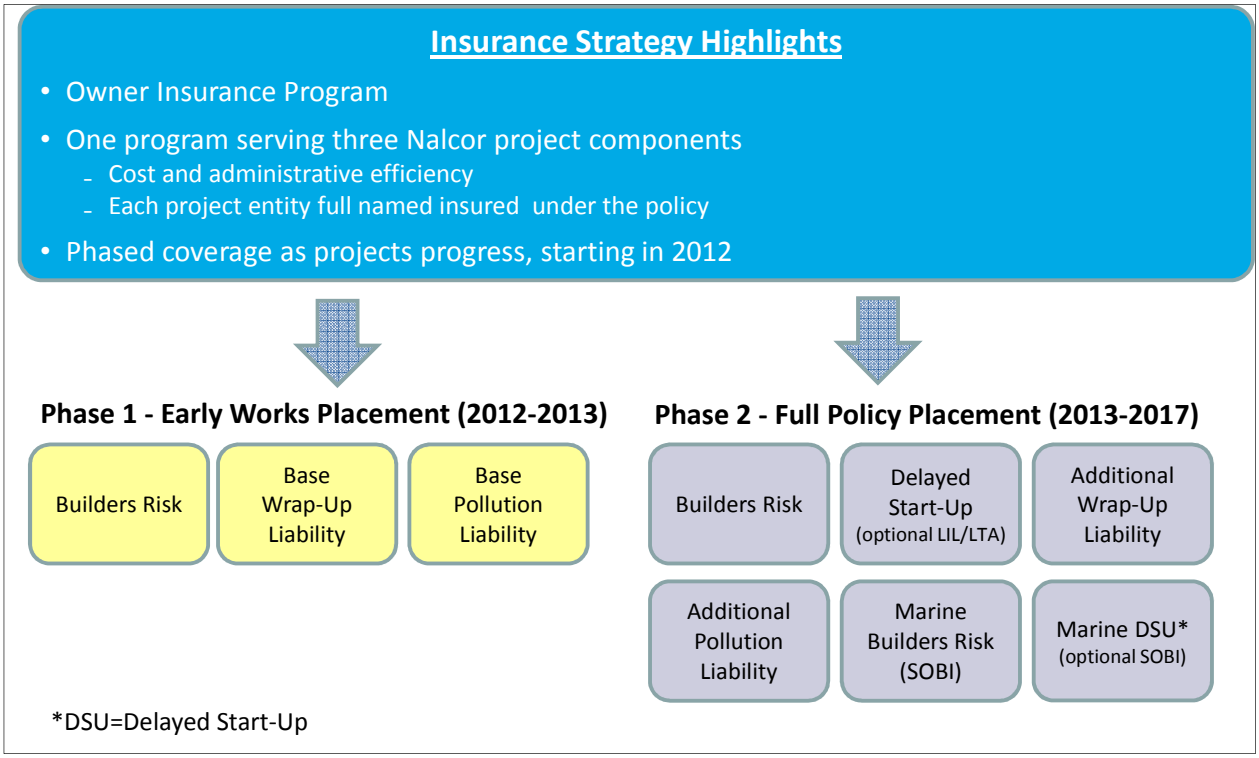


Figure 15: Insurance Approach

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

Default Provisions

To avoid delays, Nalcor has the right, in the event of any material default in a contractor's performance, to take over the contractor's plant and the performance of the work or to terminate a contractor's contract.

Subcontracts and Assignments

The prime contractors are expected to perform most of the work with their own forces, but the principle of limited subcontracting is accepted. To ensure that only qualified subcontractors are employed, intended subcontractors must be listed in the prime contractor's tender so that they may be approved prior to contract award. No other subcontractors may be employed without approval of SLI and Nalcor.

Patent Indemnity

Contractors and suppliers are required to indemnify Nalcor and SLI from claims arising from patent infringement.

Differing Site Conditions

To eliminate allowance for excessive contingencies in bids and reduce the likelihood of claims being made for differing site conditions, provisions are made in construction contracts for price adjustment in the event that the cost of performing work is increased or decreased due to changed or unknown conditions.

Benefits / Preference Commitments

Nalcor has negotiated an Impacts and Benefits Agreement (IBA) with the Innu Nation. To comply with Nalcor's obligations to the Innu Nation under the Impacts and Benefits Agreement, several work scopes have been targeted for awards to the Innu Nation of Labrador either via main contracts directly with Nalcor or via subcontracts with a prime/main contractor. These contracts include:

- Muskrat Falls Accommodations Complex
- Muskrat Falls Main Site Access Road
- Muskrat Falls Site Preparation and Utilities Services
- Catering and Janitorial Services
- Medical Services
- Security Services
- Site Ground Transportation
- Air Services
- Camp and Building Maintenance
- Sewage and Garage Disposal

Nalcor has also developed a Benefits Strategy with the Province of Newfoundland and Labrador and commitments made in that strategy will become obligations of the Contractors as well, including monitoring and reporting of benefits.

These agreements have influenced the current Contracting Strategy in several ways, including the configuration (size and scope) of the contract packages where commercially reasonable.

All construction contracts are expected to have a high level of local content achievable either through sub-contracts to local companies or employment of the local and provincial workforce by the awarded contractor.

Health, Safety and Environment

Another key consideration in the development of the LCP contracting strategy is Nalcor's commitment to undertake its business in such a way as to minimize the risks of injury or ill health to people and damage to property or the environment. It is therefore Nalcor's requirement and expectation that every contractor associated with the Project shall play their part in the implementation of the LCP occupational health and safety management strategy.

All contracts negotiated for the LCP will include explicit requirements with respect to contractor's commitment to HSE and specific deliverables to be provided under the agreement.

Bulk Materials and Services to Contractors

Limited bulk materials and supplies will be made available to contractors at the site at fixed prices, while the contract packaging scheme is designed so that most bulk materials and supplies required by only one or two contractors will be included in the scope of their contracts and they will be obligated to make some of the materials and supplies available to other contractors (e.g. Portland cement will be provided by the Powerhouse contractor). Materials and supplies provided by Nalcor / SLI will be arranged to the extent feasible and economical and include diesel and gasoline. Procurement and distribution are handled generally through commercial suppliers selling directly to the contractors. This supply system affects economics by avoiding duplication of contractors' purchasing and administrative organizations, multiple shipping and handling facilities and possible delays in delivery.

9.5 Contract Types

Descriptions of the types of contract which are contemplated for execution on the LCP are provided below. The selection of the lump sum, unit price and other forms of contracts follows normal construction practice.

Lump Sum Construction Contracts

These can be considered when:

- Designs, specifications and drawings are complete;
- Scope is completely defined; and
- Quantity variation is negligible.

The lump sum contract amount is subject to variation only for changes in scope or for changed conditions which occur, or become evident, after contract award.

Unit price contracts, with a guaranteed maximum price, are included in this category. In these cases, where the upper limit of quantities can be determined with sufficient accuracy to assess a guaranteed maximum, the contract is usually amenable to treatment on a lump sum basis

with more straightforward contractor competition and bid analysis. These have the attraction of obtaining the maximum degree of commitment of final overall cost

In the work covered by unit price contracts, discussed below, substantial portions are firm since to all intents and purposes they cover work on which quantities will be fixed at the time of contract award. Examples are the Bulk Excavation contract with defined pay items. These items have been considered under the Unit Price Contracts discussion below with the unit price contracts of which they are a part, in accordance with normal contractual procedures.

Lump Sum Design, Supply & Install Contracts

Major contracts for the supply of permanent equipment covers the design, manufacture transportation, installation and commissioning.

These contracts will be negotiated with firm pricing, and include performance guarantees backed by liquidated damages.

Procurement Items

Nalcor, through its EPCM consultant, will procure under purchase orders and firm price contracts, certain items of plant and permanent equipment.

Unit Price Contracts

Contracting on a unit price basis is often used in the construction industry. In these cases the basic scope and specifications must be well defined. Often however, quantities cannot be exactly determined since they are dependent on specific local conditions which become known only as the work progresses. The unit price contract concept, therefore, requires the contractor to be responsible for the unit costs of the various work items but not for the risk of quantity variation.

As noted above, portions of the work covered by unit price contracts can be considered as being firm when they cover work where quantities will be fixed at the time of contract award.

Other Types of Contract

It has been considered desirable to award, insofar as it is practicable, all contracts on a lump sum or unit price basis where the only variables would be scope changes and /or, in the case of the latter, quantity variation.

Where circumstances require however, other contract forms, such as reimbursable, cost plus, target price and other combinations, will be considered.

9.6 Contract Types

A summary of the packages by notional contract form is provided below in Table 3. This table groups the packages by major construction contracts, major procurement packages, and other packages (includes smaller value purchase orders and various service packages).

Attachment B.1 contains a summary listing of the packages.

Table 3: Package Contract Count by Notional Contract Form

SPV	Major Construction Contracts by Type			Major Procurement Packages	Other Packages	Total
	Lump Sum	Combination Lump Sum & Unit Price	Unit Price			
Muskrat Falls Generation	6	7	4	3	45	**65**
Labrador Transmission Assets	n/a	3 (1,2)	n/a	9 (1,2)	3	**15**
Labrador – Island Transmission Link	3 (1,2)	8(1,2)	n/a	9 (1,2)	7	**27**
Common (3)	n/a	1	n/a	n/a	11	**12**
Total	**9**	**20**	**4**	**21**	**65**	**119**

(1) Packages will have provision for award of separate contracts by geographical location which could result in additional contracts. Division of packages will not result in additional interface issues due to separate geographical locations.
(2) In some cases, packages may also be split to differentiate scope between SPV's.
(3) Contracts which span all Projects and which are inappropriate to split between SPV's are classified as Common.

9.7 Considerations Applied to Achieving Maximum Extent of Lump Sum Contracts

Throughout the consideration of the basis on which contracts should be awarded, emphasis has been placed on the desire to obtain the maximum degree of firm price commitment at as early a date as possible and to the extent economically feasible and practicable.

At this point in the Project, substantially all of the electromechanical contracts are in the lump sum or firm price categories while all of the civil structures, dams, and earthworks are in the unit price category with lump sum provisions for portions of the work wherever feasible. The governing criteria in practically all cases have been the degree of quantity variation inherent in the work. There is a practical limitation to the extent to which work can be covered by lump sum or firm price contracts when the scope/subsurface conditions are not completely defined.

The Project team believes that contract payment on the basis of unit prices for work involving the possibility of substantial variations in quantity has proved to be more practical and economical than payment terms on a lump sum basis. It is largely a matter of the contractor's approach to the tender with respect to risk.

A typical approach can be illustrated by taking as an example a case where quantity variation is a factor, as it generally is in channel and major excavation and associated construction work. The contractor, in determining a lump sum bid, will normally add a contingency to its estimated bid price of from 15 to 25 per cent of the aggregate of his unit prices on quantities set out in the tender documents. Thus, if there is an under run of quantities or if the percentage of quantity overrun is less than the percentage of the added contingency, the cost to the Owner will be higher for the lump sum contract than for work performed on a unit price basis.

Furthermore, if the overrun on a lump sum contract exceeds 15 to 25 per cent of the engineer's estimated quantities, the contractor will, in most cases, seek additional compensation for changed or latent conditions claimed to have been unknown to him at the time of tendering and, therefore, beyond his control. Experience has shown that even in the case of a "No Change" contract, every effort will be made by a contractor who has experienced a substantial variation in quantities to justify his claim on the basis of misrepresentation of site conditions by the Owner.

Another factor to be considered when weighing the advantage of lump sum contracts is the tendency of the contractor to build up contingency even though the bid items are firm and quantities are precisely defined based upon a specific design. In these cases, it is expected that the contingency established by the bidding contractor is at a level significantly in excess of the aggregate contingencies assigned to unit prices for identical work.

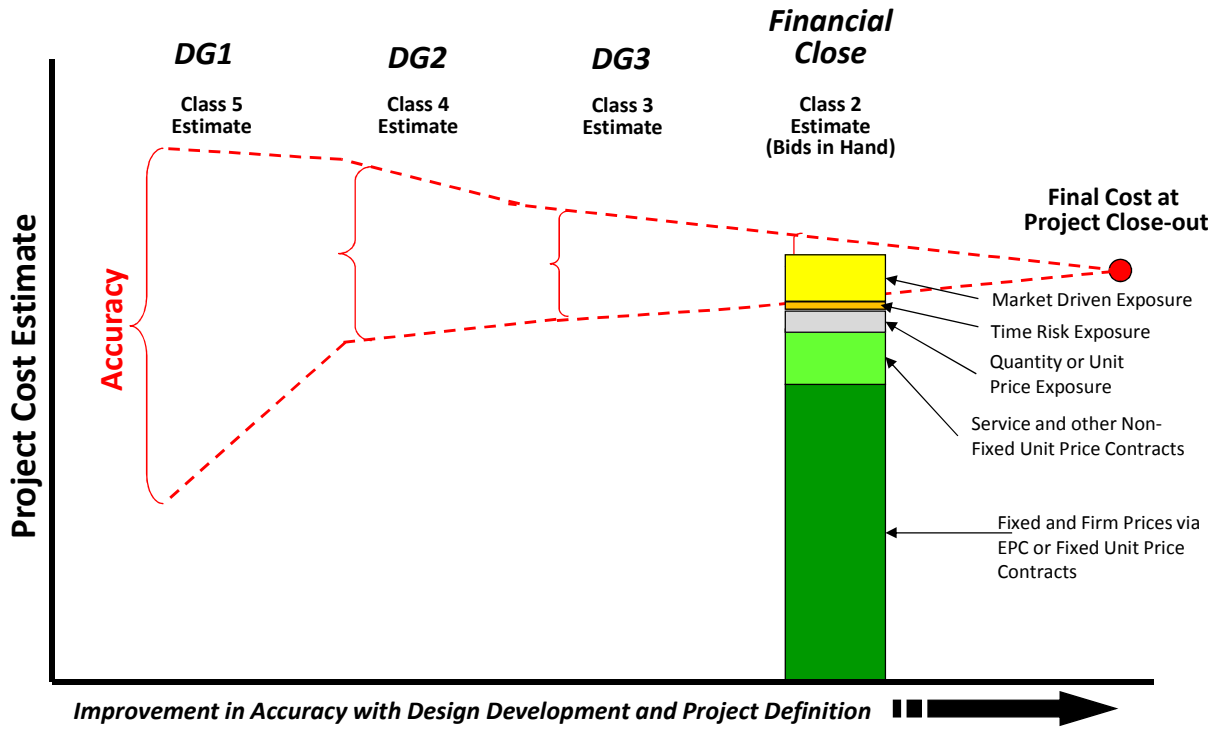
When appropriate, unit price contracts will be evaluated in terms of the “cost penalty” associated with converting them to lump sum contracts. The "cost penalty" is an estimate of the excess of the contractor's contingency allowance for work on a lump sum basis over the contractor’s corresponding unit price contingency allowance.

