

NOT APPROVED

Nalcor Energy – Lower Churchill Project



Project Governance Plan

LCP-PT-MD-0000-PM-PL-0005-01

Comments:	Total Page Count (including cover): 35
-----------	---

Approvals and Revision History

Status / Revision	Date	Reason For Issue	Prepared By	Checked By	Checked By	Checked By	Project Manager Approval
B1		Issued for Use / Implementation	J. Kean	R. Power	L. Clarke	L. Barrington	P. Harrington
A3	6-Jan-09	Issued for Review / Comment	J. Kean				
A2	4-Sep-08	Issued for Review / Comment	J. Kean				
A1	7-Apr-08	Issued for Review / Comment	J. Kean				

This document contains intellectual property of the Nalcor Energy – Lower Churchill Project and shall not be copied, used or distributed in whole or in part without the prior written consent from the Nalcor Energy – Lower Churchill Project.

Additional Signatures (where required)

B1		Issued for Use / Implementation	G. Bennett	D. Sturge	E. Martin		
Status / Revision	Date	Reason For Issue	LCP VP Approval	CFO Approval	Gatekeeper Approval		

Professional Engineers Stamp:
(where required)

TABLE of CONTENTS

1.0 Purpose.....5

2.0 Scope5

3.0 Definitions5

4.0 Abbreviations and Acronyms8

5.0 Roles and Responsibilities9

6.0 Reference Documents and/or Associated Forms9

7.0 Project Goals and Objectives.....10

8.0 Decision Gate Assurance Process10

 8.1 Decision Support Package 11

 8.2 Independent Project Reviews..... 12

9.0 Corporate Structure13

10.0 Project Policies.....13

11.0 Organization14

 11.1 Corporate Functional Interface Philosophy 16

12.0 Decisions and Authority17

 12.1 Decision Making 17

 12.2 Approval of Financial Expenditures 19

13.0 Financial Controls.....21

 13.1 Capital Budgets and AFEs 21

 13.2 Purchase Requisitions 23

 13.3 Agreements (Contracts and Purchase Orders)..... 23

 13.4 Hiring of Project Personnel..... 23

14.0 Health, Safety and Environment Stewardship24

 14.1 Emergency Management 25

15.0 Contracting and Procurement25

16.0 Audit and Assessment.....27

17.0 Management of Change28

18.0 Risk Management29

19.0 Capital Cost and Schedule Estimates31

 19.1 Contingency 32

 19.2 Management Reserve 33

20.0 Internal Stakeholder Reporting34

 20.1 Regular Progress Status Repots 34

 20.2 Board of Directors and Shareholder Relations..... 34

21.0 External Communications and Consultation34

 21.1 Press Releases 35

A.0 Activity Flowchart (Excel Format).....35

 A.1 N/A..... 35

B.0 Attachments/Appendices.....35

 B.1 N/A..... 35

1.0 Purpose

This *Governance Approach* sets out the basic governance approach to be used during the development of the Nalcor Energy – Lower Churchill Project (NE-LCP or the Project).

This document should be read in conjunction with documents LCP-PT-MD-0000-PM-CH-0001-01 Project Charter and LCP-PT-MD-0000-PM-PL-0001-01 Project Execution Plan.

2.0 Scope

Corporate governance is a term that refers broadly to the rules, processes, or laws by which businesses are operated, regulated, and controlled. A well-defined and enforced corporate governance provides a structure that works for the benefit of everyone concerned by ensuring that the enterprise adheres to accepted ethical standards and best practices as well as to formal laws. Corporate governance also entails the accountabilities and responsibilities for managing of the performance of an enterprise (i.e. Nalcor Energy). Project governance extends the principle of corporate governance into the management of individual projects, specifically in the case of NE-LCP.

A project governance structure is different from corporate governance in that it defines accountabilities and responsibilities for various project activities, including strategic decision-making, as well as defines the rules, structures and processes by which an individual project is managed and controlled. These include the organizational structures, roles, decision processes and mechanisms. Governance is also about who and what level of the organization performs the various project management functions / activities, especially when multiple parties have input into the function and decisions need to be made at the next level based upon actions being performed.

This Project Governance Plan defines the basic governance structure, methodologies and principles that will be utilized by the NE-LCP. It is not meant to duplicate or replace existing Nalcor Energy corporate governance standards or practices, rather provides the necessary level of governance clarity required to plan and execute the NE-LCP. Awareness and adherence to this document will ensure that the NE-LCP remains clearly aligned with Nalcor Energy's vision and values.

3.0 Definitions

LCP-PT-MD-0000-PM-LS-0001-01 Project Dictionary is the approved dictionary of definitions for the NE-LCP.

Accountability Being answerable for the satisfactory completion of a specific assignment

(Accountability = Authority + Responsibility).

Authority	The power granted to individuals (possibly by their position) so that they can make final decisions.
Authorization for Expenditure	The mechanism used by management to approve and control capital appropriation against approved Nalcor Energy corporate budgets.
Budget Holder	Person accountable for development, scheduling, commitment, control and forecasting against particular project scope.
Baseline	The project scope, in terms of quantity, quality, timing, hours, costs, etc that establishes a formal reference for comparison and verification of subsequent efforts, progress, analysis and control.
Commitment	Represents the value of the Project Budget allocated for awarded goods or services. The financial obligation of procured goods and/or services for the scope of various project work packages and/or the estimated value of other associated project costs (e.g. Project Management/special type contracts). Committed costs for awarded goods and services include the original values plus any approved variation orders to the contracts or change orders to the purchase order (which may or may not be a project scope change).
Commitment Authorization	The process of creating a financial obligation to procure goods and/or services. A commitment represents a cost which has not yet been paid, but an agreement, such as a purchase order or contract, has been made that the cost will be incurred.
Decision Gate	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.
Decision Support Package	Comprehensive package recommending a preferred way forward for a business decision; including justification, rationale, and supporting documentation for recommended way forward.
Estimate Contingency	Provision made for variations to the basis of an estimate of time or cost that are likely to occur, and that cannot be specifically identified at the time the estimate is prepared, but experience shows will likely occur. Contingency does not cover either of project scope changes, events such as strikes or natural disasters, or escalation and currency effects.
Financial Commitment	Establishes the financial commitment authorization limits (i.e. Approval Authorization Levels) for key positions and personnel within the Lower

Authorization Limits	Churchill Project. Individuals are only permitted to make financial commitments to the limit as specified.
Gatekeeper	Individual responsible for making the decision at the Decision Gate of the Gateway Process.
Gatekeeper-Level Strategic Risks	Strategic Risks that are given a relative risk-ranking of "High" due to a combination of their likelihood of occurrence and potential impact on Nalcor's corporate goals.
Internal Audit	A systematic and independent investigation to determine whether activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.
Key Deliverable	High-level listing of key outputs/documents which collectively demonstrate that objectives of the relevant Phase of the Gateway Process have been attained.
Lower Churchill Project Management Team	Managers and their delegates who report directly to the NE-LCP Project Director.
Management Reserve	Approved capital budget held in reserve and controlled by Gatekeeper, which is used to provide a higher confidence cost level (i.e. comfort factor).
Project Scope	A concise and accurate description of the end products or deliverables to be expected from the project and that meet specified requirements as agreed between the Project Stakeholders. It represents the combination of all project goals and tasks, and the resources and activities required to accomplish them.
Responsibility	The obligation incurred by individuals in their roles in the formal organization to effectively perform assignments.
Risk	Uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives.
Shareholder	For Nalcor Energy, the Shareholder is the Province of Newfoundland and Labrador.
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,

regulatory approvals, etc. Managing these risks requires significant effort and influence by the Gatekeeper with external stakeholders. Strategic risk is also referred to as the risk of a failure of a planned execution strategy.

Tactical Risk	Refers to risks associated with the base capital cost estimate as a result of uncertainties with the four components of the estimate: (1) project definition / scope, (2) construction methodology and schedule, (3) performance factors, and (4) price. It excludes escalation and inflation.
Trend Notice	A preliminary “early warning” indicator of a potential variance to a current scope and/or budget as previously forecast thus indicating a possible change to the Current Forecast Cost.
Work Breakdown Structure	The decomposition of the project scope into more manageable packages of work or deliverables. Each WBS element will have an approved budget that will be defined in the Project Budget.
Work Task Order	The official request and approval sheet for the authorization of work to the contractor. The Work Task Order, along with the attachments, describes the work scope, resources, hours, schedule, reporting requirements, costs, deliverables and desired outcome of the work scope.

4.0 Abbreviations and Acronyms

AFE	Authorization for Expenditure
CCB	Change Control Board
CEA	Canadian Electrical Association
CERP	Corporate Emergency Response Plan
CSA	Canadian Standards Association
DGSP	Decision Gate Support Package
ERP	Emergency Response Plan
HSE	Health, Safety and Environment
IPR	Independent Project Review
KPI	Key Performance Indicators
LACTI	<u>L</u> eads, <u>A</u> ccountable, <u>C</u> onsulted, <u>T</u> echnical and <u>I</u> nformed Chart
NE-LCP	Nalcor Energy Lower Churchill Project
NE-LCPMT	Nalcor Energy Lower Churchill Project Management Team
NLH	Newfoundland and Labrador Hydro
RACI	Responsible, Accountable, Consult and Inform
SWOP	Safe Workplace Observation Program
WBS	Work Breakdown Structure
WTO	Work Task Order

5.0 Roles and Responsibilities

Gatekeeper	Responsible for endorsement of this <i>Project Governance Plan</i> and to mandate the NE-LCP VP and PM to fully implement.
NE-LCP Vice-President	Single-point accountability for the NE-LCP. Is responsible to ensure this <i>Project Governance Plan</i> meets the need of the Gatekeeper, Nalcor Energy Board of Directors and the Shareholder. Also leads the implementation of this model within the NE-LCP. Shall also be responsible to ensure the Lower Churchill Project conducts its business in accordance with this Document.
Nalcor Energy CFO	Responsible to verify that this <i>Project Governance Plan</i> meets the Nalcor Energy corporate practices with respect to financial integrity and shareholder reporting.
Nalcor Energy General Counsel & Corporate Secretary	Responsible to verify that this <i>Project Governance Plan</i> meets the Nalcor Energy corporate governance practices as mandated by the Nalcor Energy Board of Directors and Shareholder.
NE-LCP Project Director	Responsible for production of this document for the NE-LCP Vice-President and for communication of the contents of <i>Project Governance Plan</i> within the NE-LCP and for ensuring the principals stated within are fully implemented.