9.8 Considerations with respect to Achieving Cost Certainty at Financial Close

As indicated in Figure 16 below, this contracting strategy will result in the variability associated with the DG3 cost estimate being largely been removed at Financial Close. In general at Financial Close, the estimate will be of Class 2 quality, with the majority of the overall project cost be confirmed via both fixed and firm price-based contracts, thereby providing a high level of confidence in the integrity of the capital cost estimate. The remaining cost exposure for lenders at this point, from greatest to least, will be:

- Market driven exposure
- Quantity driven exposure
- Time driven exposure

Figure 16: Cost Estimate Accuracy at Financial Close



10.0 EPCM CONTRACTING STRATEGY

10.1 Introduction

As described above, the decision for Nalcor to lead the development of the hydro potential of the lower Churchill River is reaffirmed within the release of the Energy Plan by the Government of Newfoundland and Labrador. Consistent with this objective, Nalcor decided to select an EPCM contractor for assistance in the execution of some elements of the LCP. The selection process was initiated in February 2009, when Nalcor issued an Expression of Interest (EOI) to six engineering and project management companies in order to determine their interest in bidding for the Lower Churchill Project's detailed engineering design work. From there, Nalcor selected three companies to receive a Request for Proposal (RFP).

In December 2010, after extensive analysis and a thorough decision process, Nalcor issued a letter of intent for the engineering, procurement and construction management (EPCM) contract to SNC-Lavalin Inc. The EPCM contract includes some elements of Phase I of the Lower Churchill Project, specifically the Muskrat Falls Generating Facility, Labrador Transmission Assets, and the Labrador – Island Transmission Link. The contract does not include the Strait of Belle Isle subsea crossing or the Maritime Link.

SNC-Lavalin Inc. offers the world-class engineering, procurement and construction management experience required for a project of this magnitude. Their specialization in hydroelectric developments, transmission, HVdc and civil works will be critical to the successful construction of the Lower Churchill Project.

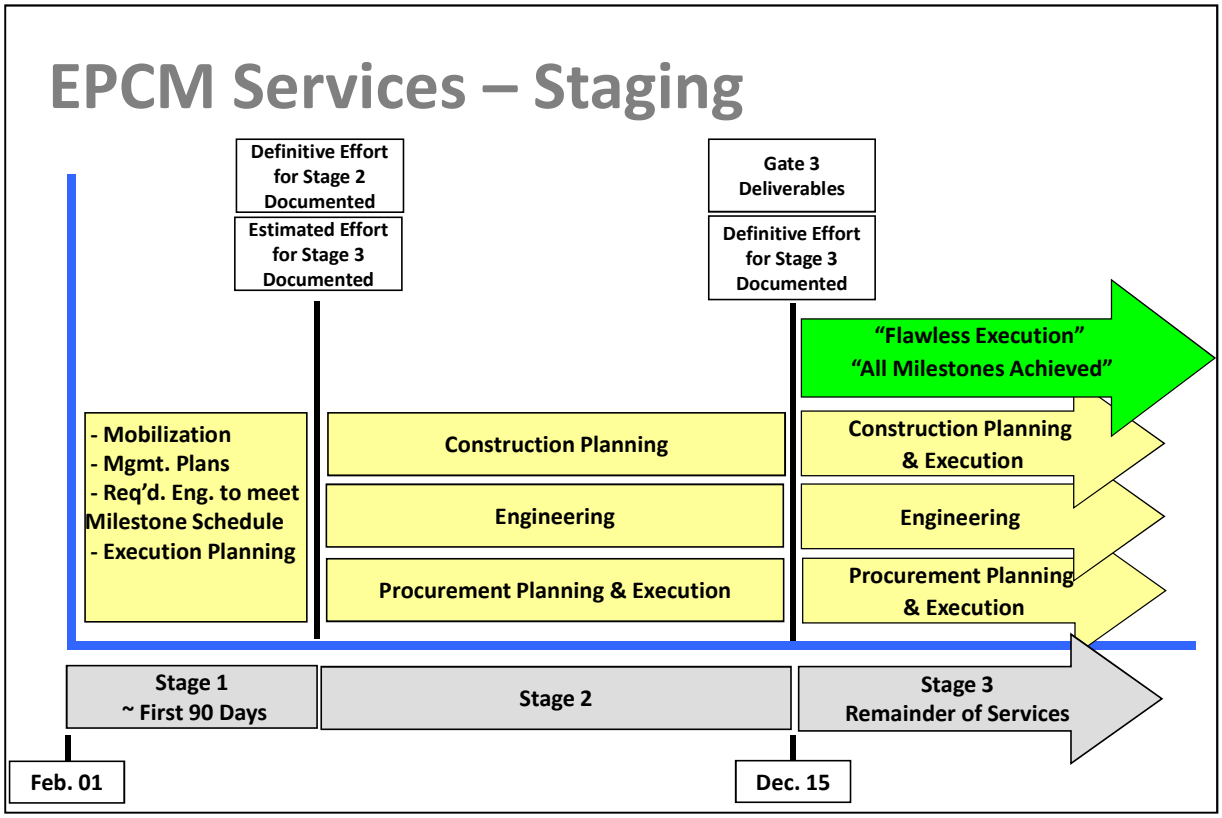
10.2 Scope of Work

The EPCM Services Agreement is comprised of three (3) distinct stages, each with key objectives:

- Stage 1 – Mobilization of the Services
- Stage 2 – Decision Gate 3 Key Deliverables
- Stage 3 – Balance of Services

Consistent with the requirements of Gateway Phase 3, Stages 1 and 2 are crucial to completing the prerequisite amount of engineering, procurement planning, and construction planning in order to achieve **Flawless Execution** (i.e. all cost & schedule milestones achieved) during the construction phase. Figure 17 illustrates this approach.

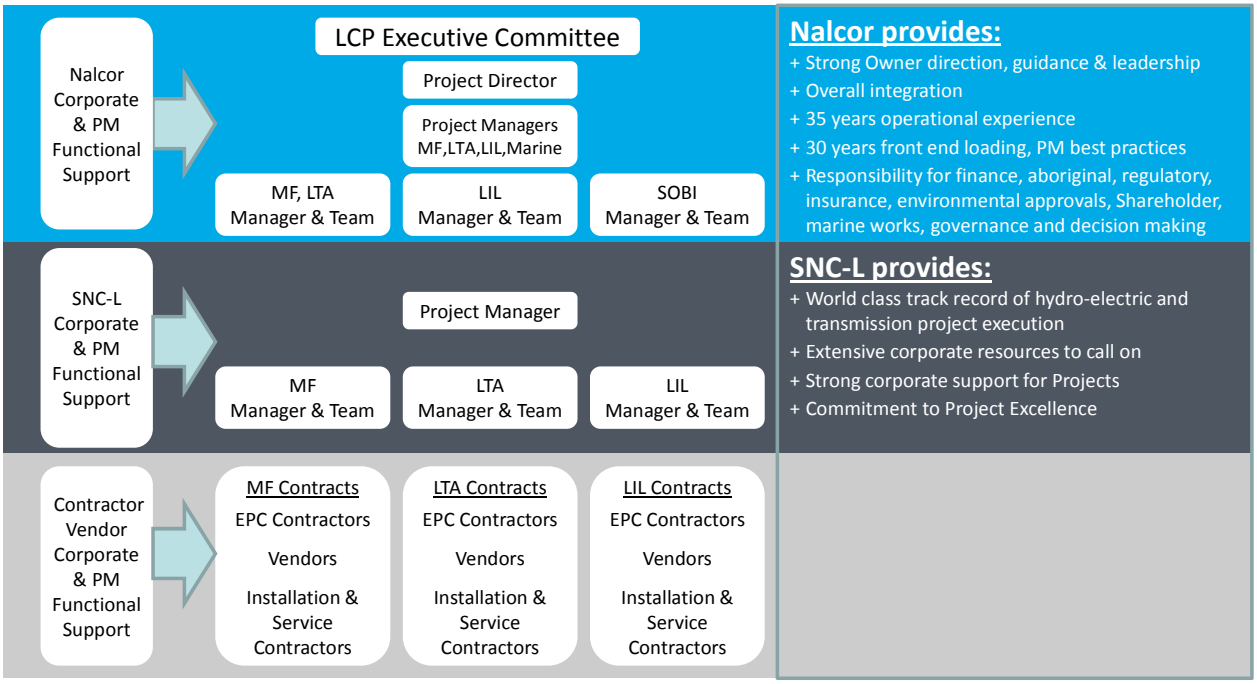
Figure 17: Delivery Strategy for EPCM Services through Staging



For the EPCM-led scope, NE-LCP PMT provides focused management of the overall project and the selected EPCM Contractor, as illustrated in Figure 17 below. The EPCM Contractor is responsible for the completion of all project engineering and detailed design, construction execution planning, procurement of permanent plant equipment, issue and management of all supply and construction contracts, and overall construction management for the Project, including custodian for the Project work sites, and Project Completions. The construction contractors will be responsible for the safe and successful execution of their work in accordance with their contracts and approved safety programs, while the suppliers are responsible for delivery of goods and services for the Project. In addition to requiring the contractors and suppliers to coordinate and manage their interfaces, those interfaces will also be managed by the EPCM Contractor for everything other than the Strait of Belle Isle Crossing where the interfaces within the crossing are managed by Nalcor.

A more detailed listing of scope of work and related roles and responsibilities between Nalcor, the EPCM contractor and EPC/EPCI contractors is contained in Attachments B1 & B2 of the Project Execution Plan (Scope and Approach), reference document no. LCP-PT-MD-0000-PM-PL-0001-01.

Figure 17: Overall Nalcor / EPCM Contractor Interfaces and Responsibilities



10.3 Strategic Guidelines

On most similar large scale hydroelectric developments in Canada, power utilities/Owners have adopted a delivery approach where they maintain the overall management and control of the engineering, procurement and construction (e.g. Hydro Quebec and Manitoba Hydro). They have found that this approach is more likely to result in a completed project where specifications, functionality and overall quality standards are consistent with the utilities' operational requirements. Under an EPCM approach, Nalcor will play a key role in ensuring the completed project meets all stakeholder expectations set out for LCP.

The following key benefits will result from a Nalcor managed EPCM approach:

Schedule and cost

An EPCM allows for sufficient front end loading to mitigate many design risks and thus provide a sufficient balance between cost and schedule certainty and predictability.

A significant schedule advantage is foreseen over an EPC approach, which could not be bid effectively until after a comprehensive FEED Phase is completed. This could have added approximately eight (8) months or more to the overall project schedule. With an EPCM approach, there will be less risk of schedule delays in the start of construction and in equipment delivery, as all long lead items will be procured by Nalcor either during FEED or as the relevant engineering and definition is completed.

The award of separate construction contracts under an EPCM will allow Nalcor to benefit from economies linked to a reduction in contractor risk (better definition of smaller scopes of work & more advanced engineering) and expected lower prices due to increased market competition, including possible international participants.

Design Integrity & Performance

The LCP is a large complex project. As a "run-of-river" development with a forecast energy value of 4.9 TWh/yr and a 75 year life expectancy, high availability and maintainability is mandatory and must be built into the completed project. A Nalcor managed EPCM approach will provide tight control over all design and performance specifications.

Further, given the complexity of the total system, the EPCM Contractor will be responsible for overall system engineering and integration, such that the system meets operating and performance expectations. Having this critical activity under the responsibility of a single entity is considered essential and adds merit to EPCM approach.

Other Requirements & Obligations

The Nalcor PMT will take a lead role to make sure that governance requirements, Aboriginal and Provincial benefits commitments, strategic labour agreements (i.e. Special Project Orders), environmental & other permitting, Federal Government loan guarantee guidelines & requirements, and the interface with existing power generation and transmission system operations are all properly managed and that Nalcor's total commitment to Safety is never compromised.

Flexibility to add Maritime Link Project

The award of an EPCM contractor provides Nalcor and Emera Energy with access to an established entity that can be leveraged to support feasibility and FEED stage work for the Maritime Link Project, thereby ensuring tighter overall integration.

Special Purpose Vehicle (SPV) Interface Management

The physical assets of the three SPVs are separate, distinct and have clear battery limits. Managing and coordinating the interfaces between the three projects is thus primarily one of coordinating a small number of technical matters required for their inter-connection to allow the three completed projects to operate as a single, integrated whole. The appropriate management of interfaces between the SPV's is critical to ensuring revenue generation for each of them and primarily technical, so utilizing an EPCM approach with the same engineer for all three SPV's, even if through separate contracts with each SPV, drastically reduces risks associated with potential system incompatibilities.

Although the EPCM approach was selected for delivery of the Muskrat Falls, Labrador Transmission Assets and Labrador – Island Tranmission Link Projects (excluding the SOBI Cable Crossing), it is understood that overall Nalcor management is required to fully capitalize on the EPCM approach. To address two areas of concern, the risks associated with contractor performance and the management of interfaces, Nalcor has planned the following actions and mitigation measures :

- Conduct Expert & Cold Eyes Reviews during design & execution. These will include technical, commercial and legal reviews
- Frequent Technical Workshops with the team including identification and mitigation of risks, management of interfaces, technical reviews, constructability reviews
- Frequent Commercial Workshops with team including contract administration, audit, claims, burden of proving fault
- Proactive Interface management role including workshops with contractors
- Robust contract terms & conditions (obligation to cooperate and mitigate, common practical arrangements like access protocols, consolidated dispute resolution, Letters of Credit, Bonding, Holdback, LD's)
- Risk/Reward schemes with EPCM
- Risk/Reward schemes with Contractors, shared bonus pool for "total" outcome
- LD's with EPCM
- Strong Owners team to provide EPCM oversight, especially for design integrity
- Contract packaging tested to ensure optimum strategy
- Although a sound working relationship with EPCM Contractor is established, maintain synergy through teambuilding efforts
- Project focus on planning & management of issues/risks
- Develop optimum Insurance strategy
- Award EPC contracts where it makes sense (i.e. Turbine/Generator, Converter Stations).
- Complete FEED to a high level to establish quantities and increase cost predictability

10.4 Compensation Structure

Compensation of the EPCM Contractor is based on a combination of Lump Sum, and Reimbursable costs.

For the execution of EPCM services up to completion of the deliverables required for Decision Gate 3, compensation is Reimbursable, as follows:

- Personnel Rates are quoted, and approved, based on:
  - Direct Cost for each employee
  - Payroll Burdens
  - Office Overhead
  - Fixed Fee per hour (incl. Corporate OH)
- All other costs not included in the above

For the execution of EPCM services following completion of all Decision Gate 3 deliverables and continuing to Project completion, compensation will be a combination of Reimbursable for all costs as above, with a Lump Sum Fixed Fee. The Fee rate has already been set based on the existing Contract.

Nalcor will review the benefit of a risk/reward scheme prior to Decision Gate 3. Any scheme will address the following:

- Major Milestones achievements
- Final Performance in relation to target cost, HSE performance, and schedule

10.5 Current Status

Contract Status In progress
Contractor: SNC-Lavalin Inc.
Contract Value: $ 300 to 400 million CDN
Location: St. John's and other Project Work Sites within Newfoundland & Labrador

SLI's immediate focus has been on completion of final feasibility studies and essential engineering and procurement activities to support a start of Early Works at Muskrat Falls following the release from environmental assessment. During Gateway Phase 2, Nalcor had already undertaken the detailed engineering for selective site infrastructure facilities referred to as Early Works (e.g. accommodations, access roads, communications and construction power).

Gateway Phase 3 culminates at Decision Gate 3. During this phase, Nalcor with SLI will complete the level of Project definition (i.e. engineering design, procurement and construction planning) in order to demonstrate that Key Deliverables of Gate 3 have been met. These Key Deliverables include a Class 3 Estimate (as defined under AACEI cost estimate classification system) and equivalent detailed schedule for the Project.