6.0 Reference Documents and/or Associated Forms

LCP-PT-MD-0000-PM-LS-0001-01	Project Dictionary
LCP-PT-MD-0000-FI-PR-0001-01	Capital Expenditure Approval Authorization Procedure
LCP-PT-MD-0000-FI-PR-0002-01	Capital AFE Preparation and Supplement Procedure
LCP-PT-MD-0000-PM-CH-0001-01	Project Charter
LCP-PT-MD-0000-PM-PL-0001-01	Project Execution Plan
LCP-PT-MD-0000-PM-PR-0001-01	Lower Churchill Project Gateway Process
LCP-PT-MD-0000-PM-CH-0002-01	Project Steering Committee Charter
LCP-PT-MD-0000-PM-ST-0001-01	Contracting and Project Management Strategy
LCP-PT-MD-0000-RI-PH-0001-01	Risk Management Philosophy
N/A	NLH Corporate Emergency Response Plan (CERP)

7.0 Project Goals and Objectives

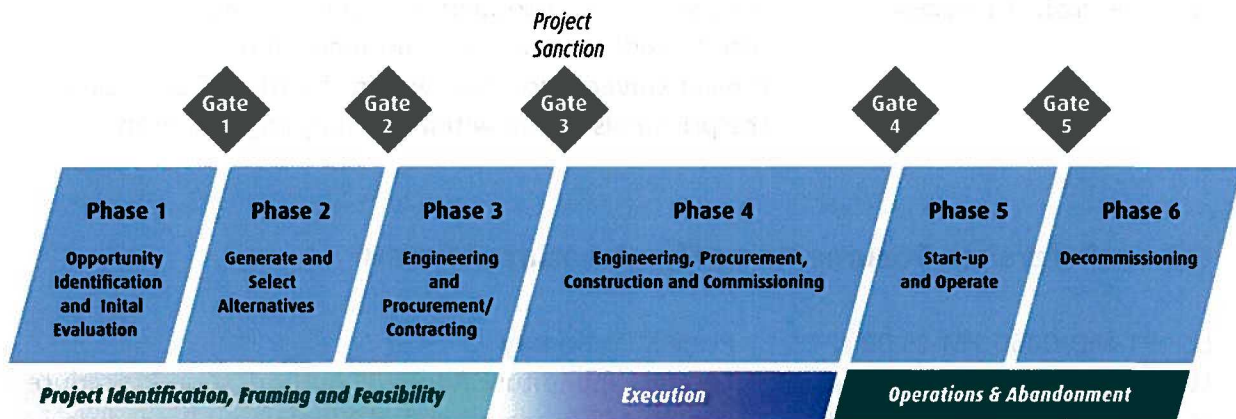
The business goal and supporting project objectives of the NE-LCP are documented in LCP-PT-MD-0000-PM-CH-0001-01 Project Charter. These objectives shall be the basis by which the Project Team works to achieve a successful delivery of the project.

The Project Charter will be updated to reflect any changes in the project as it progressively passes through decision gates.

8.0 Decision Gate Assurance Process

The NE-LCP Gateway Process, reference LCP-PT-MD-0000-PM-PR-0001-01 Lower Churchill Project Gateway Process, depicted in Figure 1.0, is a staged or phased decision gate assurance process that will be used to guide the planning and execution of the NE-LCP. The phases of the Project are managed by cross-functional teams, while the gates (known as Decision Gates) are structured decision points at the end of each phase. Project management is used to manage the phases between the gates, and can shorten the time between gates. The use of formal Decision Gates facilitates decision-making by the Gatekeeper of the readiness of a project to move from one phase to the next, whereby the capital intensity of the phase increases.

Figure 1.0 – Gateway Process



The Decision Gates in the Gateway Process are structured decision points at which the Gatekeeper, who is the person empowered to enforce the use of the Gateway Process and to make a decision on the future of the project, has to make appropriate decisions whether to proceed to the next project phase, make a temporary hold, or to terminate the project. The option to recycle to the current phase is considered an undesirable option unless caused by changes in business conditions. For each Decision Gate there are a number of Key Deliverables that have been agreed with the Gatekeeper that will be delivered to facilitate efficient and effective decision making at the Decision Gate.

The NE-LCP Gateway Process includes 6 Phases and 5 Decision Gates and is designed to reflect the realities of a financed project that will start construction at Project Sanction. The remaining Decision Gates that the NE-LCP will pass through prior to First Power are:

- Gate 2 – Approval of Development Scenario and to Commence Detailed Design
- Gate 3 – Project Sanction – Project Sanction
- Gate 4 – Approval to Commence First Power Generation

For the NE-LCP the Gatekeeper is the CEO of Nalcor Energy.

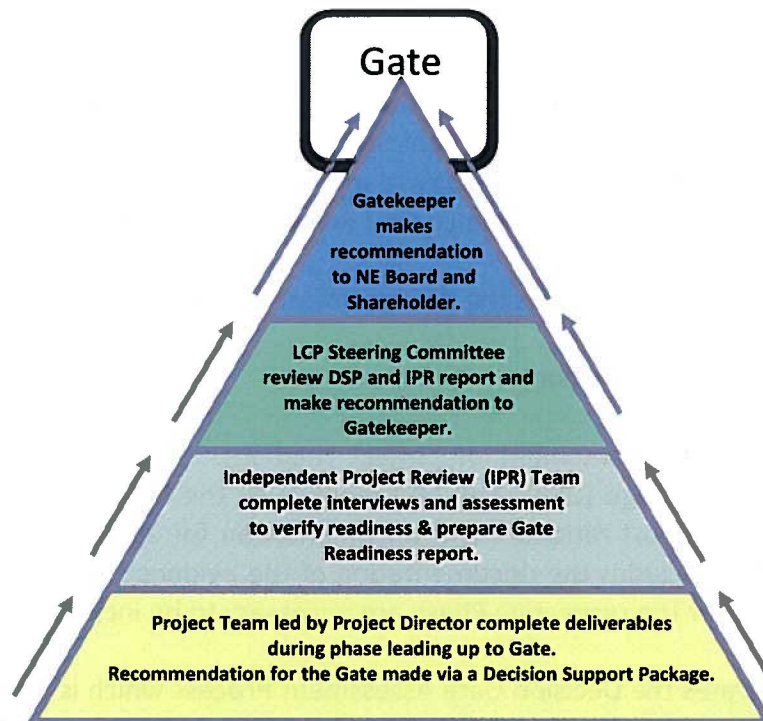
8.1 Decision Support Package

In order to facilitate assessment of project readiness to move through a Decision Gate a Decision Support Package (DSP) shall be prepared by the Project Team. The DSP includes the justification and support rationale and documentation for assessment of a go / no-go by the Gatekeeper. This includes the documentation of the evidence of completion and outcomes of Key Deliverables for the respective Phase are necessary to be included in the DSP.

Figure 2.0 illustrates the Decision Gate Assessment Process which is made up of four sequential steps, culminating with a recommendation of the Gatekeeper to the Nalcor Energy Board of Directors and Shareholder. In order to facilitate the Decision Gate Assessment Process, the NE-LCP will utilize Independent Project Review (IPR) Teams. With respect to IPRs the NE-LCP VP together with the Project Director will ensure the following:

- Reviews are conducted at the appropriate time and in the appropriate manner.
- Personnel with necessary competencies and experience are appointed to lead and participate in the reviews, and that availability of these personnel is secured to assure timely and adequate preparation for execution of the reviews.
- The review terms of reference are agreed with the Gatekeeper prior to the review.
- Preparation for reviews is undertaken in a timely manner.

It should be noted that the content of the DSP, excluding the section addressing the Independent Project Review (IPR) conclusions and recommendations, shall be available prior to the applicable decision gate review to allow adequate review by the IPR Team.

Figure 2.0 – Decision Gate Assessment Process

8.2 Independent Project Reviews

Independent Project Reviews (IPR) provides the degree of quality assurance required by the Gatekeeper for major decisions. The reviews are regarded as an opportunity to introduce external, constructive and holistic challenge to the project team, and provide assurance that the project will deliver the required business results. The conclusions and recommendations from IPR, as well as a gap closure plan, are included in the DSP when submitted to the Gatekeeper.

The objectives of the IPR are:

- To provide external challenge to the project team at each Decision Gate, to help assess the validity and robustness of the work done in key areas requiring focused attention and to assist in maximizing the value of the business opportunity.
- To assess the suitability of the project plans and strategies.
- To appraise the readiness and justification of the project to proceed into the next phase.

IPRs can be initiated by the Gatekeeper outside of the pre-defined Decision Gates. Such reviews must have a clear objective and the end products must be clarified in a specified terms of reference for each review to be conducted.

The review team may be comprised of external individuals and Nalcor Energy personnel that are not directly involved in the Lower Churchill Project that are able to provide an independent assessment of the project. A major selection criterion will be the proper representation of all

areas and disciplines in the review team. The IPR Leader and IPR team members will be appointed by the Gatekeeper.

To ensure consistency and quality of approach, it is essential that personnel with the desired competencies and experience are appointed to lead the IPR. The following guidelines should therefore be adhered to when selecting the team leader:

- IPR Leader will be external to and independent of the project team.
- IPR Leader has experience in conducting similar types of reviews, preferably as the team leader.
- IPR Leader has broad knowledge and experience covering Technical, Commercial, Operational, and Project Management issues.

IPR Team Members:

- The level, number and types of resources should be applicable to the nature, size and vulnerability of the review.
- The IPR Team should also include a member of the project team who can act to support the review and give guidance. The specific areas of competencies of the IPR team will vary between the different reviews depending on the focus of the decision being made. However, it is critical that the resources should cover the full range of competencies from Technical, Commercial, Economic, Financial, Operational, Project Management, and Business Environment issues.
- Several of the IPR Team members should have experience from similar types of reviews.
- The IPR representatives should be senior personnel who have significant experience in their area of expertise.

9.0 Corporate Structure

The proclamation of the Energy Corporation Act in October 2007 saw the birth of the province's energy corporation which has been branded as Nalcor Energy. With this emergence the NE-LCP became one of five divisions of Nalcor Energy. This division is structured as a capital project or business opportunity investigation within the corporation. As a division of Nalcor Energy, the NE-LCP operates within the corporate structure and organization of Nalcor Energy and subject to the same privileges and obligations.

It is envisioned that at the appropriate point in time a separate corporate entity will be formed to ensure, among other things, that appropriate levels of liability protection exist between the NE-LCP and Nalcor Energy.

10.0 Project Policies

As a division of Nalcor Energy, the NE-LCP will adhere to the Nalcor Energy corporate policies and standards, including the Nalcor Energy corporate values.

In those instances where a standard or policy does not exist within the corporation or is not deemed to reflect the differences between Nalcor Energy operations activities and those activities of the NE-LCP, the NE-LCPMT will identify this deficiency and need with the NE-LCP VP and Steering Committee and recommend a way for resolution. To-date this process has led to the development of several NE-LCP policy statements, including a Quality Policy, Risk Management Policy, and Information Management Policy.

11.0 Organization

An effective governance structure requires that the individuals who direct the project and those who manage its work activities be organized and their responsibilities, authority and decision making capacity be clearly defined and communicated. The NE-LCP organizational structure and the supporting decisions and authority framework outlined in Section 12.0 endeavors to achieve these objectives.

The executive-level organizational reporting structure for the NE-LCP is depicted in Figure 3.0, while Table 1.0 provides a summary-level Responsible, Accountable, Consult and Inform (RACI) chart for key activities within the leadership and management of the NE-LCP.