Full Project Sanction will occur following the completion of all deliverables required for Decision Gate 3. Project Sanction will trigger the start of Gateway Phase 4 and the award of purchase orders for major permanent plant equipment that have not already been committed to maintain the Target Milestone Schedule, and contracts for the start of major civil construction works. Concurrent to the start of early construction activities, the remaining engineering, procurement and contracting activities will be completed. Early in Gateway Phase 4, a Class 2 Cost Estimate (as defined under AACEI) and commensurate detailed schedule will be produced by Checkpoint 1, as defined in the Project Milestone Schedule.

Gateway Phase 4 ends at Decision Gate 4, which signifies a readiness to commence production of electricity, where all system completion activities have been completed and the generation and transmission facilities are ready to be transitioned to the receiving operations organization. Nalcor will lead the overall Completions activities for the Project as well as establish a Ready for Operations organization who will prepare to progressively accept the plant systems as completed, culminating at Decision Gate 4.

11.0 MUSKRAT FALLS GENERATION CONTRACTING STRATEGY

11.1 Introduction

As indicated in the Overall Contracting Strategy section, the Project will, with the exception of the Strait of Belle Isle (SOBI) cable crossing, be executed utilizing an Engineering, Procurement and Construction Management (EPCM) delivery method.

For Muskrat Falls Generation, the EPCM Contractor is responsible for the completion of all project engineering and detailed design, construction execution planning, procurement of permanent plant equipment, issue and management of all supply and construction contracts, and overall construction management for the Work, including custodian for the Project work sites. The construction contractors will be responsible for the safe and successful execution of their work in accordance with their contracts and approved safety programs, while the suppliers are responsible for delivery of goods and services for the Project.

This Section provides details on the currently envisioned primary contract packages. The overall contract package breakdown will be revisited and updated throughout Gateway Phase 3 in order to produce an updated overall contracting strategy and contract list for the Project as a Decision Gate 3 deliverable.

It should be noted that to a large extent, the selection of the contracting strategies detailed in this Section followed the same process and utilized many of the same guidelines, drivers and selection criteria which were considered in the selection of the overall delivery method (see Section 8). Accordingly, they are not duplicated in this Section.

11.2 Scope of Work

As detailed in Basis of Design, reference document no. LCP-PT-ED-0000-EN-RP-0001-01, Muskrat Falls Generation will be sited 285 kilometers downstream from the existing Churchill Falls Generating Station. The remotely controlled 824 MW Muskrat Falls Generating Facility will be comprised of the following physical components:

- Site access road from the Trans-Labrador Highway.
- Accommodations Complex for 1500 persons and associated site facilities and services for the planned construction program.
- Construction power tap from the existing 138 kV transmission grid.
- Reservoir preparation and fish habitat compensation facilities.
- A close coupled intake and powerhouse, including:
  - A north roller compacted concrete (RCC) overflow dam, 32 m high x 430 m long with upstream and downstream concrete facing, concrete overflow crest designed for 4 intakes with gates and trash racks,
  - 4 concrete lined water passages,

- 4 Kaplan turbines with generator units at 206 MW each with associated ancillary electrical/mechanical and protection/control equipment
- 8,000 m^3/s flow, and upstream and downstream cofferdams
- A south RCC dam 29 m high x 330 m long, with upstream and downstream concrete facing and concrete crest
- River diversion during construction via natural river channel for first three years and via the spillway for subsequent years
- Gated Spillway – including:
  - Approach and discharge channels,
  - 5 submerged gates
- Stabilization works on the North Spur at Muskrat Falls

As detailed in Figure 18, the Muskrat Falls site has some very favourable conditions, which will lead to reduced construction risk and hence is a strategic consideration in the packaging strategy.

Battery limits for the Labrador Transmission Assets are detailed in the Lower Churchill Project Asset Schematic by Project, document no. LCP-PT-MD-PC-BD-0001-01.

Figure 18: Muskrat Falls Site Characteristics

MF Capital Cost is Driven by favourable Construction Characteristics

Key Element	Muskrat Falls Site Characteristics
Geotechnical Conditions	• Competent bedrock (Canadian Shield) exposed / near surface • Minimal overburden to remove and dispose • Conditions validated by comprehensive site investigations, thus limited exposure with respect to quantity growth

Physical Layout	• No peripheral structures (i.e. 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 (Intake , Powerhouse, Spillway, Aux. Dams)
	  • 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 (i.e. Spillway) rather than expensive temporary structures (e.g. Diversion Tunnels)
	• Conventional equipment (T&G sets, gates, cranes)
	• Access by road from Trans-Labrador Highway

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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11.3 Strategic Guidelines / Considerations

The general construction approach under EPCM management will be to optimize the number of contractors working on site in consideration of contractor capability, the number of interfaces created, and to accommodate market conditions, including contractor capacity. Where applicable, individual contracts will share common resources, services and infrastructure (e.g. accommodations, transportation services, fuel, etc.) managed by the EPCM Contractor.

In dividing the Project into discrete contract elements careful consideration has been given to the construction and financial capabilities of the heavy construction industry. The proposed scope of work to be included in each contract has been selected to provide a logical sequence of activities to meet the project scope and schedule with a minimum of interference and minimal, or alternatively, clear and well defined interfaces, between one contract and another. The scope of the packages and type of contract utilized is designed to allocate risk with the party in the best position to handle it and to provide the greatest possible protection of project capital by:

- Attracting the maximum number of qualified bidders.
- Increasing competition for successive contracts among contractors who are mobilized to site or who have contracts for future work which cover mobilization costs.
- Permitting each contractor to concentrate his most competitive approach to bidding on the limited package scope best suited to his experience, equipment and capacity (i.e. earthworks only for earthworks contractors and electrical only or electrical contractors).
- Optimizing the level of risk to be assumed by each contractor. When the contract scope of work is not subject to change a Lump Sum Contract would be the most suitable whereas excavation quantities, which could be subject to change, would have a unit price contract as the most suitable.
- Encouraging a closer control of contract supervision by having the camp, offices, lay-down areas, warehouse, etc. in close proximity to the actual worksite
- Minimizing any risk associated with the late turnover from one segment to another segment of the work and reducing or eliminating potential for claims from multiple contractors
- Reducing both the level of commercial and execution uncertainty, resulting in enhanced cost and schedule predictability
- Reducing the impact of lack of definition of some scope on other well defined scope, resulting in reduced overall cost and schedule risk
- Aligning bidders' resources and capabilities
- Enabling companies with specialist knowledge and skills to have a direct responsibility for the work, reducing some of the costs (and interference) associated with major general contractors
- Reducing the impact of any lack of performance by a contractor across the project
- Reducing schedule risk as the packages may be tendered and awarded as soon as adequate definition is available
- Allowing better control over quality of installed equipment
- Maintaining flexibility in the construction phase

Work at the Muskrat Falls Generating Facility will be executed under a Project Labour Agreement, endorsed under a Provincial Special Project Order, which provides the terms and conditions under which trade labour will be available to the contractors. The conditions of this Project Labour Agreement will form a basis of all construction contracts. Due to the need for consistency between the three Projects, Nalcor will maintain a key role in the oversight of this Agreement.

11.4 Contract Types

Careful consideration has been applied in selecting the types of contracts (see Section 9.5 above) to ensure budget, performance and schedule requirements are met and to achieve maximum protection of Project capital costs.

A summary of the contract package types, for the Muskrat Falls Generation, is provided below in Table 4. In addition, the percentage breakdown of the estimated total construction cost is provided.

Table 4: Approximated Value by Notional Contract Form

Muskrat Falls Generation	Major Construction Contracts by Type			Major Procurement Packages	Other Packages
	Lump Sum	Combination Lump Sum & Unit Price	Unit Price		
Package Count	6	7	4	3	45
Estimated % of SPV Total Cost	20%	20%	50%	<2%	8 - 10%

11.5 Contract Packages Summary

A summary of the proposed major contract packages, their scope, compensation structure, and proposed performance security strategy is provided in Table 5 below.

In line with LCP's procurement strategy, Purchase Orders for major equipment (i.e. transformers, gates and cranes) will be issued by Nalcor. These PO's cover items requiring detail design to a technical specification and/or items requiring long lead delivery times.

It must be noted that as contracting strategies are selected, they undergo review and validation prior to being finalized. This step is consistent with the strategy formulation process described herein and is necessary as construction plans are modified and as market intelligence develops.

Accordingly, adjustments to the contracting strategies identified below may take place prior to commencement of the bidding process.

Complete details of all contract packages is provided in the document Package Dictionaries, reference no. LCP-SN-CD-0000-PM-LS-0001-01. A summary Package Dictionary report is provided as Attachment B1.

Table 5: Summary of Major Contract Packages for Muskrat Falls Generation

Package Ref. No.	Contract Package Title	Scope	Security Strategy	Required for Final Disclosure	Notional Contract Form
CH0002	Supply and Install Accommodations Complex Buildings	Design, supply and installation of accommodations complex buildings, including the starter camp	Bond	Yes	Combination lump sum and unit prices
CH0003	Supply and Install Administrative Buildings	Design, supply and installation of administrative buildings	n/a	Yes	Combination lump sum and unit prices
CH0004	Construction of Southside Side Access Road	Construction (excl. clearing) of the main site access road from the Trans Labrador Highway to Muskrat Falls	n/a	Yes	Combination lump sum and unit prices
CH0005	Supply and Install Accommodation Complex Site Utilities	Accommodations complex site utilities including the design, supply and installation of water storage reservoir and sewage treatment plant and installation emergency generators and switchgear	Bond	Yes	Combination lump sum and unit prices
CH0006	Construction of Bulk Excavation Works	Overburden and rock excavation for Intake, Powerhouse and Spillway structures: transition dam, switchyard and converter station excavation: cofferdam construction: and additional site investigations and pre-construction drilling.	Bond	Yes	Unit Price
CH0007	Construction of Intake and Powerhouse, Spillway and Transition Dams	Civil and architectural works for powerhouse, intake and spillway structures including concrete, steel structures, embedment parts and miscellaneous metals; concreting of the south, central and north transition dams: supply/installation of upstream and downstream spillway bridges and access roads: supply and installation of the interconnection cables between the powerhouse and the spillway.	Bond	Yes	Unit Price

CH0008	Construction of North Spur Stabilization Works	North spur groundwater control, drainage and downstream stabilization including site investigation, pump wells and related mechanical/electrical, access roads and boat launches	Bond	Yes	Unit Price
CH0009	Construction of North and South Dams	Construction of the South RCC and North RCC dams including the rock filled upstream and downstream cofferdams and North RCC mechanical/electrical work	Bond	Yes	Unit Price
CH0023	Construction of Reservoir Clearing – South Bank	Clearing of timber on the South Bank in the ice and stickup zones of the Muskrat Falls Reservoir including forest access road rights of way and storage yard areas.	Bond	Yes	Combination Lump Sum & Unit Price
CH0024	Construction of Reservoir Clearing – North Bank	Clearing of timber on the North Bank in the ice and stickup zones of the Muskrat Falls Reservoir including forest access road rights of way and storage yard areas.	Bond	No	Combination Lump Sum & Unit Price
CH0030	Supply and Install Turbine and Generators	Design, fabrication, shop testing, delivery, installation, field testing, commissioning and guarantee of four (4) turbine-generator units with a capacity of 229 MVA. Each unit shall be complete with speed governor, static excitation system, protection and control system and monitoring system.	Bond + Letter of Credit	Yes	EPC Lump Sum
CH0031	Supply and Install Mechanical and Electrical Auxiliaries (MF)	Supply and installation of mechanical piping, HVAC systems and Powerhouse, Intake and Spillway auxiliary electrical systems and installation of major electrical equipment and cabling under the supervision of respective suppliers.	Bond + Letter of Credit	Yes	Combination Lump Sum & Unit Price
CH0032	Supply and Install Powerhouse – Hydro-Mechanical Equipment	Design, supply and installation of Powerhouse heavy mechanical equipment including vertical-lift intake gates and hoist, stop logs, trash racks, draft tube gates and crane, all with associated concrete embedment's.	Bond	No	Lump Sum
CH0033	Supply and Install Powerhouse Cranes	Design, supply and installation of two 350 MT Powerhouse Cranes	Bond	No	Lump Sum

CH0046	Supply and Install Spillway Hydro-Mechanical Equipment	Design, supply and installation of Spillway heavy mechanical equipment including gates and hoists, stop logs, mechanical/electrical auxiliaries and concrete embedment.	Bond	No	Lump Sum
CH0048	Construction of Site Clearing Access Road & Ancillary Areas	Clearing of timber for the Southside access road, gravel pits and lay-down areas, and 25 kV construction power right of way on the North and South side.	Bond	Yes	Combination Lump Sum & Unit Price
CH0050	Supply of Concrete Including Batch Plant (MF)	Supply of concrete for all contractors (except bulk excavation and access road contractors), including supply of batch plant, cement, and aggregate.	Bond	Yes	Combination Lump Sum & Unit Price

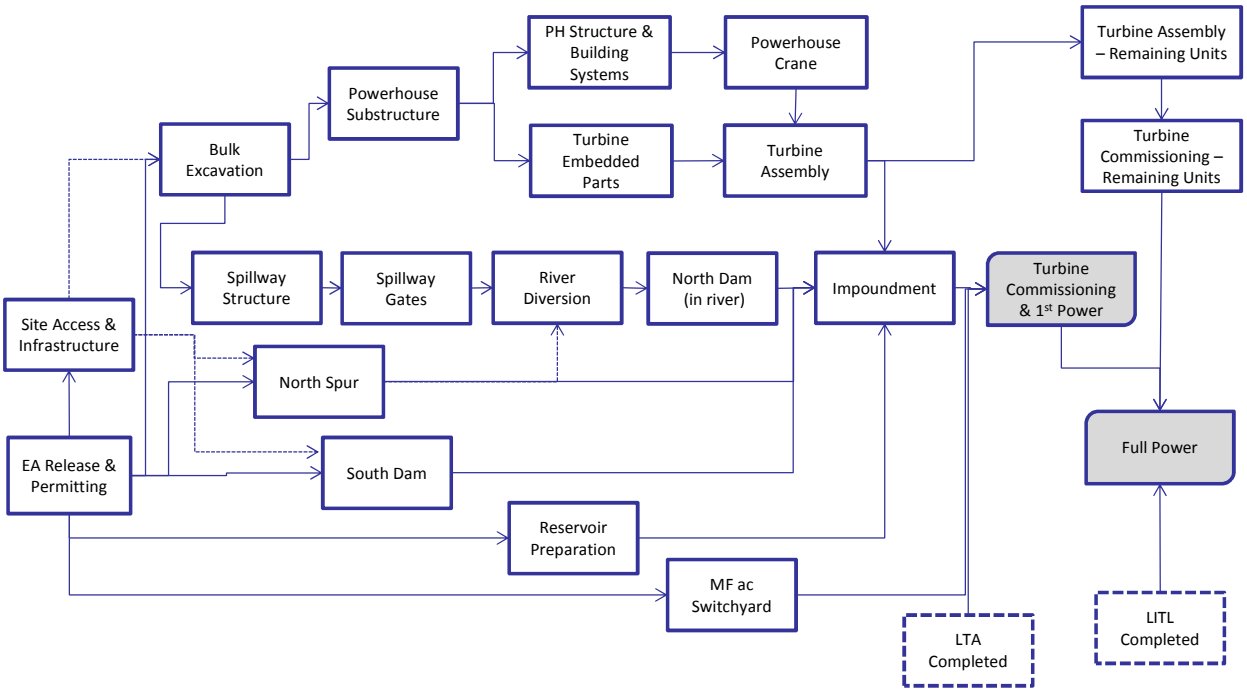
11.6 Major Contract Package Strategies

The Muskrat Falls Generating Facility contracting strategy has been developed based on Nalcor's contracting strategy guidelines and process (see Sections 8.0 & 9.0), the selected EPCM delivery approach for this scope, and the construction plan required to optimize construction work within project schedule requirements and the natural constraints imposed by the remote location and climatic conditions. A summary of this Plan is provided below.