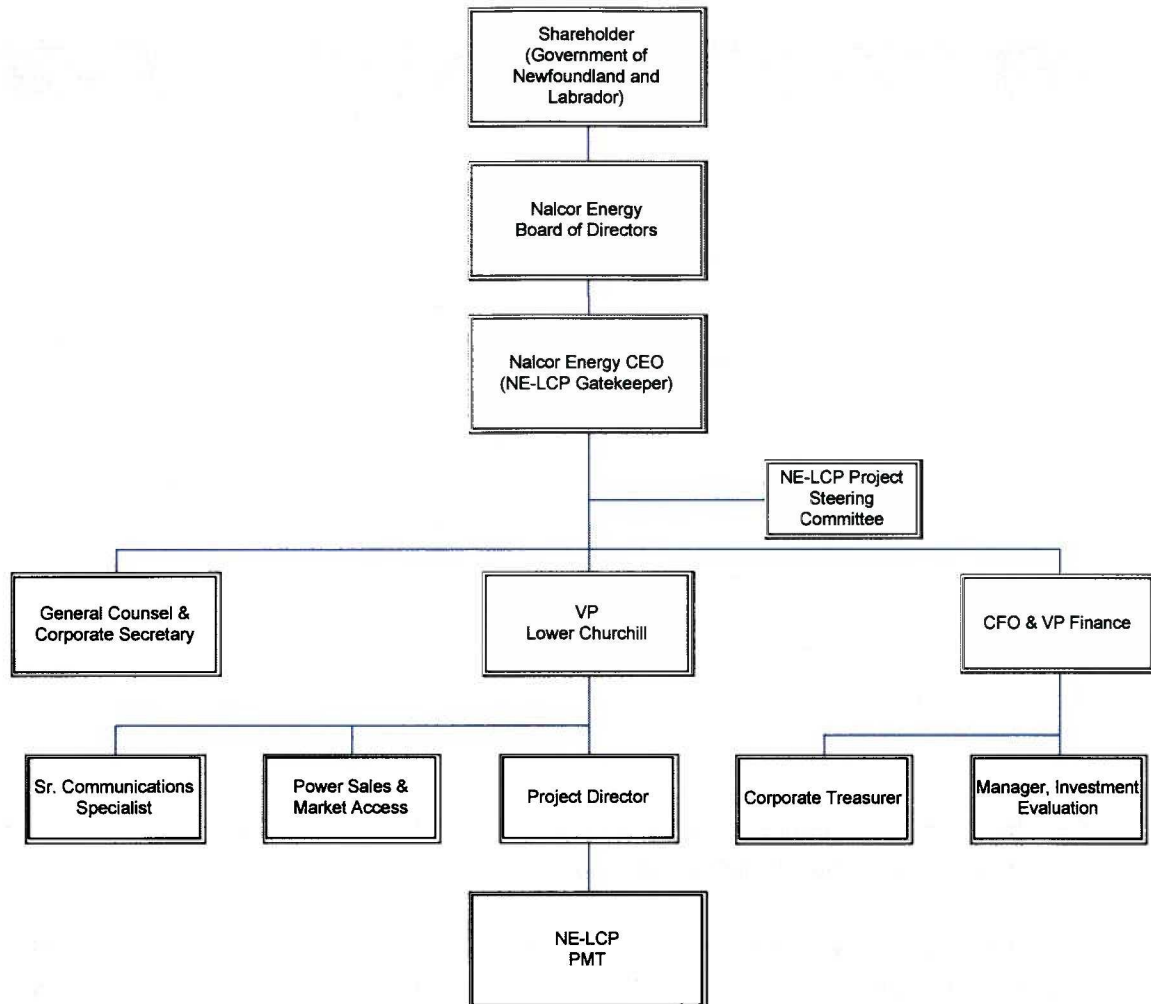
The Nalcor Energy CEO acts in a dual capacity for Nalcor Energy – both as corporate CEO and as Gatekeeper for the Project. Reporting directly to the Gatekeeper is the NE-LCP VP who has single-point accountability for all aspects of the Project, while also having responsibility for power sales and market access decisions and strategic direction.

The NE-LCP VP and CEO are members of the Nalcor Energy Executive Leadership Team whose function is to provide oversight into all Nalcor Energy divisions including the NE-LCP. This Leadership Team helps to ensure the Project is aligned with Nalcor Energy's and the Shareholder's strategic priorities. The Nalcor Energy Board of Directors and its various committees provide the checks and balances to help ensure the Shareholder's objectives for Nalcor Energy are achieved.

In this organizational structure, the NE-LCP VP is responsible for power sales and market access related decisions as well as strategic decision making and direction for the Project. The Project Director is responsible to ensure that the Project's scope is defined, and to deliver the Project within the established targets and key performance indicators as defined in the Project Charter.

The Nalcor Energy VP Finance and CFO is accountable for financing related to the NE-LCP, including shareholder and third party equity, and debt raising. The CFO is also accountable for all investment evaluation and related recommendations, as well as governance oversight of Nalcor Energy and related subsidiaries. It should be noted that corporate functional ties are not depicted on Figure 3.0, rather only those functional departments that have a direct ownership of Key Deliverables of the Gateway Process are indicated.

Figure 3.0 – Executive Level Organizational Reporting Structure



Nalcor will continue to consider the use, as appropriate, of a Steering Committee to provide support and guidance to those directly responsible for the Project (i.e. act in a consultative model) as well as be an advisory panel for the Gatekeeper. The primary role of the Steering Committee is to understand issues and needed changes, provide advice and assessment of potential impact to the NE-LCP VP and Project Director, and make needed adjustments within their own responsibility area. The Steering Committee members are not directly responsible for managing project activities; however it is essential that the members should:

- Understand the strategic implications and outcomes of initiatives being pursued through project outputs;
- Appreciate the significance of the project for some or all major internal stakeholders and represent their interests; and
- Have a broad understanding of project management issues and be able to provide guidance to the VP and Project Director on issues of importance.

The Steering Committee composition will include partial functional representation at a senior level, to be able to address issues related to the adoption of corporate policies and standards.

Table 1.0 – Summary Level Management and Leadership RACI for Key Strategic Project Activities / Functions

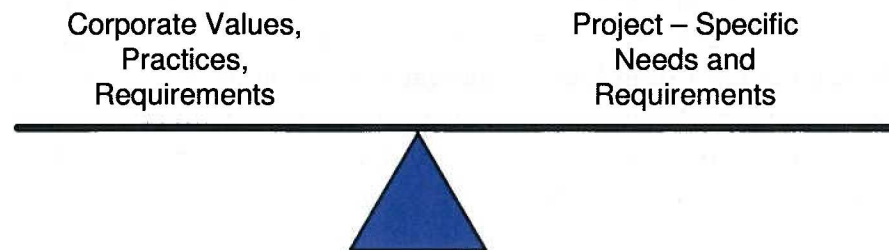
Strategic Activity / Function	Responsible	Accountable	Consult	Inform
Power Sales and Market Access Decisions	VP LCP	Gatekeeper/CEO	VP Finance / CFO	Project Director Investment Evaluation Corporate Treasurer LCPMT
Project Definition and Project Charter	Project Director	VP LCP	Gatekeeper/CEO	LCP Team
Strategic Decision Making and Direction	VP LCP	Gatekeeper	Project Manager VP Finance / CFO Steering Committee	LCPMT
Project Team Organizational Design and Direction	Project Director	VP LCP	LCPMT VP HROE	LCP Team
Communications and Stakeholder Relations Strategy	Communications	VP LCP	Mgr. Corp. Comm. Gatekeeper Steering Committee	LCPMT
Project Financing	Corporate Treasurer	VP Finance / CFO	Investment Evaluation VP LCP Gatekeeper / CEO LCPMT	LCPMT
Achieving Gates 2 and 3	Project Director	VP LCP	LCPMT	LCP Team
Day-to-Day Management of the Project	Project Director	VP LCP	LCPMT Nalcor Functional Mgrs (as appropriate)	LCP Team

Further details on the mandate and objectives of the Steering Committee are contained in the document LCP-PT-MD-0000-PM-CH-0002-01 Steering Committee Charter.

To further provide clarity on the overall responsible, accountability and interfaces of the Nalcor Energy and NE-LCP leadership, a LACTI chart has been prepared that defines the Lead, Accountable, Consult, Technical and Inform responsibilities for each of the Key Deliverables for Gate 2, as contained in the document LCP-PT-MD-0000-PM-PL-0001-01 Project Execution Plan.

11.1 Corporate Functional Interface Philosophy

NE-LCP recognizes the importance of Nalcor Energy’s initiative to ensure consistency across the corporation through in part by establishing a strong functional organization as it progresses its transformation into a diversified energy company. However this must be balanced against the Project’s need for independence and a purpose-built approach to undertaking its unique challenges that will in-turn establish a project execution excellence with Nalcor Energy. This concept is illustrated in Figure 4.0.

Figure 4.0 – Striking the Right Balance

It is envisioned that when the right balance is achieved, the Project will have the tailored methodologies and mega-project specific competencies it needs, while at the same time preserving (and even benefiting from) Nalcor's requirements for consistency and governance whilst still allowing it to develop in areas new to it and further advance its expertise in project management.

As a distinct business unit of Nalcor Energy, the Project will establish the required people, processes and tools necessary to deliver the Project within established Key Performance Indicators documented in the Project Charter. The NE-LCPMT will seek to leverage Nalcor functional expertise to support Project-corporate interface integrity, while working to ensure that functional standards are maintained within the Project where both practical and in best interest of Nalcor and the Project. For strategic interfaces, a RACI or LACTI responsibility and interface chart that is endorsed by the NE-LCP VP and the Nalcor functional VP may be completed.

Simply stated, the LCPMT will endeavor to strike the optimum balance between corporation's and the Project's requirements. In those instances and areas where there is a corporate functional accountability and expertise exist for provision of standards and guidelines exist, the NE-LCP will adopt these standards or guidelines unless it is deemed impractical from a business perspective. On these instances, the NE-LCPMT will consult with the respective corporate functional manager, and as required will seek guidance or resolution from the NE-LCP VP and Project Steering Committee.

12.0 Decisions and Authority

12.1 Decision Making

An important aspect of program governance is assigning specific decision-making authority to each executive and management role within the project organization. It is then essential that

this decision making authority be communicated and understood within both the Nalcor Energy and NE-LCP organizations.

As with any organization there are a variety of levels and complexities of decisions that must be made within the NE-LCP. The financial approval matrix (reference document LCP-PT-MD-0000-FI-PR-0001-01 Capital Expenditure Approval Authorization Procedure) addresses the limit in terms of dollars; however there are other considerations that must be taken into account when making decisions other than financial exposure. In order to function efficiently as an organization decentralized decision making is required.

The organization structure adopted for the NE-LCP is based upon defined roles and reporting relationships, such that each individual has a clear description of their authority, responsibility and accountability necessary for the project to succeed. Authority and responsibility can be delegated to lower levels in the organization, whereas accountability usually rests with the individual. The general approach with respect to decision making and approvals within the NE-LCP is that only strategic business level decisions (e.g. budgets, communications, organizational plans, all-encompassing strategies) need to go the highest level, while day-to-day decisions are made by the PM and NE-LCPMT within the strategic "riverbanks" established by these strategic business level decisions.

In an effort to provide the maximum possible clarity over the allocation of authority for key decision-making responsibilities among the main participants in a management structure for the NE-LCP, a decisions and authority framework has been developed (reference Figure 6.0). The matrix indicates that three levels of authority can be allocated for each decision-making responsibility, represented by the codes D, J and C, while R indicates the individual who must prepare required support packages for decision making.

- D** The right to decide, whereby one party has ultimate decision making responsibility and can overrule the views of others. This party is ultimately responsible for the task.
- J** Joint decision-making power, whereby each party has power of veto. Lead roles can be specified for each decision related activity.
- C** The right to be consulted and kept informed of developments.
- R** The person responsible to prepare required support package for decision making.