Construction Plan Summary

The overall construction logic for the Muskrat Falls Generation is illustrated in Figure 19.

Figure 19: Muskrat Falls Generation Construction Logic – Overview



As an initial step in the Muskrat Falls construction program, site access must be provided. An access road (19km long) will be constructed in two stages with the first stage providing initial access for site works whilst the second stage is being completed.

Concurrent with road construction, site infrastructure and accommodations facilities will be built.

The primary civil works for the facility will begin with excavation (overburden & rock) for the civil structures, followed by concreting in the powerhouse, intake and spillway. At this time, some components (embedment) will be required for the spillway and intake gates, as well as the turbines.

After the powerhouse Stage 1 concreting, the powerhouse superstructure can be built, and turbine unit assembly will commence. As the unit erection will require the use of the assembly hall and the powerhouse crane, the superstructure and the turbine build sequence is closely linked.

Once the spillway gates are installed, the river is diverted through the spillway allowing construction of the North (in-river) Dam.

It is likely that about this time the reservoir clearing would be nearing completion, and decommissioning of this work would begin. During this time, turbine unit assembly should be well along, leading to the commissioning of the turbine units in sequence, with power being

generated from each unit in turn. This requires the removal of the tailrace "plug" that was left in place to prevent flooding of the powerhouse, and completion of impoundment to the Minimum Operating Level.

For first power generation at Muskrat Falls, it is necessary to have the transmission system in place from Muskrat Falls to Churchill Falls, along with the switchyards at Muskrat Falls and Churchill Falls. While each component would be commissioned individually, the entire system would be commissioned and synchronized during this commissioning phase.

Contracting Strategy Considerations

In selecting the Muskrat Falls contracting strategies, the guidelines and criteria set out in Nalcor's contracting strategy selection process (Sections 8 & 9) have been applied following consideration of the construction execution plan developed to meet the project schedule.

This has resulted in the major supply and construction packages identified in Section 11.5 above.

The specific strategies related to the major scope components of the Muskrat Falls Generation (see 11.5 for list of Major Packages) are identified below:

CONTRACT PACKAGE NOs. CH0002, CH0003, CH0004, CH0005, CH0048

Early Infrastructure Works (multiple contracts) – The Early Infrastructure Works scope will be a combination of lump sum and unit price contracts. The award of this work early in several months before construction start is critical so as to support the overall construction program. These contracts will cover site clearing, access roads, accommodations and administrations complex, site utilities and miscellaneous site support services.

The overall strategy has two major objectives:

- Establish necessary infrastructure to enable bulk excavation activities to start as soon as possible in 2012 (bulk excavation is a critical path activity) and,
- Provide opportunities for local participation

To accomplish these objectives, the work will be awarded to multiple contractors. This strategy will:

- Reduce the level of schedule risk by having multiple work fronts
- Allow work to be executed by specialist contractors reducing schedule and quality risks
- Allow potential local participation

The Early Works implementation has been based upon early development of engineering during 2011 by the EPCM consultant.

CONTRACT PACKAGE NO. CH0006

Construction of Bulk Excavation Works – The Bulk Excavation contract will be awarded as one (1) contract, on a unit price basis. It is planned that this contractor commences mobilization upon site access being available. This strategy is designed to protect the schedule and to provide early feedback on geotechnical conditions resulting in firmer quantity estimates and site conditions for other civil contracts. Separation of the Bulk Excavation contract will also allow more time to finalize civil structures design (and concrete quantities), which will translate into less contractor risk and firmer pricing for the powerhouse, spillway and intake structures contracts. Although extensive geotechnical work has been completed, including rock surface modelling, the Bulk Excavation contract will require the contractor to continue a drilling program so as to confirm bedrock elevations. This will validate projected quantity estimates for overburden and rock excavation. To allow for variations in estimated quantities, contracts will require unit pricing "ranges" in the event that quantities are substantially different from contractual estimated quantities.

The Bulk Excavation scope of work does include some areas where subsurface information is better understood than others. The cost of some elements of this contract, therefore, will be considered to be firm, as described in Section 11.4.

In addition to the above, the selection of a single, standalone Bulk Excavation contract is supported by the following:

- The work can be easily isolated from the civil structures work for both engineering and construction, allowing interfaces to be easily identified and managed
- Unit prices can be established based on preliminary designs and quantities
- A similar strategy on most other large-scale hydroelectric plants has been previously successfully executed using this approach.

CONTRACT PACKAGE NO. CH0007

Construction of Intake and Powerhouse, Spillway and Transition Dams – Currently, the civil works associated with the powerhouse, spillway and intake structures is planned as one (1) large contract to be awarded on a fixed unit price basis, however the engineering deliverables are being structured to facilitate the award of separate contracts should market conditions / contractor availability warrant. Validating market appetite to assume this package will be a key focus area in the first half of 2012.

It is expected that a single-package approach will reduce indirect costs through use of common facilities and will reduce the management of a variety of interface issues, while the dominate interfaces are considered well defined and manageable. As this contractor will have the ability to plan/execute multiple work faces, schedule risk will be reduced.

As explained above, the earlier award of the Bulk Excavation contract will allow additional time for structural designs to be completed sufficiently to support a high degree of accuracy in quantity estimates. This will result in firming up overall cost estimates, more competitive pricing and reduced risk of schedule delays.

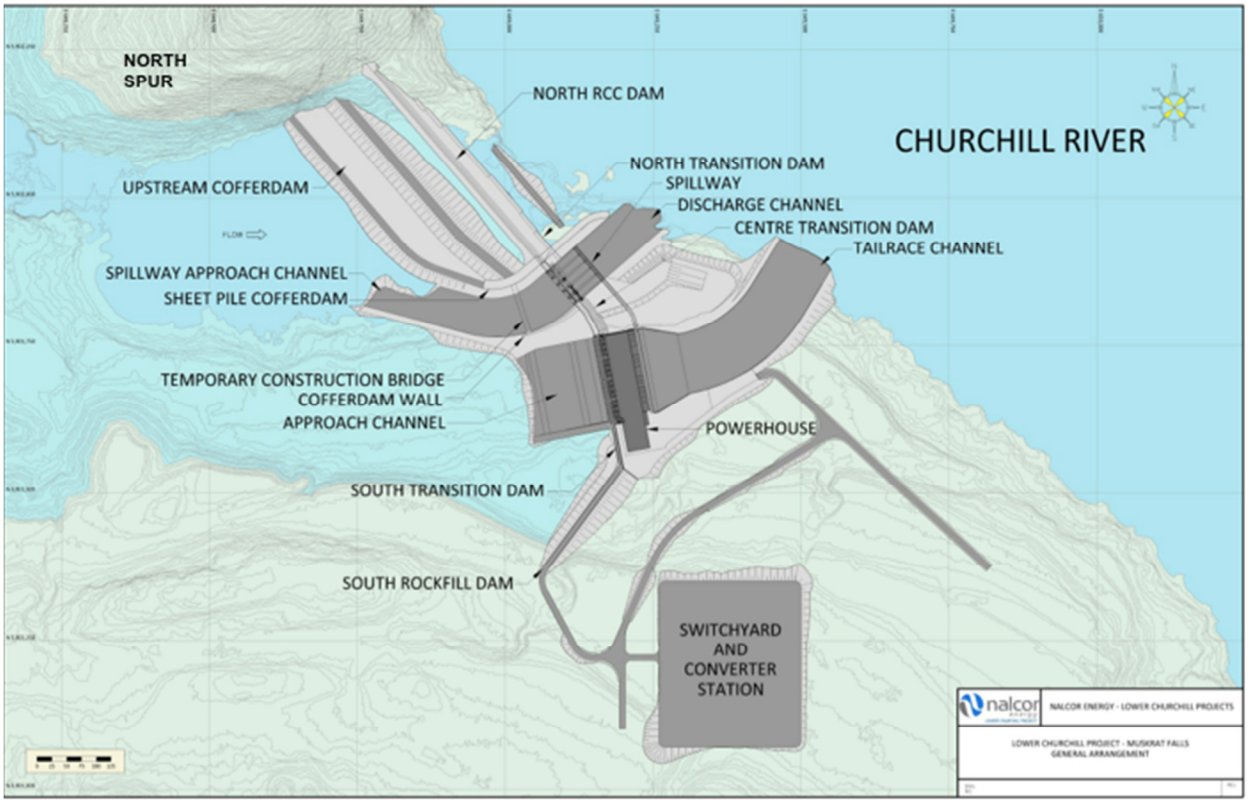
Similarly, critical information from the turbine contractor will be required to facilitate the completion of design required for award of this contract.

This scope of work is by far the largest that is planned to be awarded for the entire LCP; while it is this contractor that will require the largest labour demand and likely face the greatest productivity risk challenges. In this regard, the selection of a contractor who has the breadth and depth of resources to plan and execute this critical scope which extends over four (4) year duration is key. A contractor's experience executing large civil works in northern environments, with a solid safety record, and solid industrial relations working within Building Trades labor framework with are considered key criteria during the selection process.

Note: This package scope is designed in consideration of the planned mitigation strategies associated with Key Risks R9 (Good HSE record is critical for project success), R20 (Availability of experienced hydro contractors), and R22 (Availability of qualified construction management / supervision).

Other major contracts which are considered as key interfaces with CH0007 include Bulk Excavation, North & South dam Construction, Mechanical and Electrical Auxiliaries and the major equipment contracts for Turbines & Generators, Powerhouse Crane and Intake/Spillway gates & Cranes. Key interfaces are displayed below in Figure 20.

Figure 20: Muskrat Falls Generation Packages – Mature and Manageable Interfaces



CONTRACT PACKAGE NO. CH0008

Construction of North Spur Stabilization Works – Civil works are needed to ensure the permanent stability of the North Spur, including adding rock protection, removing extra material, and works to aid in control of the water table. This earth works scope has well defined battery limits, and includes an upstream berm, downstream stabilization, pump wells and crest unloading.

North Spur construction works can take place in parallel with and largely independent of other site construction works, however must be completed up to EL. 26m prior to river closure / temporary diversion through the spillway structure. All scope must be completed prior to reservoir impoundment.

Material used for the North Spur stabilization will be sourced from a separate quarry on the north side of the river, hence leading to minimal interfaces with the main civil works scope.

CONTRACT PACKAGE NO. CH0009

Construction of - North and South Dams – Construction of these main dams requires a contractor with special competency in the management of construction resources, including concreting facilities for the north RCC dam. All related interfaces with adjoining structures are well understood and manageable.

The Dam Contractor is responsible for closing of the river by constructing the upstream cofferdam using material produced by the Bulk Excavation contractor.

The construction of the north RCC dam can only commence following river diversion through the spillway, and must be complete prior to impoundment. This is considered the critical interface for this contractor. Further RCC concrete cannot be placed in winter given temperature restrictions.

CONTRACT PACKAGE NOs. CH0023, CH0024

Construction of Reservoir Clearing, South & North Banks – The scope of this construction contract takes place over an extended period and is independent of the work at the site of the main dam, spillway and powerhouse structures. The current plan is to award two (2) contracts with provision for combining the work into one (1) contract (north and south side of reservoir) if circumstances are favourable. This scope has very manageable interfaces and is targeted as an area to provide maximum local benefits.

CONTRACT PACKAGE NO. CH0030

*Supply and Install Turbine & Generator*s – The T/G package will be a lump sum EPC contract covering the design, manufacture, transportation, installation, performance testing and commissioning of four Kaplan turbine and generator sets, including exciters, governors, controls and monitoring systems, and electrical / mechanical protection systems. The basis for this approach includes the following:

- The package can be isolated from the main facility for both engineering and construction work allowing scope of supply limits and interfaces to be identified and managed;
- The technical definition required to establish a lump sum is achievable earlier, partly because it includes performance based functional specifications rather than detailed design drawings and specifications;
- A similar strategy has previously been successfully used on many other large- scale hydroelectric plants.

Market testing supported this strategy and outlined a substantial interest by major turbine and generator suppliers in tendering for this package on an EPC basis. It should be noted that the T/G package is not expected to include all other mechanical / electrical systems and components which make up a "water to wire" approach. Nalcor's market analysis identified significant risks in having the T/G contractor take overall responsibility for these additional elements as they are not commonly associated with its scope of work on such large projects. In addition, Nalcor wishes to take advantage of synergies in the bulk procurement of various items, such as transformers, other parts of the project.

In late 2010 Nalcor reached agreements with the three (3) firms viewed capable to supply these units, to conduct turbine model testing, in an effort to de-risk the overall delivery schedule and promote competition among the vendors to deliver the optimal units for Muskrat Falls. A Request for Proposal for the design, manufacture, transportation, installation, commissioning and performance testing of these units will be issued to each vendor in third quarter of 2011 with a desire to achieve firm pricing to support the Decision Gate 3 cost estimate. This EPC contract will be negotiated with firm pricing, and include performance guarantees backed by liquidated damages.

CONTRACT PACKAGE NO. CH0031

Supply and Install Mechanical and Electrical Auxiliaries (MF) – The scope of this supply and install contract includes the supply and installation of major electrical/mechanical equipment and utilities. This work will be awarded on a lump sum EPC basis, as the scope of supply is well understood with a selection of competent contractors available.

MATERIAL SUPPLY CONTRACTS NOs. CH0032, CH0033, CH0034, CH0046, CH0047

Equipment (multiple packages) – These packages include large specialty items including the Powerhouse Crane, intake, powerhouse and spillway gates and cranes. These are speciality items, which will be awarded on a lump sum EPC basis.

The basis of this strategy is as follows:

- The package can be easily isolated from the main facility for both engineering and construction work allowing scope of supply limits and interfaces to be easily identified and managed;
- The level of technical definition required to establish a lump sum is relatively low;
- Similar arrangements on most other large-scale hydroelectric plants have been previously successfully executed using this approach.

CONTRACT PACKAGE NO. CH0050

Supply of Concrete including Batch Plant (MF) – One package will be awarded for the supply of concrete for all contractors at site (except bulk excavation and access road contractors). This strategy will result in less duplication of infrastructure required to provide concrete and provide uniformity and control over pricing and quality. Users of concrete will be responsible to verify product quality as well as for payment directly to the concrete contractor. The concrete supplier will be responsible for:

- Mobilization and installation and dismantlement of a batch plant;
- Fabrication of the aggregates for concrete from blasted rock stockpile and from sand and gravel borrow areas;
- Supply of cement, flyash and additives;
- Fabrication and delivery of concrete to the contractors at site; and
- Quality control at the batch plant.