In an effort to foster quality the NE-LCP will also implement a structured decision process for larger project-related decisions.

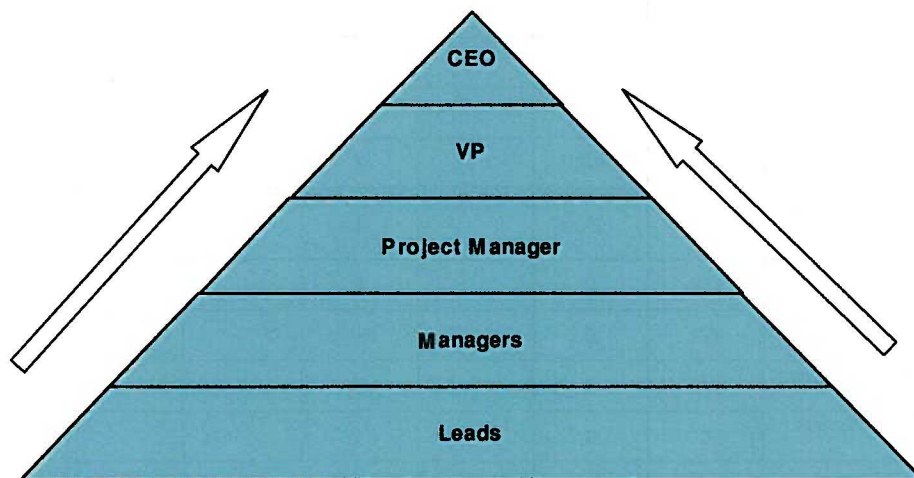
12.2 Approval of Financial Expenditures

In order to ensure appropriate control, authority for financial expenditures has been established for the various project functions in a tiered or pyramidal approval. As a general principal budget holders can approve financial commitments up to their assigned limits. For expenditures that are in excess of their approved limits, they are required to verify, review and approve the commitment or expenditure prior to forwarding and receiving the final approval from a higher authorization limit. The initial approval begins with the budget holder or lead, and if further approval is required, the commitment/expenditure will be forwarded to the next approval limit. Figure 5.0 illustrates the commitment approval hierarchy and illustrates the levels within the organization that have financial authority; however it should be noted that the next level of approval may follow a different path through the organizational chart, depending on the budget holder, scope and reporting relationships.

NE-LCP personnel in positions with signing authority are accountable for expenditures they approve. For multiple levels of approval, the highest level attested is ultimately accountable.

This process as well as the financial approval limits is detailed in the document LCP-PT-MD-0000-FI-PR-0001-01 Capital Expenditure Approval Authorization Procedure.

Figure 5.0 – Organizational Levels with Financial Authority



f Project Master Schedule	C/R									J
f Project Trend Notices	C/R	D								
f Major Scope Changes to the Project (>\$1M)		C/R		C						D
in presentation of Major Deviations (>5% of Sanction Final Forecast Cost to Board and Shareholder	C/R	C		C			C	C	C	D
sions (Proceed, Cancel, Recycle)	C	C		R					C	K
f Financial Commitments by the Project	Refer to Financial Approval Authorization Limits									
egarding utilization of corporate policies and procedures in tional areas	C/R	J		J	C				C	
egarding HR and hiring policies	C/R	C		C	J					D
egarding overall resource levels within LCPMT.	R	D		C						C
egarding hiring of Nalcor Term and Permanent employees	C/R	C		J	C					J
egarding formal presentations or briefing on project issues ial related) to external stakeholders	C	C	C	J	J					
egarding formal presentations or briefing on project issues lated) to external stakeholders	C	C	C	J	C		C	R	J	
in communications with external parties (non-public)	J	J	C	C						
egarding communications with capital markets and finance			C	C			C	R	D	C
f Press Releases			R	J	J					J
f Nalcor Monthly Project Status Report	R	D	C							
n plans and strategies to maintain control and coordination of	C/R	J		J						C
n contract packaging and scope of work for engineering, nt and construction contracts.	C/R	J		C						C
f cost and schedule inputs into Economic Model	C/R	J		C			J			
f newly developed standard form of contract and agreement.		J					J			
exceptions to standard contract T's and C's	C	C					D			
ancing Strategy Decisions				C			C	C	D	C
f Independent Project Review Team candidates and Terms of	C	C/R		J	C		C	C	C	J
nning and strategy development - Power Sales and Market ding product, pricing and policy	C	C		J			C		C	J
nning and strategy development - Project Delivery	C/R	D		C						C
in aboriginal negotiation strategy	C/R	C		J						J
egarding project risk management strategy and management ect-level risks.	C/R	D		C				C	C	
f strategies for management of Gatekeeper-level Strategic	C	R		J			C	C	J	J
f project insurance philosophy.	C/R	C		J				C	J	C
1 T's and C's and negotiating strategy for project labor	C/R	J		J	J	C				C
1 T's and C's of major supply and construction contracts	C/R	D		C		C				
f overall project contracting strategy for Phases 3 and 4.	C/R	R		J				C	C	J
f RFP Short-lists	Refer to Financial Approval Authorization Limits									
n design criteria to be used for plant and equipment.	C/R	J		J						
strategy for Contract Disputes >\$1M but <\$5M	C/R	J		J		J			C	
strategy for Contract Disputes >\$5M	C/R	J		J		J			J	D
f project benefits strategy and commitments.	C	C	C	J	C					J
egarding project execution strategies.	R	J		J						C

Table 2.0 – Authority Level Matrix for Key Decision Making and Approvals

Decision or Approval	Authority Level										
	NE-LCP Manager	NE-LCP Project Director	NE-LCP Communications Specialist	NE-LCP VP	NE Functional VP (or Equivalent)	NE Corporate Secretary	NE Investment Evaluation	NE Corporate Treasurer / Risk Manager	NE CFO / VP Finance	CEO / Gatekeeper	NE Board of Directors
Decisions regarding Project Governance		C		J		C			J	J	C
Approval of LCP Budget and Business Plans		C/R		C					C	C	D
Approval of AFEs	C	C/R		C					C	D	
Approval of Project Charter and KPIs	C	C/R		J						J	
Approval of Project Master Schedule	C/R	J		J						J	
Approval of Project Trend Notices	C/R	D									
Approval of Major Scope Changes to the Project (>\$1M)		C/R		C						D	
Decisions on presentation of Major Deviations (>5% of Sanction Estimate) in Final Forecast Cost to Board and Shareholder	C/R	C		C			C	C	C	D	C
Gates Decisions (Proceed, Cancel, Recycle)	C	C		R					C	R	D
Approval of Financial Commitments by the Project	Refer to Financial Approval Authorization Limits										
Decisions regarding utilization of corporate policies and procedures in project functional areas	C/R	J		J	C				C		
Decisions regarding HR and hiring policies	C/R	C		C	J					D	
Decisions regarding overall resource levels within LCPMT.	R	D		C						C	
Decisions regarding hiring of Nalcor Term and Permanent employees	C/R	C		J	C					J	
Decisions regarding formal presentations or briefing on project issues (non-financial related) to external stakeholders	C	C	C	J	J						
Decisions regarding formal presentations or briefing on project issues (financial related) to external stakeholders	C	C	C	J	C		C	R	J		
Decisions on communications with external parties (non-public discussions)	J	J	C	C							
Decisions regarding communications with capital markets and finance institutions			C	C			C	R	D	C	
Approval of Press Releases			R	J	J					J	
Approval of Nalcor Monthly Project Status Report	R	D	C				J				
Decisions on plans and strategies to maintain control and coordination of project.	C/R	J		J						C	
Decisions on contract packaging and scope of work for engineering, procurement and construction contracts.	C/R	J		C						C	
Approval of cost and schedule inputs into Economic Model	C/R	J		C			J				
Approval of newly developed standard form of contract and agreement.		J					J				
Approval to exceptions to standard contract T's and C's	C	C					D				
Project Financing Strategy Decisions				C			C	C	D	C	
Approval of Independent Project Review Team candidates and Terms of Reference	C	C/R		J	C		C	C	C	J	
Project planning and strategy development - Power Sales and Market Access including product, pricing and policy	C	C		J			C		C	J	
Project planning and strategy development - Project Delivery	C/R	D		C						C	
Decisions on aboriginal negotiation strategy	C/R	C		J						J	
Decisions regarding project risk management strategy and management of key project-level risks.	C/R	D		C				C	C		
Approval of strategies for management of Gatekeeper-level Strategic Risks.	C	R		J			C	C	J	J	
Approval of project insurance philosophy.	C/R	C		J				C	J	C	
Deciding on T's and C's and negotiating strategy for project labor agreement	C/R	J		J	J	C				C	
Deciding on T's and C's of major supply and construction contracts	C/R	D		C		C					
Approval of overall project contracting strategy for Phases 3 and 4.	C/R	R		J				C	C	J	
Approval of RFP Short-lists	Refer to Financial Approval Authorization Limits										
Decisions on design criteria to be used for plant and equipment.	C/R	J		J							
Resolution strategy for Contract Disputes >\$1M but <\$5M	C/R	J		J		J			C		
Resolution strategy for Contract Disputes >\$5M	C/R	J		J		J			J	D	
Approval of project benefits strategy and commitments.	C	C	C	J	C					J	
Decisions regarding project execution strategies.	R	J		J						C	

13.0 Financial Controls

The NE-LCP have leveraged industry best-practice to build upon existing Nalcor Energy and NLH financial controls in order to develop a suite of processes and tools required to effectively ensure adequate financial controls are in-place for a project of the size and complexity of the NE-LCP.

13.1 Capital Budgets and AFEs

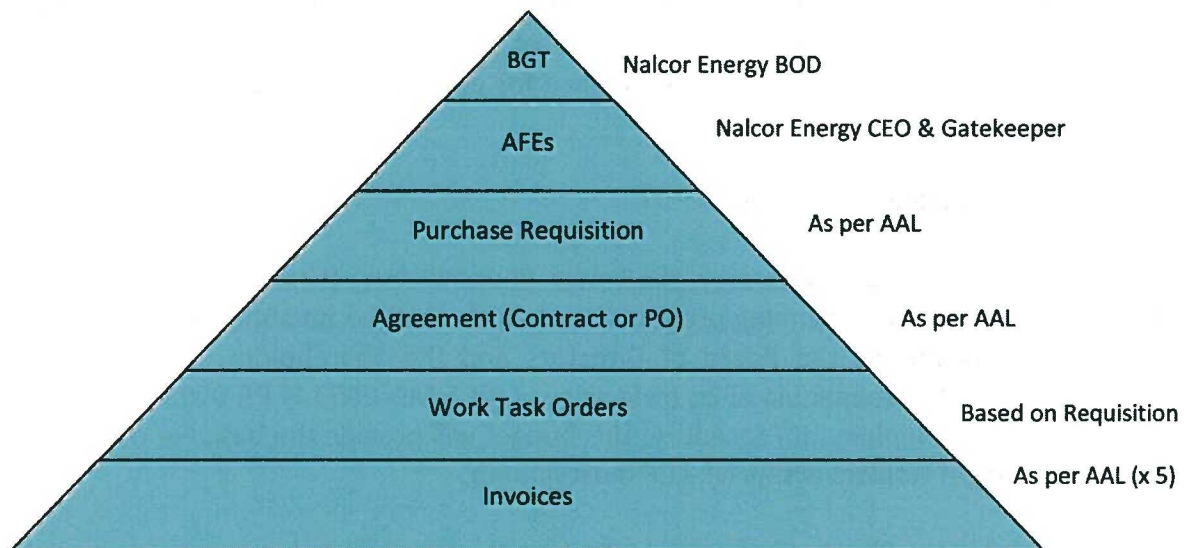
As a business unit of Nalcor Energy, the Lower Churchill Project falls within the Nalcor Energy budgeting and business planning process and as such shall be an annual process. This annual budget is approved by the Board of Directors and the Shareholder. Once approved and released by the Gatekeeper via AFEs, (reference LCP-PT-MD-0000-FI-PR-0002-01 Capital AFE Preparation and Supplement Procedure) this budget will provide the basis for operations within which the Budget Holders within NE-LCP must adhere.