SERVICE CONTRACTS NOs. SH0018, SH0019, SH0020, SH0021, SH0022, SH0040, SH0041, SH0051

Service Contracts (multiple packages) – These packages include services necessary for the safe and efficient operation of the site including the provision of office and accommodations complex, medical, security, building maintenance, personnel transportation, catering, waste disposal, road maintenance and fuel supply.

At the Muskrat Falls site, where multiple construction contractors will require similar services, contracts will be awarded on a common basis by Nalcor and managed by the EPCM contractor. For the multiple TL and switchyard sites, where Nalcor has limited ability to control the effective usage of such services, contractors will be responsible for the provision of all support services. This strategy recognizes that the contractor will optimize his build sequence, camp type, locations and crew sizes to best manage the risk assumed. Where contractors are responsible to provide their own services, bid documents will specify minimum levels of service standards and quality.

SERVICE CONTRACTS NOs. SM0700, SM0701, SM0703, SM0704, SM0715 etc.

Common Service Contracts (multiple packages)

Service contracts in support of the EPCM approach, such as freight forwarding services, expediting & inspection, geotechnical investigations, survey work etc. will be awarded separately so as to attract specialized contractors, resulting in strong bidding and competitive pricing. Contracts will include lump sum and unit price elements. Whereas Nalcor will be responsible for safeguarding equipment and materials up to the point of free issued to contractors, the care custody and control of this material will then be the responsibility of the contractors.

12.0 LABRADOR TRANSMISSION ASSETS CONTRACTING STRATEGY

12.1 Introduction

The Labrador Transmission Assets Project is a large transmission / switchyard construction project, with a total of nearly 530 km of 315 kV transmission line to be constructed. Combined with the overland transmission portion of the Labrador-Island Transmission Link, LCP has approximately 1600 km of transmission to be constructed over 5-year duration. The shear scope of the work, combined with weather restrictions, emphasizes the requirement for solid strategic planning to ensure maximum availability and utilization of work fronts.

For most utilities in North America, including Newfoundland & Labrador Hydro (NLH), transmission lines have traditionally been built by contracting an installation contractor to whom procured material (i.e. towers, insulators, conductor, etc.) has been free-issued by NLH. Simply stated, this is the approach that Nalcor will undertake for the Labrador Transmission Assets. This approach maximizes the ability to "standardize" transmission hardware and components across the entire LCP, as well as with NLH and CF(L)Co. thereby reducing the overall requirement for operational spares within Nalcor.

As indicated in the Overall Contracting Strategy section, the Project will, with the exception of the Strait of Belle Isle (SOBI) cable crossing, be executed utilizing an Engineering, Procurement and Construction Management (EPCM) delivery method.

For the Labrador Transmission Assets Project, the EPCM Contractor is responsible for the completion of all project engineering and detailed design, construction execution planning, procurement of permanent plant equipment, issue and management of all supply and construction contracts, and overall construction management for the Work, including custodian for the Project work sites. The construction contractors will be responsible for the safe and successful execution of their work in accordance with their contracts and approved safety programs, while the suppliers are responsible for delivery of goods and services for the Project.

NE-LCP will be responsible to manage all interfaces between Churchill Falls (Labrador) Corporation (CF(L)Co.) for the switchyard extension at Churchill Falls, and with Newfoundland and Labrador Hydro (NLH) for the energization of the new 315 kV lines. Dismantling of the existing 138 kV transmission line is outside the scope of the LCP.

This Section provides details on the currently envisioned primary contract packages. The overall contract package breakdown will be revisited and updated throughout Phase 3 in order to produce an updated overall contracting strategy and Contract List for the Project as a Decision Gate 3 deliverable.

It should be noted that to a large extent, the selection of the contracting strategies detailed in this Section followed the same process and utilized many of the same guidelines, drivers and

selection criteria which were considered in the selection of the overall delivery method (see Section 8). Accordingly, they are not duplicated in this Section.

12.2 Scope of Work

As detailed in Lower Churchill Project – Basis of Design, reference document no.: LCP-PT-ED-0000-EN-RP-0001-01, the scope of the physical facilities to be constructed under EPCM management includes the following:

- 2 x 315 kV HVac 247 km transmission lines connecting Muskrat Falls and Churchill Falls following the existing 138 kV line, with right of way corridor extension of 100m.
- Overhead optical ground wire used for communication purposes.
- 315kV switchyard at Muskrat Falls to facilitate connection of the converter and 315kv lines from the Generating station
- Switchyard at Churchill Falls to facilitate voltage step-up from 315 kV to 735 kV.

Battery limits for the Labrador Transmission Assets are detailed in the Lower Churchill Project Asset Schematic by Project, document no. LCP-PT-MD-PC-BD-0001-01.

12.3 Strategic Guidelines/Considerations

In dividing this Project into discrete contract elements careful consideration has been given to the construction and financial capabilities of the transmission construction industry, the volume of transmission line to be built, as well as the current marketplace conditions.

The proposed scope of work to be included in each contract has been selected to provide a logical sequence of activities to meet the project scope and schedule with a minimum of interference and interfaces between one contract and another. The project scope and type of contract is designed to place risk with the party in the best position to handle it. The scope of the contract packages is designed to provide the greatest possible assurance of completion on schedule of a reliable transmission line, within budget and protection of project capital by:

- Attracting the maximum number of qualified bidders, including international contractors.
- Recognizing that there are limited transmission contractors in North America who have the capacity to handle the entire scope unless partnering occurs.
- Recognizing the traditional make-up of line construction contractors who seldom do clearing work, rather sub-contract to others.
- Attracting the largest resource pool of experienced transmission construction labour.
- Leverage “bulk” buying and synergies for electro-mechanical equipment common across all three (3) Projects.

- Facilitate the front-end loading of the 315 HVac line, thereby “freeing” up critical resources to support the LIL overland transmission built when EA release is achieved, thus avoiding the situation where overland construction is on the critical path for LCP.
- Increasing competition for successive contracts among contractors who are mobilized to site or who have contracts for future work, which cover mobilization, costs.
- Permitting each contractor to concentrate his most competitive approach to bidding on the limited package scope best suited to his experience, equipment and capacity (i.e. right-of-way clearing).
- Providing opportunity for each transmission construction & installation contractor the opportunity to be creative in constructability approaches towards the scope.
- Reduce the likelihood of delay claims by minimizing interfaces.
- Reducing the magnitude of risk to both the contractor and owner. When the contract scope of work is not subject to change a Lump Sum Contract would be the most suitable whereas excavation quantities, which could be subject to change, would have a unit price contract as the most suitable.
- Recognizing that more certain site and geotechnical conditions could be ascertained once the ROW clearing is completed, hence providing improved pricings for the construction scope.
- Facilitate the early award of Right-of-Way clearing and commence immediately post EA release.
- Facilitate the acquisition of additional geotechnical information that will firm-up unit prices for the foundation bids presented by construction & installation contract bidders.
- Take advantage of natural and manageable interfaces (e.g. right-of-way clearing)
- Align bidders’ resources and capabilities
- Facilitate the potential for synergies with other components and Projects (e.g. switchyards, converters and transition compounds civil works)
- Facilitate purchasing synergies for free-issued electro-mechanical equipment to the installation contractors
- Reduce the impact of any lack of performance by a contractor across the Project
- Allow better control over quality of installed equipment

12.4 Contract Types

Careful consideration has been applied in selecting the types of contracts (see Section 9.5 above) to ensure budget, performance and schedule requirements are met and to achieve maximum protection of Project capital costs.

A summary of the contract package types, for the Labrador Transmission Assets, is provided below in Table 6. In addition, the percentage breakdown of the estimated total construction cost is provided.

Table 6: Package Count by Notional Contract Form

Labrador Transmission Assets	Major Construction Contracts by Type			Major Procurement Packages	Other Packages
	Lump Sum	Combination Lump Sum & Unit Price	Unit Price		
Package Count	n/a	3 (1,2)	n/a	9 (1,2)	3
Estimated % of Total SPV Cost	-	50%	-	45%	5%

(1) Packages will have provision for award of separate contracts by geographical location which could result in additional contracts. Division of packages will not result in additional interface issues due to separate geographical locations.
(2) In some cases, packages may also be split to differentiate scope between SPV's.
(3) Contracts which span all Projects and which are inappropriate to split between SPV's are classified as Common.

12.5 Contract Packages Summary

A summary of the proposed major contract packages, their scope, compensation structure, and proposed performance security strategy is provided in Table 7 below.

In line with LCP's procurement strategy, Nalcor will issue Purchase Orders for major equipment and materials. These PO's cover items requiring detail design to a technical specification (e.g. towers), items requiring long lead delivery times, "catalog" items to be supplied in large quantities (e.g. insulators), specialized equipment and items for common use by contractors.

It must be noted that as contracting strategies are selected, they undergo review and validation prior to being finalized. This step is consistent with the strategy formulation process described herein and is necessary as construction plans are modified and as market intelligence develops.

Accordingly, adjustments to the contracting strategies identified below may take place prior to commencement of the bidding process.

Complete details of all contract packages is provided in the document Package Dictionaries, reference no. LCP-SN-CD-0000-PM-LS-0001-01. A summary Package Dictionary report is provided as Attachment B1.

Table 7: Summary of Major Packages for Labrador Transmission Asset

Package Ref. No.	Contract Package Title	Scope	Security Strategy	Required for Final Disclosure	Notional Contract Form
CT0319	Construction of 315 kV HVac Transmission Line (MF to CF)	Construction of 500 km of two parallel single circuit 3-phase 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls including 735 and 315 kV switchyard interconnection lines	Bond + Letter of Credit	Yes	Combination Lump Sum & Unit Prices
CT0341	Clearing of Right of Way for 315 kV HVac Transmission Line (MF to CF)	Right-of-way (ROW) clearing for two parallel 315 kV HVac transmission lines from Muskrat Falls to Churchill Falls, approximately 250 km in length, including ROW clearing for the 735 and 315kV interconnection lines.	Bond	Yes	Combination Lump Sum & Unit Prices
CD0502	Construction of Switchyard & Synchronous Condenser Facilities	Civil Works, buildings and electromechanical installation for the following: Substations: • Churchill Falls Extension • MF Plant Substation • Soldiers Pond 230kV substation • Sync Condensers buildings & foundations at SP • Protection & Control panels installation at Western Avalon, Oxen Pond, Hardwoods and Holyrood	Bond	Yes	Combination Lump Sum & Unit Rates
CD0503	Construction of Earth Works at Power Distribution Sites	Earthworks cut & fill (excavation, backfilling, removal of material) of main site and access roads at: Churchill Falls substation, Soldiers Pond substation, Converter Station and Synchronous Condensers, and Transition Compounds at Forteau point and Shoal Cove	Bond	Yes	Combination Lump Sum & Unit Rates

12.6 Major Contract Package Strategies

The Labrador Transmission Assets contracting strategy has been developed based on Nalcor's contracting strategy guidelines and process (see Sections 8.0 & 9.0), the selected EPCM delivery approach for this scope, and the envisioned construction plan required to optimize construction work within project schedule requirements and the natural constraints imposed by the remote location and climatic conditions.

The Labrador Transmission Assets are contained within the Generation Project EA, which is forecasted to see ministerial approval by late Q4-11, and approximately one (1) construction season ahead of the EA for the Labrador – Island Transmission Link. In consideration of this reality, this work front is available earlier providing the opportunity to award this contract independently from the LIL construction. This will provide intelligence for future LIL bidding and will potentially secure a long-term transmission line workforce.

Details on the major contract packages are provided below:

CONTRACT PACKAGE NO. CT0319

Construction of 315 kV HVac Transmission Line (MF to CF) – Construction of 500 km of two parallel single circuit 3-phase 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls including 735 and 315 kV switchyard interconnection lines.

Contract covers the construction of footings, erection of steel towers, line stringing and installation of all hardware, insulators, overhead shield wire, optical ground wire, spacers and counterpoise wire for line 1 and line 2 from Muskrat Falls to Churchill Falls. Total distance is 247 km.

Materials will be free-issued by Nalcor and received by contractor at designated marshaling / storage yards. Contractor is responsible for material transport from free-issue point to work site. Contractor is responsible for providing all labor, supervision, equipment, and construction consumables required to construct the line, as well as provide all indirect support, access roads, and accommodations.

This package will be divided into two sections. Bidders will have the opportunity to bid for one or both sections. This strategy is expected to attract the best possible competition. As ROW clearing work will be in advance of this package, it is expected that firm foundation data will be available to contractors.

CONTRACT PACKAGE NO. CT0341

Clearing of Right of Way for 315 kV HVac Transmission Line (MF to CF) – This is the first construction activity and is envisioned to take up to 12 months to complete. The current plan is to go for bid with a single package but divided into two sections with options for bidding one or both sections. The scope covers the clearing of a 100m corridor extension along the 247 km

long route, which is parallel to the existing 138 kV transmission line which runs between Churchill Falls and Goose Bay. The contractor will be responsible to provide all support services they require executing the work, including accommodations and access, unless otherwise provided. The only interface this contractor has is with the Construction Contractor(s), which is minor and very manageable.

CONTRACT PACKAGE NO. CD0502

Construction of Switchyard & Synchronous Condensers Facilities – The Civil construction associated with all switchyard sites and the synchronous condenser site will be packaged under one large contract. This strategy will help to avoid the risk of schedule delay and will help to attract large experienced contractors. In addition, and with respect to the synchronous condenser, suppliers have indicated that they would not be prepared to include civil construction scope as part of their supply scope.

CONTRACT PACKAGE NO. CD0503

Construction of Earth Works at Power Distribution Sites – All required earthworks at the power distribution sites will be grouped into one package. This scope includes all excavation, backfilling, material removal and the supply of final grading material. This strategy will help to avoid the risk of schedule delay and will help to attract large experienced contractors best able to meet schedule and quality specifications.

CONTRACT PACKAGE NO. PD0505

Supply of Switchyard Equipment, AC Substations at CF, MF and SP – These packages include large specialty equipment and material including transformers, substation equipment, conductor, insulators, tower steel etc. These are speciality items, which will be procured by Nalcor (through SLI) and free issued to CD0502 for installation. They will be awarded on a firm price basis.

PURCHASE ORDERS NOs. (Multiple)

Supply of Transmission Line Hardware –These packages include large specialty material including transmission towers, foundation material, conductor, insulators, and general hardware. These are speciality items, which will be procured by Nalcor and free issued to contractors. They will be awarded on a firm price basis. Three service contracts for geotechnical investigation and survey work will also be awarded.

SITE SERVICES

Services necessary for the safe and efficient operation of each of the sites include the provision of office and accommodations facilities, medical, security, maintenance, personnel transportation, warehousing, catering, waste disposal, road maintenance and fuel supply.

On the LTA project, where Nalcor has limited ability to control the effective usage of such services, contractors will be responsible for the provision of all support services. This strategy recognizes that the contractor will optimize his build sequence, camp type, locations and crew sizes to best manage the risk assumed. Where contractors are responsible to provide their own services, bid documents will specify minimum levels of service standards and quality.

SERVICE CONTRACTS NOs. SM0700, SM0701, SM0703, SM0704, SM0715 etc.