For each Gateway Phase of the NE-LCP a work programme (i.e. scope and timing) and associated budget estimate shall be prepared for submittal to the Gatekeeper at the Decision Gate. The Gatekeeper shall review this work program and budget and make any decision with respect to approval in full or in part. The main reason for developing a work program is to achieve control of the project. Effective project schedule and cost control is the method by which a Project Director proactively ensures that the project is executed within the schedule and cost constraints.

In addition to presenting work programmes and associated budgets at each Gate, consistent with all Nalcor Energy business units, the NE-LCP shall provide regular updates to the corporate budget throughout the year as part of the annual budget and business planning process. These updates shall include the latest forecast of the planned expenditures for the duration in question as well as how this varies from the previously submitted budget and any approved AFEs. Such forecasts will allow Nalcor Energy to accurately forecast its total capital expenditures for the year and make adjustments to reflect actual versus planned cash demands.

Following a hierarchical approach, reference Figure 6.0, approval of all funding for application on the NE-LCP shall be via the annual corporate capital budgeting process. Approval of this budget provides the means for the Gatekeeper to use discretion to release part or all of this funding to the project. Typically, following confirmation of an approved capital budget, the NE-LCP Project Director will prepare an Authorization for Expenditure (AFE). This AFE request shall be submitted to the NE-LCP VP and the Gatekeeper requesting the release of all or a specific portion of this budget to the Project Team to facilitate the execution of an agreed upon scope of work or work program. Only following the approval of the AFE can financial commitments against this budget be made by the Project Team.

Figure 6.0 – Financial Commitment Control Points



The AFE system is the mechanism used by management to approve and control capital appropriation against approved Nalcor Energy corporate budgets. An approved AFE represents the authority to commit only to expenditures within the scope and dollar value indicated by that specific AFE. When an AFE is approved, the authorized amount of that AFE reduces the remaining funds available for release from the annual capital budget.

While the budget as a whole may be approved by Senior Management and the Board of Directors, in the case of the NE-LCP the AFE is used to draw down that approved budget in increments that would correspond with specific milestones as set out in the Gateway process or specific packages of work (e.g. Gull Island, Overland Transmission, Churchill Falls Interconnect, etc.) as decided by Senior Management. To that end it is important to understand the scope of work that is required within each Gate or AFE allocation, as established, and to ensure changes in scope are correctly identified and communicated.

When there are insufficient funds available in the annual capital budget or the AFE for new scope, the AFE can only be funded by drawing down on Management Reserve or reduction of other originally planned scope. In such a scenario, formal approval of the AFE will require authorization equivalent to that of the original budget approval. Insufficient funds and more particularly, new scope items, will require a rigorous review undertaken through the Project’s management of change process, the results of which will support any new AFE requirements.

13.2 Purchase Requisitions

Following the approval of an AFE, agreements (Contract or Purchase Orders) with third parties will be established to facilitate the execution of the scope. Requisitions and/or Award Authorizations representing a portion of the value of the scope approved under the AFE are prepared justifying the scope of work and are submitted to the required Approving Authority for endorsement. The approved requisition and/or award authorization represents the total amount of scope that can be committed with a particular contractor without seeking further management endorsement. All commitments for work must be within the approved capital budget of the Budget Holder that has been released to the Project through an AFE.

All contract changes will be addressed under the Project's management of change plan and associated process discussed in Section 17.0.

13.3 Agreements (Contracts and Purchase Orders)

For all goods or services to be acquired by the NE-LCP, an approved agreement (Contract or Purchase Order) is required. This represents the final stage of the financial commitments process and is used to track the total amount of commitments made by the Project. A WTO mechanism may be used to release or to agree the scope of the work with a contractor, depending on the contract form.

All WTO will require approval from the relevant budget holder with the NE-LCPMT. Since the purchase requisition has approval for the total amount of scope that can be committed, the WTO is a draw down of the original requisition and must be below the total approved amount of the requisition. In addition, the cumulative amount of the WTOs must be below the total approved requisition amount. When the scope changes, or other changes, result in a value that exceeds that of the original purchase requisition, a revision or change requisition will be required.

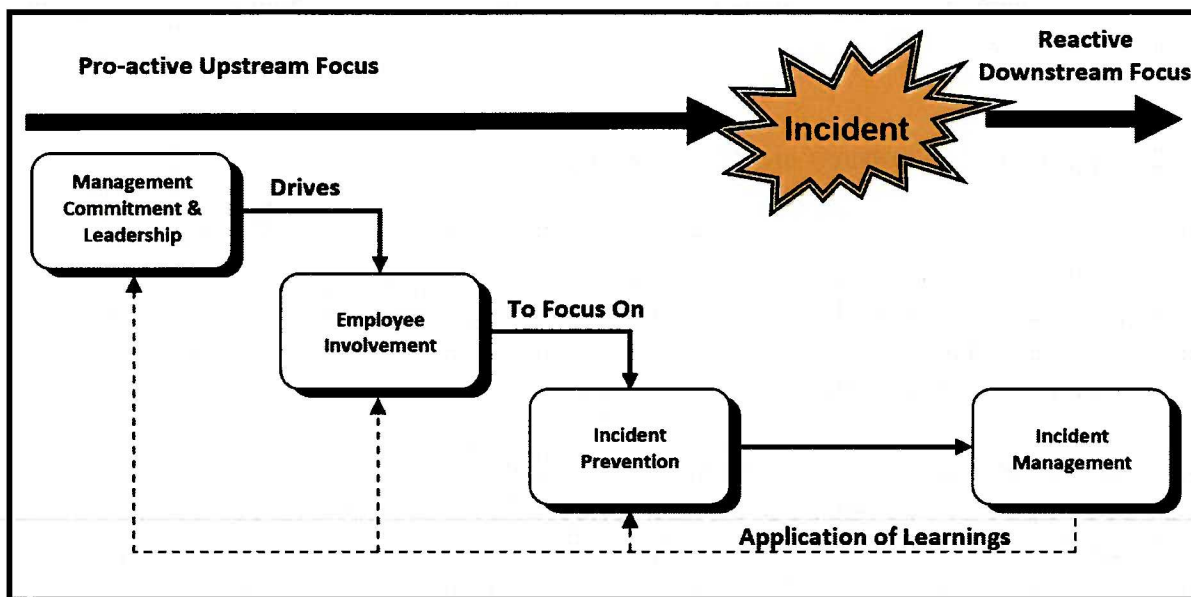
13.4 Hiring of Project Personnel

For all Project personnel hired by NE-LCP, either employees or a consultant, will require an approved personnel requisition in accordance with the Nalcor's practices for either hiring employees or contracting third party services. All personnel planned to be hired will be identified as part of the budget development process with each assigned an individual position reference number and Cost Code for booking of time and expenses. This will be approved as part of the work planning and budgeting process on blanket Personnel Requisitions or as a part of the contract commitment process covering all specific positions outlined in that budgetary request. Any requirement for personnel that are not covered within this approved list will be managed using the Project's management of change processes.

14.0 Health, Safety and Environment Stewardship

NE-LCP will develop and implement a Health and Safety Management Plan, consistent with the requirements of ISO 18001, in order to achieve Nalcor Energy’s Commitment to Safety “Zero Harm – Nobody Gets Hurt.” NE-LCP’s believes this commitment will only be realized through proactive safety leadership and employee engagement directed towards hazards awareness and control at the work-face level. This concept is illustrated in Figure 7.0.

Figure 7.0 – NE-LCP Fundamental Approach to HSE Management



NE-LCP health and safety management approach will ensure this commitment is realized by fostering a safety culture with our contractors and their employees. It is NE-LCP requirement and expectation that all contractors subscribe to Nalcor’s Commitment to Safety, actively work to implement best-in-class programs, while perform at the highest possible levels and fostering a continuous improvement mindset.

On the environment side, NE-LCP definitive action plan to ensure that Nalcor’s Commitment to the Environment is met is outlined in a Project-specific Environmental Management Plan. This Plan bridges the Project to Nalcor’s corporate Environmental Management System, and reflects the unique attitude of this large construction project.

NE-LCP will establish HSE performance targets that will be reported against on a regular monthly basis. All HSE leading and lagging indicators, including those reported by contractors and consultants, will be entered into the Safe Workplace Observation Program (SWOP) system to facilitate overall corporate performance reporting, analysis and sharing of lessons learned. Consistent with Nalcor’ practice, the basis of health and safety incident recordability will be the

Canadian Electrical Association (CEA) injury classification guidelines contained in Standard A-2-2007, while environmental incidents will be classified in accordance to Nalcor's EMS requirements.

Additionally for increased visibility, HSE reporting will be a key component of progress reports and the first issue addressed during regular progress and performance meetings with contractors and consultants.

14.1 Emergency Management

Consistent with other business units and facilities of Nalcor Energy, NE-LCP will establish an emergency response program for first-level response and management of all incidents. A core component of this will be the NE-LCP Emergency Response Plan (ERP) that describes the roles and responsibilities of those personnel working at a facility or work site as they may relate to the various types of emergencies that may occur. This ERP will be structured to ensure clarity on both the roles and responsibilities of and interface between the NE-LCP and Nalcor Energy for emergency management, leveraging the Nalcor Energy Corporate Emergency Response Plan (CERP) as a basic working platform to build upon.

Up to Gate 2, the NE-LCPMT will coordinate with its contractors to manage all incidents while seeking support from the Corporate Emergency Operations Centre as determined as required by the NE-LCP VP and the Executive Member On-call.