Common Service Contracts (multiple packages)

Service contracts in support of the EPCM approach, such as freight forwarding services, expediting & inspection, geotechnical investigations, survey work etc. will be awarded separately so as to attract specialized contractors, resulting in strong bidding and competitive pricing. Contracts will include lump sum and unit price elements. Whereas Nalcor will be responsible for safeguarding equipment and materials up to the point of free issued to contractors, the care custody and control of this material will then be the responsibility of the contractors.

13.0 LABRADOR – ISLAND TRANSMISSION LINK CONTRACTING STRATEGY

13.1 Overview

As indicated in the Overall Contracting Strategy section, the Labrador – Island Transmission Link Project includes an overland transmission component as well as an undersea cable crossing which will traverse the Straight of Belle Isle (SOBI). As a result of this diversity and the requirement for special contractor skill sets, each component will be executed under a different delivery method. The overland transmission scope will be executed utilizing the (EPCM) delivery method, whereas the SOBI Cable Crossing will be a lump sum EPC contract under the management of Nalcor.

This section provides details on the contracting strategies developed for each of these components, which comprise the Labrador – Island Transmission Link.

It should be noted that to a large extent, the selection of the contracting strategies detailed in this Section followed the same process and utilized many of the same guidelines, drivers and selection criteria which were considered in the selection of the overall delivery method (see Section 8). Accordingly, they are not duplicated in this Section.

13.2 Overland Transmission, Converter Stations & Switchyards

The Labrador-Island Overland Transmission component of the LIL Project is a large transmission construction project, with a total of nearly 1080km of 350kV overhead transmission line to be constructed. The magnitude of the work to be done, combined with geographical challenges and constraints and weather restrictions, emphasizes the requirement for solid construction planning to ensure maximum availability and utilization of work fronts.

The complete scope, including transmission lines, HVdc converters switchyards and system integration will be executed by the EPCM Contractor who is responsible for the completion of all project engineering and detailed design, construction execution planning, procurement of permanent plant equipment, issue and management of all supply and construction contracts, and overall construction management for the Work, including custodian for the Project work sites. The construction contractors will be responsible for the safe and successful execution of their work in accordance with their contracts and approved safety programs, while the suppliers are responsible for delivery of goods and services for the Project.

The overhead transmission system will consist of two conductors and an overhead ground wire connected at the top, the function of which will be to shield the other infrastructure from possible lightning strikes. The overhead ground wire will be equipped with a fiber optic cable (OPGW) to fulfill the communication requirements between the converter stations. Galvanized steel towers will support all lines along the transmission route. The spacing of the transmission towers will be based on topographic, meteorological and other environmental factors.

A 2km wide transmission corridor has been chosen for planning of the HVdc transmission route. This corridor contains the current transmission route along with several alternative segments. Once the actual transmission route is selected, a right-of-way of approximately 60 m will be cleared (the right-of-way width is site specific and may range from less than 60 m and up to 80 m, depending on the areas). A comprehensive route selection process based on technical and environmental and within the corridor will determine detailed routing of the HVdc transmission lines.

Four (4) existing transmission lines are to be connected to the Soldiers Pond converter station to allow the transmission of electricity to the Island electrical grid. To ensure proper integration of the HVdc system into the Island grid several modifications may need to be implemented, including the installation of transmission line compensation equipment, synchronous condensers, static var compensators, circuit breakers, disconnect switches and other instrumentation, as well as conductor replacement.

The converter station engineering and construction phases are scheduled for an approximate duration of four years. The first and second years of this lump sum EPC contract will include design, procurement and manufacturing of specialized equipment. The third and fourth years will encompass the construction of the facilities, including site preparation, outfitting, supporting infrastructure installation, and testing and commissioning

Nalcor will be responsible to manage all interfaces between Newfoundland and Labrador Hydro (NLH) for the energization of the new 350 kV lines.

13.2.1 Scope of Work

The scope of the physical facilities to be constructed under EPCM management is detailed in Lower Churchill Project – Basis of Design, reference document no.: LCP-PT-ED-0000-EN-RP-0001-01.

A summary of the scope of this work is provided below:

- 350 kV operating voltage
- 900 MW Capacity
- 1080 km Overhead Transmission Line
- HVac to HVdc converter stations at Muskrat Falls and Soldier's Pond
- Shore / Pond Electrodes at SOBI and Dowden's Point
- Island System Upgrades, including 3 off 150 MWar inertia synchronous condensers

Battery limits for the Labrador Transmission Assets are detailed in the Lower Churchill Project Asset Schematic by Project, document no. LCP-PT-MD-PC-BD-0001-01.

13.2.2 Strategic Guidelines /Considerations

For most utilities in North America, including Newfoundland & Labrador Hydro (NLH), transmission lines have traditionally and successfully been built by contracting an installation contractor to whom procured material (i.e. towers, insulators, conductor, etc.) has been free-issued by NLH. Nalcor plans to adopt this same strategy to build the overhead lines from Muskrat falls to Soldiers Pond. This approach maximizes the ability to "standardize" transmission hardware and components across the entire LCP, as well as with NLH, thereby reducing the overall requirement for operational spares within Nalcor.

In dividing this Project into discrete contract elements careful consideration has been given to the construction and financial capabilities of the transmission construction industry, the volume of transmission line to be built, as well as the current marketplace conditions.

The proposed scope of work to be included in each contract has been selected to provide a logical sequence of activities to meet the project scope and schedule with a minimum of interference between one contract and another. The project scope and type of contract is designed to place risk with the party in the best position to handle it. The contracting strategy is designed to provide the greatest possible protection of project capital by:

- Attracting the maximum number of qualified bidders, including international contractors.
- Recognizing that there are limited transmission contractors in North America who have the capacity to handle the entire scope unless partnering occurs.
- Attracting the largest resource pool of experienced transmission construction labour.
- Leverage "bulk" buying and synergies for electro-mechanical equipment common across all three (3) Projects.
- Increasing competition for successive contracts among contractors who are mobilized to site or who have contracts for future work, which cover mobilization, costs.
- Providing contractors with a high level of certainty with respect to site and geotechnical conditions by executing ROW clearing in advance. This will enhance cost and schedule predictability of the transmission line construction contracts.
- Permitting each contractor to concentrate his most competitive approach to bidding on the limited package scope best suited to his experience, equipment and capacity (i.e. right-of-way clearing).
- Providing opportunity for each transmission construction & installation contractor the opportunity to be creative in constructability approaches towards the scope.
- Reduce the likelihood of delay claims by minimizing interfaces.
- Reducing the magnitude of risk to be assumed by each contractor. When the contract scope of work is not subject to change a Lump Sum Contract would be the

most suitable whereas excavation quantities, which could be subject to change, would have a unit price contract as the most suitable.

- Recognizing the tendency of transmission construction contractors to sub-contract "specialized" services such as Right-of-Way clearing, and that is work is routinely completed by non-unionized contractors.
- Reducing schedule risks and material compatibility issues by Nalcor free-issuing all hardware and materials to Construction & Installation contractors. This will also result in purchasing synergies.
- Take advantage of natural and manageable interfaces (e.g. right-of-way clearing)
- Facilitate the potential for synergies (e.g. switchyards, converters and transition compounds civil works)
- Reduce the impact of any lack of performance by a contractor
- Reduce durations required to prepare the technical specifications for the separate packages
- Allow better control over quality of installed equipment

13.2.3 Contract Packages Summary

A summary of the proposed major contract packages, their scope, compensation structure, and proposed performance security strategy is provided in Table 8 below.

In line with LCP's procurement strategy, Nalcor will issue Purchase Orders for major equipment and materials. These PO's cover items requiring detail design to a technical specification (e.g. towers), items requiring long lead delivery times, "catalog" items to be supplied in large quantities (e.g. insulators), specialized equipment and items for common use by contractors.

It must be noted that as contracting strategies are selected, they undergo review and validation prior to being finalized. This step is consistent with the strategy formulation process described herein and is necessary as construction plans are modified and as market intelligence develops. Accordingly, adjustments to the contracting strategies identified below may take place prior to commencement of the bidding process.

Complete details of all contract packages is provided in the document Package Dictionaries, reference no. LCP-SN-CD-0000-PM-LS-0001-01. A summary Package Dictionary report is provided as Attachment B1.

Table 8: Summary of Major Contract Packages for LITL (excluding SOBI Crossing)

Package Ref. No.	Contract Package Title	Scope	Security Strategy	Required for Final Disclosure	Notional Contract Form
CD0501	Supply & Install Converters, Harmonic Filters and Transition Compounds	Turnkey Electromechanical Works, Design, Electromechanical Equipment Supply, Equipment Erection, Commissioning, final grading, civil Works, and foundations for • Converter Stations at Muskrat Falls • Converter Station at Soldiers Pond • Transition compounds at Forteau Point • Transition compound at Shoal Cove. • Scope also includes provision of Converter buildings	Bond + Letter of Credit	Yes	EPC lump Sum
CD0502	Construction of AC Substations and Synchronous Condensers Facilities	Civil Works, buildings and electromechanical installation for the following: • Churchill Falls Switchyard Extension • MF Plant Substation • Soldiers Pond 230kV substation • Sync Condensers buildings & foundations at SP • Protection & Control panels installation at Western Avalon, Oxen Pond, Hardwoods and Holyrood	Bond	Yes	Combination Lump Sum & Unit Rates
CD0503	Construction of Earth Works at Power Distribution Sites	Earthworks cut & fill (excavation, backfilling, removal of material) of main site and access roads at: Churchill Falls substation, Soldiers Pond substation, Converter Station and Synchronous Condensers, and Transition Compounds at Forteau point and Shoal Cove	Bond	Yes	Combination Lump Sum & Unit Rates
CD0508	Construction of Electrode Sites	Installation (civil works and site preparation) of Electrodes, including construction of breakwater, fences, and access road at l'Anse au Diable and Dowden's Point.	Bond	Yes	Combination Lump Sum & Unit Rates
CD0534	Supply and Install Soldiers Pond Synchronous Condensers	Design, manufacturing, FAT, transportation to site, erection and commissioning at site of 3 synchronous condensers 150MVAR at Soldier`s Pond with mechanical auxiliaries, excitation and control, starting SFC with starting bus	Bond + Letter of Credit	Yes	EPC Lump Sum

		• Isolated phase bus bar for main and starting circuit, GCB, MV and LV switchgear, protection panels, and overhead crane. (Excludes building)			
CT0327	Construction of 350 kV HVdc Transmission Line – Section 1	Construction of Section 1 of the ± 350 kV HVdc, 900 MW transmission line from Muskrat Falls to the end of the Long Range Mountains	Bond + Letter of Credit	Yes	Combination Lump Sum & Unit prices
CT0343	Clearing of Right of Way for HVdc Transmission Line - Section 1	Right-of-Way (ROW) clearing for the construction of Sections 1&2of the ± 350 kV HVdc transmission lines from Muskrat Falls to Soldiers Pond. Sections covers the distance from Muskrat Falls to the end of the Long range Mountains	Bond	Yes	Combination Lump Sum & Unit Prices
CT0345	Clearing of Right of Way for HVdc Transmission Line - Section 2	Right-of-Way (ROW) clearing for the construction of Section 3 of the ± 350 kV HVdc transmission lines from Muskrat Falls to Soldiers Pond. Section 3 covers the distance from the southern end of Long Range Mountains to Soldiers Pond	Bond	Yes	Combination Lump Sum & Unit Prices
CT0346	Construction of 350 kV HVdc Transmission Line – Section 2	Construction of Section 2 of the ± 350 kV HVdc, 900 MW transmission line from the southern end of the Long Range Mountains to Soldiers Pond.	Bond + Letter of Credit	Yes	Combination Lump Sum & Unit prices
CT0342	Construction of AC Transmission Lines - Island	Modification of existing 230 kV, 138 kV and 69 kV transmission lines, new construction of a 15 km of wooden pole electrode line from the Converter Station at Soldiers Pond to Conception Bay and re-termination of three 230 kV HVac transmission lines at the Soldiers Pond Converter Station including right-of-way clearing as required.	Bond + Letter of Credit	No	Combination Lump Sum & Unit Prices

13.2.4 Major Contract Package Strategies

The LIL transmission lines contracting strategy has been developed based on Nalcor's contracting strategy guidelines and process, an EPCM delivery approach, the construction plan and the strategic guidelines identified in 13.2.2.

Construction Plan Summary

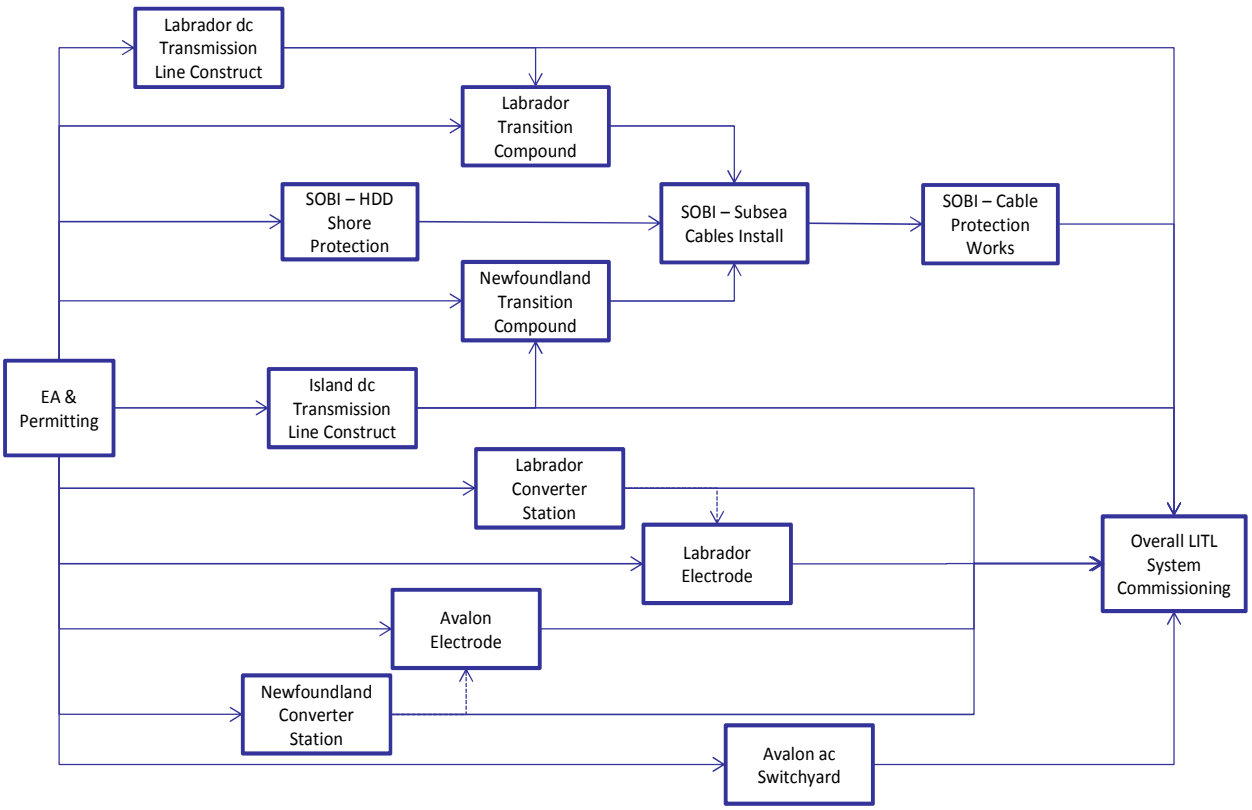
The overall construction logic for the Labrador – Island Transmission Link is illustrated in Figure 21 below.