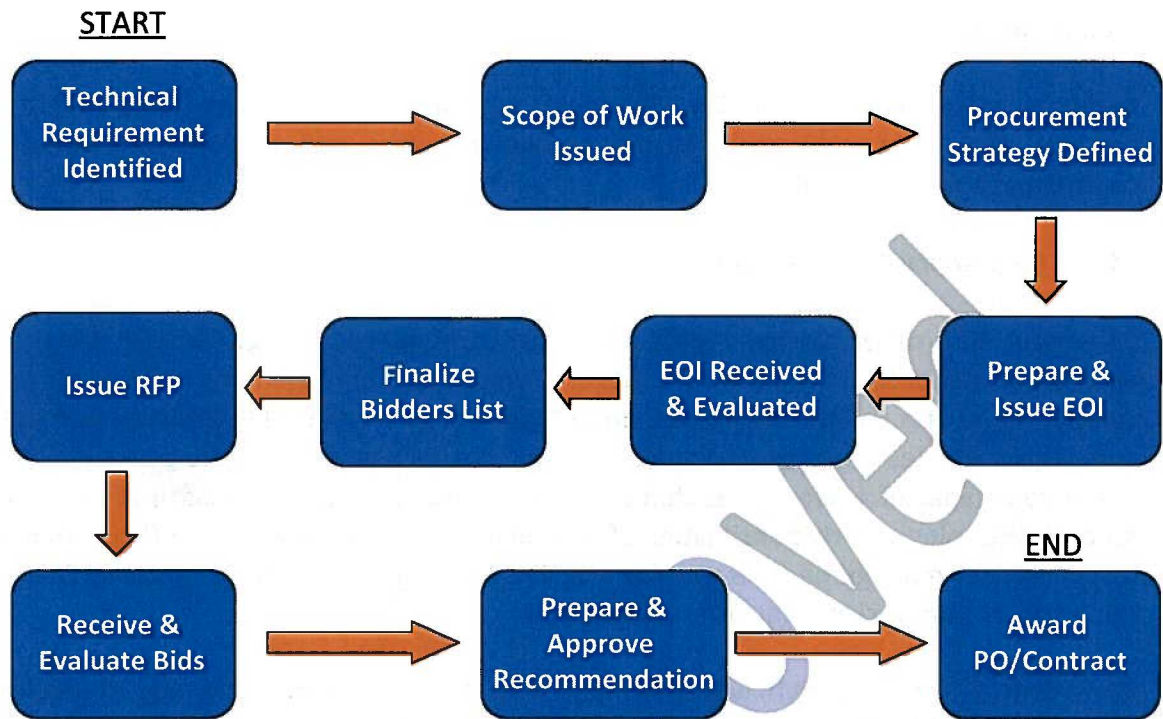
15.0 Contracting and Procurement

All contracting and procurement undertaken for the NE-LCP will be based upon Nalcor Energy's procurement principles. These principles encompass the following themes:

- Achieving Best Value
- Providing Full and Fair Opportunity
- Encouraging Competition
- Efficient and Effective Use of Resources
- Adherence to Ethical Business Practices
- Accountability, Openness and Disclosure

The NE-LCP contracting strategy (reference document LCP-PT-MD-0000-PM-ST-0001-01 Contracting and Project Management Strategy) and supporting processes are based upon the typical approach to contracting for mega projects in the oil and gas industry on the East Coast of Canada. The major components of the contracting process to be used by the Project are shown in Figure 8.0.

Figure 8.0 – Representative Contract Process for NE-LCP



The NE-LCP Team have developed a full suite of contract and supply chain administrative procedures based upon best practices and proven techniques for management of supply of goods and services for mega-projects. These procedures are embodied within the NE-LCP Management System.

The NE-LCP will use a rigorous competitive bid process which will provide full and fair opportunity for suppliers and will utilize Request for Proposals (RFPs), as opposed to tenders, to acquire works, goods or services for the Project. RFPs will be evaluated using a broad range of qualitative criteria which will include safety, quality, benefits, creditworthiness, availability of resources and experience. Industry statistics support that best value is achieved by this quantitative and qualitative approach to the review of RFPs.

Included within these procedures is a transparent and accountable process for the approval for contract change orders. Management of these change orders is encompassed with the Project’s change management plan and will be in accordance to the Financial Commitment Authorization process established for the Project (reference document LCP-PT-MD-0000-FI-PR-0001-01 Capital Expenditure Approval Authorization Procedure for approval limit authorization).

16.0 Audit and Assessment

All activities and functions the NE-LCP will be subject to internal audit or assessment to verify compliance with stated policy and focus on continuous improvement through the identification of both deficiencies and best practices. These audits will either be identified or completed by either the Nalcor Energy Internal Audit Department or by the internal audit function embedded within the Project.

The Internal Audit Department will develop its annual audit plan that includes the NE-LCP, but will consult and inform the internal team audit function of the envisioned scope of these audits during the process of developing the plan. Through a process of consultation, the Nalcor Energy Internal Audit Department will be fully aware of the planned audit program of both the Project Team and the NE-LCP's contractors planned for the upcoming year by the internal NE-LCP audit function. Using this information Nalcor Energy's Internal Audit Department is able to recommend an audit plan to the Nalcor Energy Audit Committee for approval.

The role of the Nalcor Energy Internal Audit Department is to provide independent, objective assurance and consulting services designed to add value and improve Nalcor Energy's business activities. It helps the organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

Consistently across the various business lines of Nalcor Energy, the scope of work of the Internal Audit Department is to determine whether the organization's network of risk management, control, and governance processes, as designed and represented by Nalcor Energy's leadership, and the leadership of all subsidiary companies, is adequate and functioning in a manner to ensure:

- Risks are appropriately identified and managed.
- Interaction with the various governance groups occurs as needed.
- Significant financial, managerial, and operating information is accurate, reliable, and timely.
- Employee's actions comply with policies, standards, procedures, and applicable laws and regulations.
- Resources are acquired economically, used efficiently, and adequately protected.
- Programs, plans, and objectives are achieved.
- Quality and continuous improvement are fostered in the organization's control process.
- Significant legislative or regulatory issues impacting the organization are recognized and addressed properly.

Planning, coordination and management of internal team audits will be completed internally within the NE-LCP by a designated audit function. Audits shall be led by a lead auditor and an audit team who seeks objective evidence of compliance to requirements, effective control over the process and conformance to documentation requirements.

Internal NE-LCP audits may be process oriented or may address specific elements of the relevant requirements or standards (e.g. ISO 9001, ISO 14001, CSA Z1000). The general objectives of these internal audits are to:

- Verify that existing processes are effective, consistently applied, and in compliance with the applicable requirements.
- Identify problems and opportunities for improvement.
- Facilitate communications and understanding of internal and external customer needs and expectations
- Provide information for management review relating to the integrity of the IMS.

In addition to these planned audits, the NE-LCP VP, CFO, Gatekeeper Board may also request the Nalcor Energy corporate audit team or external auditors to perform additional audits as deemed necessary.

For each audit or assessment completed, an audit report will be prepared noting all observations and findings from the audit. Results of audits are subject to management review and endorsement.

17.0 Management of Change

The NE-LCP will implement a formal management of change process in order to effectively manage and control change. Project Change Notices will be used to identify scope and design changes to the Project as well as realignment of scope, budgets, schedules, resource plans or Work Breakdown Structure elements which may alter the NE-LCP's goals and objectives. Formally approved Project Change Notices will be used to control, monitor and communicate changes to project personnel and forms the basis of changes to project baselines.

The objectives of project change management include:

- Provide a mechanism for identifying project changes impacting scope, cost, schedule, changes and/or quality as an early warning, so that adverse impacts on the project are minimized or eliminated and positive impacts can be maximized.
- Provide a standard process for resolving change. The change management process shall identify the source of change, evaluation of potential impact, development of a change action plan, and a process for gaining endorsement from project stakeholders.
- Establish and implement an approval process to document, quantify and track proposed project changes; assess changes for their full impact on the NE-LCP objectives and priorities; assess changes with impacts affecting multiple functions within an integrated multifunctional team; and to track approved changes.

A Change Control Board will be implemented to review and either reject or approve all proposed changes, regardless of origin. The Change Control Board will convene on a regular basis to review all proposed changes. Project baselines will not be adjusted and additional scope cannot be accepted into the Project or executed without an approved Project Change

Notice. Both a justification and impact assessment of change are prerequisites to a Project Change Notice being formally approved.

Funding for Project Change Notice will be from the Project Contingency contained in the cost estimate, which shall be controlled by the Project Director.

If the Project Change Notice is for new scope rather than scope growth / gap or design progression, then it must be reviewed for acceptability by the Gatekeeper or LCP VP. Funding to execute this new scope must be released from the Management Reserve to the Project Director.

18.0 Risk Management

Risk management shall be a key management tool for the Project. NE-LCP will adopt a risk management program that is aligned with the expectations and contributes to Nalcor Energy's Enterprise Risk Management program. The document LCP-PT-MD-0000-RI-PH-0001-01 Risk Management Philosophy outlines the NE-LCPMT's approach to managing all types of risks that the Project will be exposed.

The Project is dedicated to a proactive program of risk management to provide the following:

- Proactive identification and analyzing of risks and uncertainties which have potential HSE, operational, cost, schedule or reputation implications on the NE-LCP;
- Ensuring appropriate awareness of key project risks;
- Create ownership and accountability for management of risks;
- Utilize knowledge of these risks and uncertainties to facilitate more effective decision making by removing uncertainty;
- Timely and cost effectively respond to these risks in order to control their potential adverse impact on the NE-LCP.

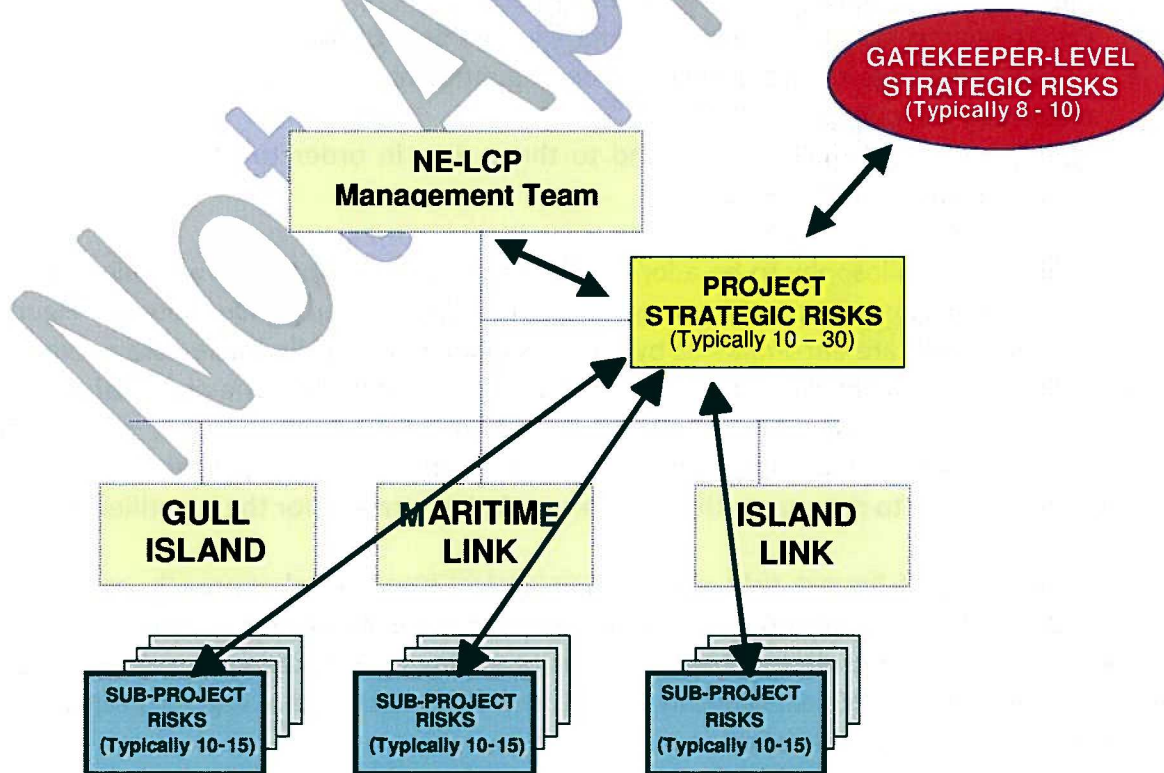
The underlying risk philosophy to be adopted by the Project is to package and allocate risks to the party who can most effectively manage the risks. This concept is illustrated in Figure 9.0; where all Project risks are encompassed by the larger blue circle, while those risks packaged and allocated in various parties are depicted by the smaller, inner circles. The ability of the NE-LCP to allocate these risks will be very much dependent on the risk appetite of the various stakeholders. A Risk Resolution Team will be formed to work together, seeking expert consultation, in order to determine the optimal resolution strategy for the identified risks.