The overall construction program is largely independent, parallel work with key interface points:

- Transition compounds join together the overhead transmission lines and the SOBI cables
- Converter stations connect to electrodes
- Converter stations connect to ac switchyards (the MF switchyard is considered part of the MF project)
- Converter stations connect to overhead dc transmission lines

All components must be completed for final system testing & commissioning, while the key enablers for successful construction completion is construction logistics and management of interface points.

Figure 21: Labrador – Island Transmission Link Construction Logic – Overview



Contracting Strategy Considerations

Transmission line construction will take advantage of the minor and very manageable interfaces resulting from the natural division of the work by corridor length (geography). The Right of Way clearing work will be packaged and awarded in advance of the transmission line (TL) construction so as to provide key site and geotechnical data for the TL construction contracts. The TL will be divided into two bidding phases. This reflects the current view of availability of skilled resources to complete this work (2012 and 2013 are forecast to be very busy periods for other TL projects across Canada). Each of these phases will be sub-divided into smaller sections for bidding purposes. This strategy is expected to attract medium and large companies and joint ventures as bidding will allow contractors to bid on single sections as well as multiple sections. This strategy will be monitored and adjusted based on market conditions, availability of experienced contractors and resources, and permitting. Focus will be on TL completion well in advance of its required date so as to remove the risk of it being on the project critical path.

The strategy for power transmission components will follow similar successful experience on other large projects. The converter stations and synchronous condensers will be lump sum EPC contracts. Specialized equipment for switchyards and electrodes will be procured directly by Nalcor (i.e. SNC-Lavalin) and will be free issued to civil and mechanical installation contractors. Interfaces for these installations are well understood and very manageable.

A description of the major contract packages is provided below.

CONTRACT PACKAGE NO. CD0501
Supply & Install Converters, Harmonic Filters and Transition Compounds – This large work scope is well suited to experienced suppliers which typically execute this work on an EPC lump sum basis. As a result, interfaces are minimized. All earthworks required to prepare the sites will be done in advance by other contractors specialized in this work.

CONTRACT PACKAGE NO. CD0502
Construction of AC Substations and Synchronous Condensers Facilities – The electro-mechanical construction associated with all switchyard sites and the synchronous condenser site will be packaged under one large contract. This strategy will help to avoid the risk of schedule delay and will help to attract large experienced contractors. In addition, and with respect to the synchronous condenser, suppliers have indicated that they would not be prepared to include civil construction scope as part of their supply scope. Scope of this contract will also include the supply and erection of the building for synchronous condensers.

CONTRACT PACKAGE NO. CD0503
Construction of Earth Works at Power Distribution Sites – All required access, bulk earthworks and rough grading at the power distribution sites will be grouped into one package. This scope includes all excavation, backfilling, material removal and the supply of final grading material. This scope of this work is designed to be suitable for local or Atlantic Canada heavy civil contractors.

CONTRACT PACKAGE NO. CD0508

Construction of Electrode Sites – Based on market confirmation, both electrode sites will be constructed on a combination of lump sum and fixed unit price basis. The design of the electrodes will be undertaken by SLI, who will also procure specialized equipment, while the contractors will take responsibility for all for construction and installation works.

CONTRACT PACKAGE NO. CD0534

Supply and Installation of Soldier`s Pond Synchronous Condensers - This contract covers the design, supply, installation and commissioning of the synchronous condensers, including all associated electromechanical components. It will be contracted on a lump sum EPC basis. Based on the typical scope of supply for synchronous condenser suppliers, all civil works and structures will be contracted separately.

CONTRACT PACKAGE NO. PD0505

Supply of Switchyard Equipment, AC Substations at CF, MF and SP – These packages include large specialty equipment and material including transformers, substation equipment, conductor, insulators, tower steel etc. These are speciality items, which will be procured by Nalcor (through SLI) and free issued to CD0502 for installation. They will be awarded on a firm price basis.

CONTRACT PACKAGE NO. CT0343

Clearing of Right of Way for HVdc Transmission Line - Section 1 – This package includes the right of way (ROW) clearing for approximately 585 km of HVdc lines for the Section 1, Segment 1 (74 km starting from Muskrat Falls) and Segment 2 (151 km), in Labrador and Segment 3, 4 and 5 (360 km starting from Labrador to the end of the Long Range Mountains) in Newfoundland.

The ROW clearing works will be carried out on a 60 m wide corridor and consist of felling all trees and shrubs higher than 1 m at maturity.

The scope is structured so bidders may bid on either segment individually or the whole section.

CONTRACT PACKAGE NO. CT0345

Clearing of Right of Way for HVdc Transmission Line - Section 2 - The package includes right of way (ROW) clearing of approximately 470 km of HVdc lines for Section 2, Segment 6, 7 and 8, from the end of Long Range Mountains to Soldiers Pond and 15 km of wood pole electrode line in Newfoundland.

The ROW clearing works will be carried out on a 60 m wide corridor and consist of felling all trees and shrubs higher than 1 m at maturity.

The scope is structured so bidders may bid on either segment individually or any combination of segments together.

CONTRACT PACKAGE NO. CT0327

Construction of 350 kV HVdc Transmission Line - Section 1– Contract covers the construction of footings, erection of steel towers, line stringing and installation of all hardware, insulators, overhead shield wire, optical ground wire, spacers and counterpoise wire.

Materials will be free-issued by Nalcor and received by contractor at designated marshaling / storage yards. Contractor is responsible for material transport from free-issue point to work site. Contractor is responsible for providing all labor, supervision, equipment, and construction consumables required to construct the line, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

This package will be divided into two sections. Bidders will have the opportunity to bid for one or both sections. This strategy is expected to attract the best possible competition. As ROW clearing work will be in advance of this package, it is expected that firm foundation data will be available to contractors.

CONTRACT PACKAGE NO. CT0346

Construction of 350 kV HVdc Transmission Line - Section 2 – Contract covers the construction of footings, erection of steel towers, line stringing and installation of all hardware, insulators, overhead shield wire, optical ground wire, spacers and counterpoise wire.

Materials will be free-issued by Nalcor and received by contractor at designated marshaling / storage yards. Contractor is responsible for material transport from free-issue point to work site. Contractor is responsible for providing all labor, supervision, equipment, and construction consumables required to construct the line, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

This package will be divided into two sections. Bidders will have the opportunity to bid for one or both sections. This strategy is expected to attract the best possible competition. As ROW clearing work will be in advance of this package, it is expected that firm foundation data will be available to contractors.

CONTRACT PACKAGE NO. CT0342

Construction of AC Transmission Lines - Island – This contract covers modification to existing 230 kV, 138 kV and 69 kV transmission lines. New construction of 15 km of wooden pole electrode line from the Converter Station at Soldiers Pond to Conception Bay and the re-termination of three 230 kV HVac transmission lines at the Soldiers Pond Converter Station, including all required right-of-way clearing.

CONTRACT PACKAGE NOs. (Multiple)

Electromechanical Equipment & Material – These packages include large specialty equipment and material including transformers, substation equipment, conductor, insulators, tower steel etc. These are speciality items, which will be procured by Nalcor and free issued to contractors. They will be awarded on a firm price basis.

SITE SERVICES

Services necessary for the safe and efficient operation of each of the sites include the provision of office and accommodations facilities, medical, security, maintenance, personnel transportation, warehousing, catering, waste disposal, road maintenance and fuel supply.

On the LTA project, where Nalcor has limited ability to control the effective usage of such services, contractors will be responsible for the provision of all support services. This strategy recognizes that the contractor will optimize his build sequence, camp type, locations and crew sizes to best manage the risk assumed. Where contractors are responsible to provide their own services, bid documents will specify minimum levels of service standards and quality.

SERVICE CONTRACTS NOs. SM0700, SM0701, SM0703, SM0704, SM0715 etc.

Common Service Contracts (multiple packages)

Service contracts in support of the EPCM approach, such as freight forwarding services, expediting & inspection, geotechnical investigations, survey work etc. will be awarded separately so as to attract specialized contractors, resulting in strong bidding and competitive pricing. Contracts will include lump sum and unit price elements. Whereas Nalcor will be responsible for safeguarding equipment and materials up to the point of free issued to contractors, the care custody and control of this material will then be the responsibility of the contractors.

13.3 SOBI Cable Crossing

As identified in the overall Contracting Strategy Diagram illustrated in Figure 12, the Nalcor-led scope includes the development of the SOBI Cable Crossing.

The SOBI submarine cable is required to achieve power transmission from the Muskrat Falls generating station to the Island of Newfoundland via the Strait of Belle Isle. In general, the work includes laying three cables across the Strait with a routing distance of approximately 40 km each.

13.3.1 Scope of Work

The conceptual design of SOBI Marine Crossing portion of the Labrador – Island Transmission Link forming the DG 2 basis is described in SOBI Marine Crossing "Phase 2" Conceptual Design, reference document no. ILK-PT-ED-8110-MR-RP-0001-01.

The Work shall include all design, manufacture, testing, transport, installation and pre-commissioning activities of the HVDC cable *(*350 kV at total bi-pole system power of 900 MW) and accessories for the Island Link Strait of Belle Isle (SOBI) crossing and interface with the overland transmission system on both sides of the Strait, including:

- Nominally 102 km of mass-impregnated submarine cable
- Approximately 20 km of mass-impregnated land cable
- All applicable accessories - terminations, joints, anchoring devices, etc.
- Fibre optics strands to be included in the cables for temperature sensing and telecommunications
- Studies (sea currents, ice, benthic, bathymetry, sub-bottom, profiling, geotechnical, etc.
- Design of landfall, utilizing Horizontal Directional Drilling (HDD)
- Design and execution of adequate marine and land protection

Due to the lead-time required for cable production, Contract Award is planned for the 4th Quarter of 2011 with cable installation beginning late in the 2nd Quarter of 2015 and completed early in the fourth quarter of 2015.

13.3.2 Strategic Guidelines

As a result of market intelligence and previous experience with international vendors it was decided to employ the following package scheme with respect to the major components for the SOBI marine crossings.

The recommended packaging groups the work so that only one contractor will be working in an area at one time, thereby reducing risks associated with interfaces. Additionally, the proposed packaging keeps the work within the core competencies of the specialized contractors/suppliers, necessary to complete the various aspects of the work. This approach should result in achievement of best value for the individual packages while reducing commercial risk and interfaces.

In addition to the major packages there is a requirement for some additional field work (studies) for progression of detailed engineering. This scope is now ongoing and is being contracted directly by Nalcor.

13.3.3 Contract Packages Summary

A summary of the proposed major packages and type of contracts is contained in Table 9.

In line with LCP's procurement strategy, Nalcor will issue Purchase Orders for major equipment and materials. These PO's cover items requiring detail design to a technical specification (e.g. towers), items requiring long lead delivery times, "catalog" items to be supplied in large quantities (e.g. insulators), specialized equipment and items for common use by contractors.

Table 9: Summary of Major Contract Packages for LIL SOBI Crossing

Package Ref. No.	Contract Package Title	Scope	Security Strategy	Required for Final Disclosure	Notional Contract Form
SB-003	Submarine Cable Design, Supply and Installation	Submarine Cable Design, Supply and Installation	Bond + Letter of Credit	Yes	EPCI lump sum
SB-010	Landfall HDD Construction	Landfall HDD Construction	Bond + Letter of Credit Bond	Yes	Fixed Unit Rates
SB-011	Rock Berm Design, Supply and Install	Rock Berm Design, Supply and Install	Bond + Letter of Credit Bond	Yes	Combination Lump Sum & Unit prices

13.3.4 Major Contract Package Strategies

The contracting strategy associated with each major component of the SOBI Cable Crossing is provided below:

CONTRACT PACKAGE NO. LC-SB-003

Cable Design, Supply and Installation – In communications with the three cable manufacturers known to have the capacity to manufacture subsea cables (Nexens, Prysmium, ABB) suitable for the Straits Crossings it has been determined that all have the capacity and interest to design, manufacture and install the cable (with free issued landfall). None of the manufacturers have expressed an interest in a turnkey job of design, supply, install (including landfall) and protect. Only one manufacturer expressed an interest in design, supply, install and protect, however this does not include general marine protection. A general contractor could be employed to complete the entire program however it is anticipated that this would result in a premium price for the work.

It is critically important to keep the design, supply and installation of the cables as a single package to ensure that risks relating to integrity/continuity remain clearly with the supplier from the manufacture through installation to testing and commissioning. This will ensure single-

point responsibility for problems with the cable that may be attributable to design, supply or installation.

CONTRACT PACKAGE NO. LC-SB-011

Design, Supply and Install Marine Cable Protection – As stated above, only one cable manufacturer has expressed an interest in installation of cable protection (rock cover over the cable exposed on the seabed). To ensure competition, therefore, this scope will be treated as a separate package from the Cable, Design Supply Install package. Also, rock placement can be performed after installation and testing of the cable, reducing interface risks.

There is significant east coast experience for this work so the separate packaging also creates a local supply opportunity.

The industry standard is for the performance of this work to be executed using an Combination Lump Sum & Unit prices delivery method.

CONTRACT PACKAGE NO. LC-SB-003

Landfall – Construction (HDD Construction) – Landfall construction utilizing the Horizontal Directional Drilling (HDD) construction method. A company experienced in this field will carry out the design separately, building upon the 2011 pilot program. Nalcor`s consultant, Hatch MottMacDonald, will act as the engineer for the HDD boreholes.

13.4 Contract Types

Careful consideration has been applied in selecting the types of contracts (see Section 9.5 above) to ensure budget, performance and schedule requirements are met and to achieve maximum protection of Project capital costs.

A summary of the contract package types, for the Labrador Transmission Assets, is provided below in Table 10. In addition, the percentage breakdown of the estimated total construction cost is provided.

Table 10: Package Count by Notional Contract Form

Labrador – Island Transmission Link	Major Construction Contracts by Type			Major Procurement Packages	Other Packages
	Lump Sum	Combination Lump Sum & Unit Price	Unit Price		
Package Count	3 (1,2)	8 (1,2)	n/a	9 (1,2)	7
Estimated % of Total SPV Cost	50%	40%	-	10%	<1 to 2%

(1) Packages will have provision for award of separate contracts by geographical location which could result in additional contracts. Division of packages will not result in additional interface issues due to separate geographical locations.

(2) In some cases, packages may also be split to differentiate scope between SPV's.

(3) Contracts which span all Projects and which are inappropriate to split between SPV's are classified as Common.

14.0 MISCELLANEOUS FACILITIES AND SERVICES

14.1 Introduction

As identified in the overall Contracting Strategy Diagram, Figure 12, the Nalcor-led scope includes the development of the SOBI Crossing as well as other elements including Environmental Assessment, Aboriginal Affairs, Power Sales, Finance and other facility and support activities.

Since the beginning of the project, an array of feasibility studies, environmental research, field investigations and all associated support services have been contracted by Nalcor. This work was carried out to identify costs, support permit applications and to progress the overall design configuration to be used for development. Miscellaneous facilities and services will continue to be contracted throughout project implementation.

The process used to award these contracts and agreements follow LCP's approved procurement policies and procedures. Due to its nature, almost all of this work is reimbursable and is procured on an as required basis. Accordingly, all of the work within this category is excluded from the LCP Contracting Strategy process. The value of each of these contracts is relatively minor in comparison to the total budget for each project and provides significant benefits to the project in assisting to define scope, design and other features of the project, which provide greater certainty to cost and ability to mitigate potential risks.

14.2 Scope of Work

A selection of representative contracts and agreements are provided below:

	Description
➢ **Hatch Limited** ➢ **Canadian Helicopters Ltd** ➢ **Fugro Jacques Geosurveys** ➢ **Stantec Consulting Ltd** ➢ **Fasken Martineau Dumoulin**	Engineering feasibility studies and field work Helicopter services in support of field investigations Geotechnical Investigations Miscellaneous environmental and other consulting assignments Legal services

14.3 Compensation Structure

Reimbursable, based on agreed rates.

14.4 Current Status

Work has been executed on the LCP for many years, leading up to the formal commencement of the project in a sustained manner in 2008. Since January 2008, approximately 250 Agreements have been executed under a variety contract types. The costs associated with this work will be allocated to each of the Project in accordance with the approved and documented Project Allocation Principles.

15.0 INTEGRATION WITH OPERATIONS

15.1 Operations Strategy

Operations and Maintenance Philosophy, reference document no. LCP-PT-MD-0000-PM-PH-0001-01, describes the overall approach that will be used to ensure long-term asset integrity.

The general approach is for routine maintenance, condition and performance monitoring, inspection, adjustment and minor repairs will be performed by Nalcor staff working at the facilities, or located nearby in other Nalcor facilities. Major maintenance and repair, specialized inspections, tests and adjustments will be performed by contractors, which will be engaged through a variety of contractual arrangements depending on the nature of the services required. Such services would include technical support for the following equipment types:

- Turbine
- Governors
- Generators
- Exciters
- Converter station equipment
- Control systems
- Switchgear
- Transformer
- Submarine Cables

All capital equipment supply contracts will include the requirement for suppliers to provide life-of-field operational support, the scope and nature depending upon the particular piece of equipment. To this effect, all Requests for Proposals issued by Nalcor will contain relevant terms for such services.

15.2 Spare Parts Policy

Design Philosophy for Equipment Criticality, Reliability, Redundancy and Spare Parts, reference document no. LCP-PT-ED-0000-EN-PH-0015-01 provides the criteria for selection of spare parts for the operation.

Nalcor's Ready for Operations team will define a suitable strategy for the supply, handling and management of the spare parts necessary for the proper operations of the Project, while leveraging the existing processes with the NLH.

As normal practice, the spare parts necessary for the commissioning & start-up operations will be provided by Supplier together with the requested equipment/items; the operation and 2 years spare parts will be provided by Supplier on an optional basis as well as the required capital spare parts.

The spare parts necessary for the proper running of the operations, including strategic or insurance spare parts with high cost or long lead implications will be procured and managed by Nalcor.

A.0 ACTIVITY FLOWCHART (EXCEL FORMAT)

A.1 N/A

B.0 ATTACHMENTS/APPENDICES

B.1 Contract Package List

Contract Package List
Excluding SOBI Crossing (as of 3-Feb-2012)

EPCM Component Reference	Type	Code	Package Name	SPV Reference			Package Count
				MF	LTA	LITL	
C1	C - Contract	CH0002	Supply and Install Accommodations Complex Buildings	X			
C1	C - Contract	CH0003	Supply and Install Administrative Buildings	X			
C1	C - Contract	CH0004	Construction of Southside Access Road	X			
C1	C - Contract	CH0005	Supply and Install Accommodations Complex Site Utilities	X			
C1	C - Contract	CH0006	Construction of Bulk Excavation Works and Associated Civil Works	X			
C1	C - Contract	CH0007	Construction of Intake and Powerhouse, Spillway and Transition Dams	X			
C1	C - Contract	CH0008	Construction of North Spur Stabilization Works	X			
C1	C - Contract	CH0009	Construction of North and South Dams	X			
C1	C - Contract	CH0023	Construction of Reservoir Clearing South Bank	X			
C1	C - Contract	CH0024	Construction of Reservoir Clearing North Bank	X			
C1	C - Contract	CH0029	Construction of Site Restoration at Muskrat Falls	X			
C1	C - Contract	CH0030	Supply and Install Turbines and Generators	X			
C1	C - Contract	CH0031	Supply and Install Mechanical and Electrical Auxiliaries (MF)	X			
C1	C - Contract	CH0032	Supply and Install Powerhouse Hydro-Mechanical Equipment	X			
C1	C - Contract	CH0033	Supply and Install Powerhouse Cranes	X			
C1	C - Contract	CH0034	Supply and Install Powerhouse Elevator	X			
C1	C - Contract	CH0039	Supply and Install McKenzies River Permanent Bridge	X			
C1	C - Contract	CH0046	Supply and Install Spillway Hydro-Mechanical Equipment	X			
C1	C - Contract	CH0048	Construction of Site Clearing Access Road & Ancillary Areas	X			
C1	C - Contract	CH0049	Supply and Install Log Booms	X			
C1	C - Contract	CH0050	Supply of Concrete including Batch Plant (MF)	X			
C1	C - Contract	CH0052	Construction of Habitat Compensation Works	X			
C1	P - Purchase Order	PH0014	Supply of Generator Step-up Transformer	X			
C1	P - Purchase Order	PH0015	Supply of Isolated Phase Bus	X			
C1	P - Purchase Order	PH0016	Supply of Generator Circuit Breakers	X			
C1	P - Purchase Order	PH0035	Supply of 15kV Switchgear and Station Service Breakers	X			
C1	P - Purchase Order	PH0036	Supply of Auxiliary Transformers	X			
C1	P - Purchase Order	PH0037	Supply of 25kV Switchgear	X			
C1	P - Purchase Order	PH0038	Supply of Emergency Diesel Generators	X			
C1	S - Service Contract	SH0001	Physical Hydraulic Model	X			
C1	S - Service Contract	SH0018	Provision of Catering, Housekeeping and Janitorial Services (MF)	X			
C1	S - Service Contract	SH0019	Provision of Security Services	X			
C1	S - Service Contract	SH0020	Provision of Medical Services	X			
C1	S - Service Contract	SH0021	Provision of Road Maintenance and Snow Clearing Services (MF)	X			
C1	S - Service Contract	SH0022	Provision of Fuel Supply and Dispensing Services (MF)	X			
C1	S - Service Contract	SH0040	Provision of Garbage Removal and Disposal Services (MF)	X			
C1	S - Service Contract	SH0041	Provision of Ground Transportation Services (HVGB to MF)	X			
C1	S - Service Contract	SH0051	Provision of Buildings Maintenance Services (MF)	X			
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Contract Package List
Excluding SOBI Crossing (as of 3-Feb-2012)

EPCM Component Reference	Type	Code	Package Name	SPV Reference			Package Count
				MF	LTA	LITL	
C3	C - Contract	CD0501	Supply and Install Converters and Cable Transition Compounds			X	
C3	C - Contract	CD0502	Construction of AC Substations and Synchronous Condensers Facilities		X		
C3	C - Contract	CD0503	Construction of Earthworks at Various Power Distribution Sites		X	X	
C3	C - Contract	CD0508	Supply and Install of Electrode Sites			X	
C3	C - Contract	CD0509	Construction Telecommunication Services - Phase 2	X			
C3	C - Contract	CD0510	Supply and Install Permanent Communication Systems	X	X	X	
C3	C - Contract	CD0512	Construction of Construction Power Facilities	X			
C3	C - Contract	CD0534	Supply and Install Soldiers Pond Synchronous Condensers			X	
C3	C - Contract	CD0535	Construction Telecommunication Services - Phase 2 Remote Camps		X	X	
C3	C - Contract	CD0538	Supply and Install Accommodations Camp (CF)		X		
C3	C - Contract	CD0564	Construction of Land Mobile Radio System - Labrador	X	X	X	
C3	P - Purchase Order	PD0505	Supply of Switchyard Equipment, AC Substations at CF, MF and SP		X	X	
C3	P - Purchase Order	PD0513	Supply of 138/25 kV Transformers	X			
C3	P - Purchase Order	PD0514	Supply of 138 kV & 25 kV Circuit Breakers	X			
C3	P - Purchase Order	PD0515	Supply of 230 kV, 138 kV & 25 kV Disconnect Switches	X			
C3	P - Purchase Order	PD0518	Supply of 138 kV Capacitor Voltage Transformers	X			
C3	P - Purchase Order	PD0519	Supply of 25 kV Vacuum Interrupters	X			
C3	P - Purchase Order	PD0520	Supply of 25 kV 6 x 3.6 MVAR Capacitor Banks	X			
C3	P - Purchase Order	PD0522	Supply of Pre-fabricated Control Room Building	X			
C3	P - Purchase Order	PD0523	Supply of Substation Service Transformer	X			
C3	P - Purchase Order	PD0529	Supply of 25 kV Reclosers, MV Switches & Fuse Cut-outs	X			
C3	P - Purchase Order	PD0530	Supply of 138 kV & 25 kV Surge Arrestors	X			
C3	P - Purchase Order	PD0531	Supply of MV Instrument Transformer	X			
C3	P - Purchase Order	PD0533	Supply and Install Early Works Telecom Devices	X			
C3	P - Purchase Order	PD0537	Supply of Power Transformers, AC Substations at CF, MF and SP		X	X	
C3	P - Purchase Order	PD0561	Supply of D20 RTU and Cabinet (CF) - Construction Power	X			
C3	P - Purchase Order	PD0562	Supply of Specific Relays and Test Switches (CF) - Construction Power	X			
C3	P - Purchase Order	PD0563	Supply of 138 kV Circuit Switcher (CF) - Construction Power	X			
C3	S - Service Contract	SD0536	Provision of Integrated Commissioning Support Services	X	X	X	
C3	S - Service Contract	SD0560	Provision of Early Works Construction Telecommunication Services (MF)	X			
C3	S - Service Contract	SD0565	Provision of Land Mobile Radio System - Newfounland			X	
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Contract Package List
Excluding SOBI Crossing (as of 3-Feb-2012)

EPCM Component Reference	Type	Code	Package Name	SPV Reference			Package Count
				MF	LTA	LITL	
C4	C - Contract	CT0319	Construction of 315 kV HVac Transmission Line (MF to CF)		X		
C4	C - Contract	CT0327	Construction of 350 kV HVdc Transmission Line - Section 1			X	
C4	C - Contract	CT0341	Clearing of Right of Way for 315 kV HVac Transmission Line (MF to CF)		X		
C4	C - Contract	CT0342	Construction of AC Transmission Lines - Island			X	
C4	C - Contract	CT0343	Clearing of Right of Way for HVdc Transmission Line - Section 1			X	
C4	C - Contract	CT0345	Clearing of Right of Way for HVdc Transmission Line - Section 2			X	
C4	C - Contract	CT0346	Construction of 350 kV HVdc Transmission Line - Section 2			X	
C4	P - Purchase Order	PT0300	Supply of Transmission Line Conductors - 315 kV HVac		X		
C4	P - Purchase Order	PT0301	Supply of HVac Insulators - 315 kV HVac		X		
C4	P - Purchase Order	PT0302	Supply of Steel Towers - 315 kV HVac		X		
C4	P - Purchase Order	PT0303	Supply of Tower Hardware - 315 kV HVac		X		
C4	P - Purchase Order	PT0304	Supply of Optical Ground Wire (OPGW) - 315 kV HVac		X		
C4	P - Purchase Order	PT0307	Supply of Steel Tower Foundations - 315 kV HVac		X		
C4	P - Purchase Order	PT0308	Supply of Steel Tower Foundations - 350 kV HVdc			X	
C4	P - Purchase Order	PT0313	Purchase of Electrode Line Wood Poles			X	
C4	P - Purchase Order	PT0326	Supply of Steel Wires - 315 kV HVac		X		
C4	P - Purchase Order	PT0328	Supply of Transmission Line Conductors - 350 kV HVdc			X	
C4	P - Purchase Order	PT0329	Supply of HVdc Insulators - 350 kV HVdc			X	
C4	P - Purchase Order	PT0330	Supply of Steel Towers - 350 kV HVdc			X	
C4	P - Purchase Order	PT0331	Supply of Tower Hardware - 350 kV HVdc			X	
C4	P - Purchase Order	PT0334	Supply of Steel Wires - 350 kV HVdc			X	
C4	P - Purchase Order	PT0335	Supply of Anchor Materials - 315 kV HVac			X	
C4	P - Purchase Order	PT0336	Supply of 25 kV Distribution Line Hardware	X			
C4	P - Purchase Order	PT0337	Supply of 25 kV Distribution Line ADSS Fibre Optic Cable	X			
C4	P - Purchase Order	PT0338	Supply of 25 kV Distribution Line Conductors	X			
C4	P - Purchase Order	PT0339	Supply of 25 kV Distribution Line Insulators	X			
C4	P - Purchase Order	PT0340	Supply of Wood Poles for 138/25 kV Distribution Line	X			
C4	P - Purchase Order	PT0347	Supply of Re-terminations Materials			X	
C4	P - Purchase Order	PT0351	Supply of Wood Poles			X	
C4	P - Purchase Order	PT0352	Supply of Anchor Materials - 350 kV HVdc			X	
C4	P - Purchase Order	PT0353	Supply of Optical Ground Wire (OPGW) - 350 kV HVdc			X	
C4	S - Service Contract	ST0309	Provision of Geotechnical Investigation Services - 315 kV HVac		X		
C4	S - Service Contract	ST0310	Provision of Geotechnical Investigation Services - 350 kV HVdc			X	
C4	S - Service Contract	ST0311	Provision of Survey Services - 315 kV HVac		X		
C4	S - Service Contract	ST0312	Provision of Survey Services - 350 kV HVdc			X	
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Contract Package List
Excluding SOBI Crossing (as of 3-Feb-2012)

EPCM Component Reference	Type	Code	Package Name	SPV Reference			Package Count
				MF	LTA	LITL	
SM	S - Service Contract	SM0700	Provision of General Freight Forwarding Services	X	X	X	
SM	S - Service Contract	SM0701	Provision of Third Party Quality Surveillance & Inspection Services	X	X	X	
SM	S - Service Contract	SM0703	Provision of Happy Valley-Goose Bay Project Office Space	X	X	X	
SM	S - Service Contract	SM0704	Provision of Surveying Services	X	X	X	
SM	S - Service Contract	SM0705	Provision of Laboratory Services	X	X	X	
SM	S - Service Contract	SM0706	Supply and Maintenance of Project Vehicles	X	X	X	
SM	S - Service Contract	SM0707	Provision of Helicopter Services	X	X	X	
SM	S - Service Contract	SM0709	Provision of Air Transportation Services	X	X	X	
SM	S - Service Contract	SM0710	Supply and Maintenance of various IT Equipment	X	X	X	
SM	S - Service Contract	SM0713	Provision of Geotechnical Investigation Services		X	X	
SM	S - Service Contract	SM0714	Provision of EPCM Services - SNC Lavalin Inc.	X	X	X	
SM	S - Service Contract	SM0715	Provision of Expediting Services	X	X	X	
							12
						Grand Total	116