General awareness of Project risks will follow a typical hierarchical approach, as depicted in Figure 10.0, with the Gatekeeper and Steering Committee being made aware of the most substantive risks to the Project. Regular status reporting of Gatekeeper-Level Strategic Risks will be presented in the Project Monthly Report as well as discussed in regular project updates meetings held with the Gatekeeper.

Figure 9.0 – Parties to Risk Allocation



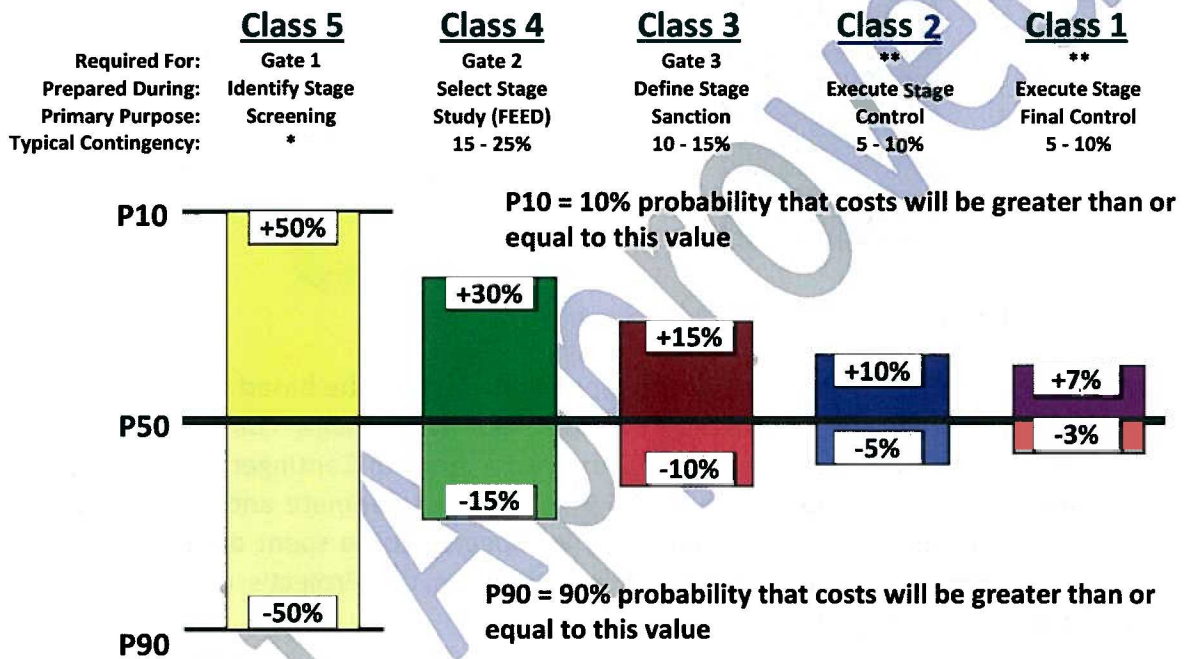
Figure 10.0 – Roll-up of Key Project Risks



19.0 Capital Cost and Schedule Estimates

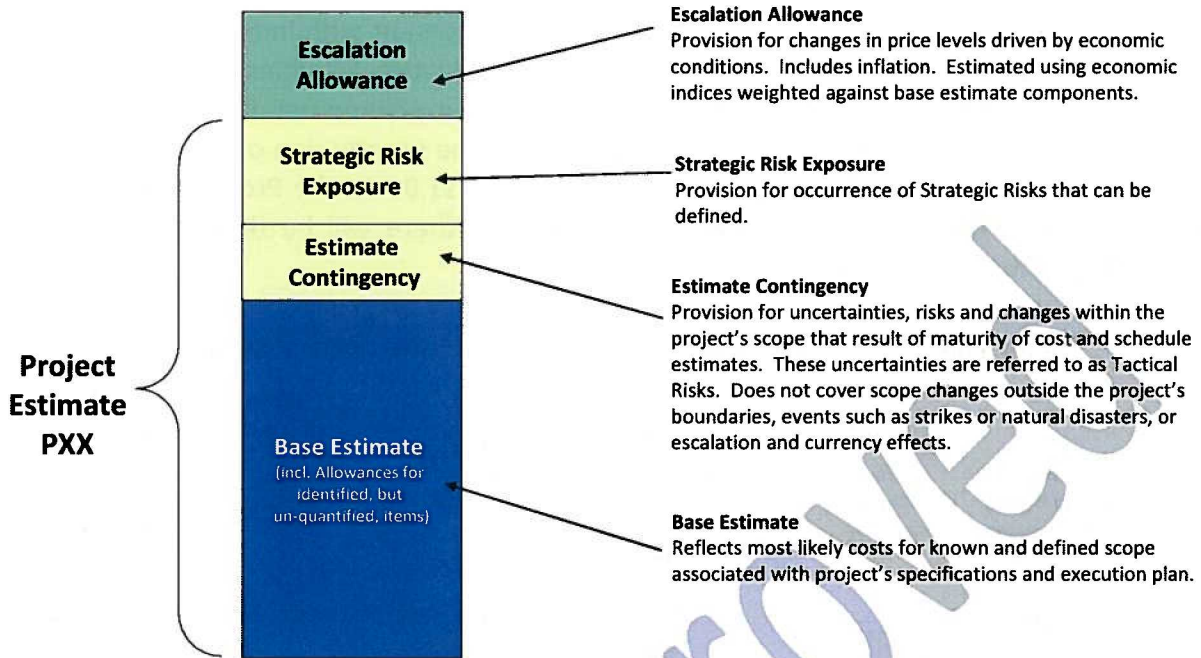
The NE-LCP will develop cost estimates and schedules consistent with industry best practice so as to ensure that all business planning and investment evaluation activities are completed using information commensurate with the level of technical and execution detail available. Generally cost and schedule estimates will mature consistent with the progression of the Project through the Phases of the Gateway Model as illustrated in Figure 11.0. As the Project becomes better defined and less likely to change, the more confidence there will be that the estimate will accurately predict the final cost of the Project.

Figure 11.0 – Capital Cost and Schedule Estimates and the Gateway Model



Capital cost estimates prepared for the purposes of business planning and investment evaluation will be comprised of three (3) distinct components as illustrated and defined in Figure 12.0. Due to its importance and often confusion on its purpose, the concept of “contingency” is defined in Section 18.1, while the concept of Management Reserve and its potential application for the NE-LCP is explained in Section 19.2.

Figure 12.0 – Project Cost Estimate Components



19.1 Contingency

Capital cost contingency recommendations for the Project will be based upon a combined pure Estimate Contingency and a provision for exposure to Strategic risks. NE-LCP will utilize quantitative risk analysis techniques to recommend a range of Contingency level (e.g. P50, P75, etc.) to account for all uncertainties in the Project's base estimate and schedule projections, and exposure to strategic risks. Contingency is expected to be spent during the execution of the Project, however will be rigorously managed using the Project's cost management and management of change processes.

The Association for Advancement of Cost Engineering International Recommended Practice No. 10S-90 defines Estimate Contingency as:

"An amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs. Typically estimated using statistical analysis or judgment based on past asset or project experience. Contingency usually excludes: 1) Major scope changes such as changes in end product specification, capacities, building sizes, and location of the asset or project; 2) Extraordinary events such as major strikes and natural disasters; 3) Management reserves; and 4) Escalation and currency effects. Some of the items, conditions, or events for which the state, occurrence, and/or effect is uncertain include, but are not limited to, planning and estimating errors and omissions, minor price fluctuations (other than general escalation), design developments and changes within the scope, and variations in market and environmental conditions.

Contingency is generally included in most estimates, and is expected to be expended."

As a general rule, Estimate Contingency will be used by the Project to provide for costs which cannot be specifically identified at the time of the estimate preparation but which can be foreseen with varying degrees of probability throughout the life of the NE-LCP. These items may include:

- Site conditions different than that assumed, but not resulting in a major change to defined project scope;
- Design refinements as engineering progresses;
- Interpretation of contract documents;
- Changes in equipment, material or labor costs;
- Increases in quantities;
- Changes in labor performance.

A Strategic Risk exposure provision shall be made to account for external influences, either under or not under the control of the NE-LCPMT. These may include:

- Changes in project scope or operating criteria;
- Unique situations of supply and demand imbalance;
- Changes in government policies and regulations;
- Changes in statutory working conditions;
- Changes in environmental regulations;
- Hyperinflation and foreign exchange;
- Accidents and catastrophes;
- Abnormal weather;
- Strikes and work stoppages.

It must be emphasized that Contingency is not to be used for escalation, or the change in price levels driven by factors including, but not limited to, the cost of raw materials.

19.2 Management Reserve

Management Reserve (not to be confused with Contingency) is known as approved capital budget held in reserve and controlled by the Gatekeeper, which is used to provide a higher confidence cost and schedule level (i.e. comfort factor). It is often used by Gatekeeper as a mechanism to support scope addition in a project raised as part of the change management process which would not be covered by normal Capital Cost and Schedule Contingency amounts. Typically only the Gatekeeper, direct reports, and Investment Evaluation are aware of the existence and value of Management Reserve fund. Unlike Contingency, Management Reserve is not expected to be spent unless the Gatekeeper so directs.

20.0 Internal Stakeholder Reporting

20.1 Regular Progress Status Repots

The NE-LCP shall issue monthly status reports to the Gatekeeper and Nalcor Energy designated representatives. The content of monthly reports shall include:

- Performance against Key Performance Indicators (KPI)
- Health, Safety, Environment Performance
- Quality Performance
- Resources and Staffing
- Cost Performance
- Schedule Performance
- Project Risks
- Discussion on Key Achievements
- Discussion on Areas of Concern and Proposed Corrective Actions
- Benefits Reporting – in accordance to the requirements of the Project Benefits Plan

These monthly status reports shall be presented by the NE-LCP Project Director to the Steering Committee and Gatekeeper in a monthly status meeting forum. During this meeting the details of the report, including key risks, areas of concern will be discussed and agreed upon.

20.2 Board of Directors and Shareholder Relations

All reporting of the status of the NE-LCP to the Shareholder and the Nalcor Energy Board of Directors shall be via the Nalcor Energy CEO or NE-LCP VP. The format for all Board and Shareholder reporting required to be produced by the NE-LCP shall be determined by the Nalcor Energy CEO with the NE-LCP VP.

If and when deemed required by the Gatekeeper in consultation with the Shareholder, NE-LCP will establish any coordinating committees between the two entities to facilitate on-going transfer and dissemination of information.

21.0 External Communications and Consultation

Pro-active and structured communication and consultation with key stakeholders will be a key success factor for NE-LCP. It will adopt a proactive and transparent public affairs strategy / policy for the purposes of:

- Maintaining pro-active communication initiatives by Nalcor Energy;
- Positioning Nalcor Energy as the source of information for all project issues on behalf of the Province of Newfoundland & Labrador; and

- Ensuring all relevant NE-LCP issues to be addressed in accordance with the NE-LCP and Nalcor Energy's objectives.

NE-LCP has a commitment to consultation and is dedicated to ensuring communities receive accurate, timely information and have the opportunity to provide comments through public open houses, one-on-one discussions and workshops. Regular communication with residents who will be affected by the Project is a priority for Nalcor. This means public consultation in Labrador is often the priority, especially for the generation project; however, as consultation for the transmission project progresses, the island portion of the province will be engaged in the project's planning process.

NE-LCP is guided by four (4) principles when consulting with community members. These consultation principles are grounded by some of Nalcor's core values.

- **Respect and Dignity** – We will uphold the highest level of integrity throughout the consultation process, recognizing and respecting the opinion, knowledge, culture and abilities of individuals and communities.
- **Teamwork** – We will collaborate with individuals and communities in an effort to ensure balanced perspectives are integrated into project planning and mutual understanding is achieved.
- **Honesty and Trust** – We will be factual and sincere when sharing Project information and addressing priorities, interests and concerns.
- **Open Communication** – We will encourage the public to express opinions and foster a supportive environment where all ideas can be shared respectfully.

A Communications and Stakeholder Relations Management Plan and supporting consultation and communication plans will be developed as key tools used to effectively manage stakeholders appraised on issues that are considered critical for achieving NE-LCP's objectives.

21.1 Press Releases

The NE-LCP Communications function is responsible for the preparation and distribution of all press releases regarding the Project. All press releases will be reviewed and commented by the LCP Project Director and NE-LCP VP, prior to final approval by Corporate Communications and the Gatekeeper.

A.0 Activity Flowchart (Excel Format)

A.1 N/A

B.0 Attachments/Appendices

B.1 N/A



Nalcor Energy – Lower Churchill Project

System:	WBS:	Project:	Location:	Applicability Code:
		Lower Churchill Project	All	D – All Phases

Document Title:	Total Pages (Including Cover):
Nalcor Energy – Lower Churchill Project Gateway Process	14

Document Number:	Management Systems Document						
MSD	—	PM	—	008	Yes	X	No

Doc. Set	Discipline	Sequence #
-----------------	-------------------	-------------------

Comments:

B1	24-MAR-09	Approved for Use or Implementation	<i>J. Kean</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
Status/Revision	Date	Reason For Issue	Prepared By	Checked By	Checked By	IMS Lead	Project Manager Approval
			J. Kean	E. Power	L. Clarke	M. Peddle	P. Harrington

CONFIDENTIALITY NOTE: This document contains intellectual property of the Nalcor Energy – Lower Churchill Project and shall not be copied, used or distributed in whole or in part without the prior written consent from the Nalcor Energy – Lower Churchill Project.

TABLE of CONTENTS

1.0 Purpose 3

2.0 Scope..... 3

3.0 Definitions 3

4.0 Abbreviations and Acronyms..... 4

5.0 Reference Documents and/or Associated Forms..... 4

6.0 Responsibilities..... 5

7.0 Background..... 5

8.0 Process Overview..... 7

9.0 Key Deliverables11

10.0 Decision Gate Support Package11

11.0 Independent Project Reviews.....12

A.0 Activity Flowchart14

N/A

B.0 Attachments/Appendices.....14

N/A

1.0 Purpose

The purpose of this document is to present the stage-gate process, referred to as the Gateway Process, which will be utilized to strategically plan the execution of the Nalcor Energy – Lower Churchill Project (NE-LCP or “Project”). Consistent with the intentions of stage-gate processes, the NE-LCP Gateway Process is designed to focus decision-making at crucial points in a project’s lifecycle thus provides a powerful internal decision-making tool.¹

2.0 Scope

The NE-LCP Gateway Process shall apply for the planning and execution phases of the NE-LCP. It reflects the application of Newfoundland and Labrador Hydro’s Gateway Process (document # LCP-P-001 rev. August 2007) to the NE-LCP, with adjustments to reflect the differences attributable to a large-civil infrastructure project that is project-financed.

The NE-LCP Gateway Process is configured to reflect the need for an advanced level of detailed design and contract award prior to Final Disclosure during the Project Finance process. It shall be utilized as an integral part of the project management approach for the Project.

3.0 Definitions

Decision Gate

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 recycle to the current stage is considered an undesirable option unless caused by changes in business conditions.

Decision Gate Review

A review of the project prior to a Decision Gate to provide the degree of assurance required by the Gatekeeper.

¹ Kerzner, Harold, (2006), Project Management – A Systems Approach to Planning, Scheduling, and Controlling 9th Edition, pp. 64 – 65
Hoboken, NJ: John Wiley & Sons, Inc.

Final Disclosure

The point in time during the Project Financing at which the proponent has achieved the necessary pre-requisites to allow the lenders to prepare its firm financing proposal, leading up to Financial Close.

Project Financing

The process of financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cash flow generated by the project.²

Gatekeeper

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

Key Deliverable

High-level listing of key outputs/documents which collectively demonstrate that objectives of the relevant Phase of the Gateway Process have been attained.

Lower Churchill Project Management Team

Managers and their delegates who report directly to the NE-LCP Project Manager.

4.0 Abbreviations and Acronyms

AFE	Authorization for Expenditure
DGSP	Decision Gate Support Package
FEL	Front-End Loading
IPR	Independent Project Review
NE	Nalcor Energy
NE-LCP	Nalcor Energy – Lower Churchill Project
NE-LCP	Nalcor Energy – Lower Churchill Project Management Team

5.0 Reference Documents and/or Associated Forms

LCP-P-001 Project Gateway Process

² The International Project Finance Association, www.ipfa.org

6.0 Responsibilities

IPR Team

Led by an appointed NE representative, the IPR team is responsible for conducting the Decision Gate review, preparing the Decision Gate review report and submitting it to the Gatekeeper for review and approval.

NE-LCP Project Services Manager

Responsible for definition of the Key Deliverables for each phase, planning and preparing for Decision Gate Reviews, and preparing the Decision Gate Support Package.

NE-LCP Project Manager

Responsible for effective utilization of the NE-LCP Gateway Process within all planning and execution activities of the Project.

NE-LCP Vice President

Accountable to ensure overall strategic project planning is consistent with the Newfoundland and Labrador Hydro Gateway Process and is responsible to take the recommendation at a Decision Gate forward in accordance with established approval levels and protocols.

Nalcor Energy CEO

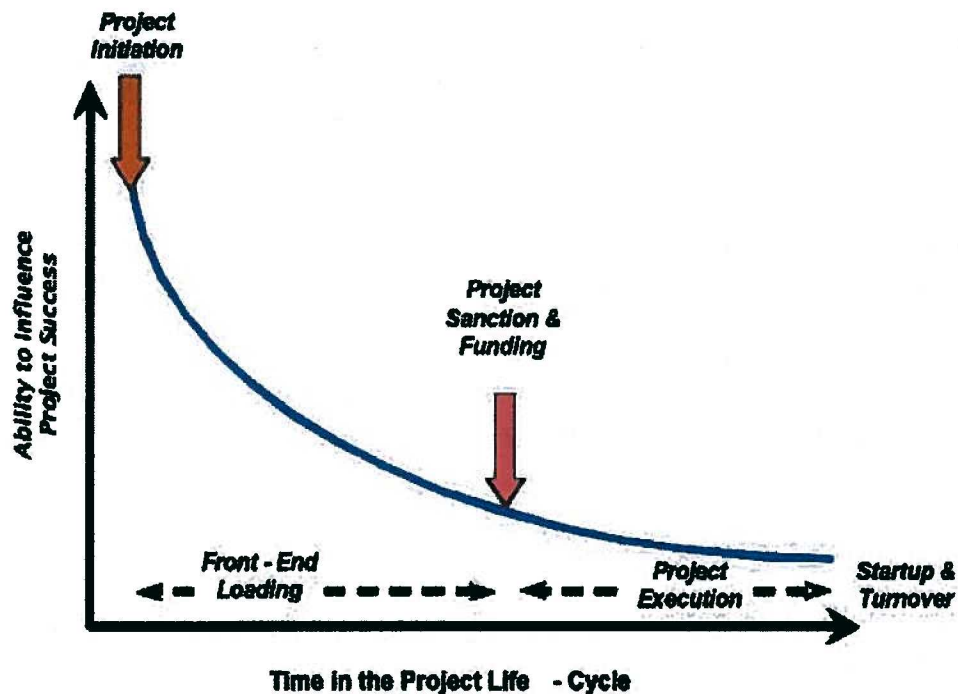
Is the Gatekeeper for the NE-LCP Gateway Process.

7.0 Background

The most significant opportunities to capture and maximize project value are during the front-end of a project's lifecycle as is depicted in Figure 1.0 – The Project Influence Curve. This value is normally attained through a practice referred to as Front-End Loading (FEL). Quite simply stated, as the development cycle moves forward, the ability to influence final cost and add value decreases.

In order to implement the influence curve concept, the idea of FEL took hold, placing more emphasis on the planning and design development activities and structured decision-making in the Front-End (i.e., pre-sanction) stages of the project. "Stage-gate" processes became a widely used best practice to codify the activities, deliverables and responsibilities required for effective FEL.³

³ The Westney Advisor, "Are Stages & Gates Destroying Predictability? The Unintended Consequences of Front-End Loading" August 2008, www.westney.com

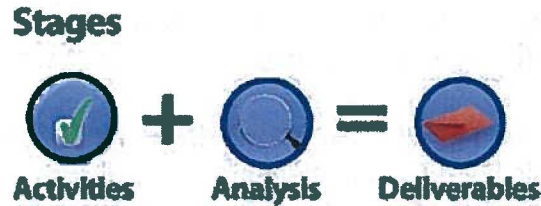
Figure 1.0: The Project Influence Curve ⁴

Within a stage-gate process stages, also referred to as phases, the following applies:

- ❑ Where the action occurs – the project team completes key activities to advance the project to the next gate;
- ❑ Cross-functional (there is no R&D or marketing stage) and each activity is undertaken in parallel to accelerate speed;
- ❑ Where risk is managed – vital information is gathered (technical, market, financial, operations) required to effectively manage risk; and
- ❑ Incremental – each stage costs more than the preceding one resulting in incremental commitments. As uncertainties decrease, expenditures are allowed to rise and risk is managed.

Figure 2.0 endeavors to illustrate the process that occurs within the stages resulting in the production of Key Deliverables.

⁴ Ibid.

Figure 2.0: Depiction of Process during Stages or Phases

With reference to Figure 3.0, gates are:

- ❑ Where the Go/No Go and prioritization decisions are made;
- ❑ Focused on three key issues: quality of execution; business rationale; and the quality of the action plan; and
- ❑ Where scorecards and benchmarking criteria are used to evaluate the project's potential for success.

Figure 3.0: Depiction of Process at Gates

8.0 Process Overview

The NE-LCP Gateway Process, as depicted in Figure 4.0, is a stage or phased decision gate assurance process that will be used to guide the planning and execution of the business opportunity presented by the lower Churchill River from identification through to operations. It has the following objectives:

- ❑ To provide a process to enable best value-adding potential to be captured and utilized.
- ❑ To provide a mechanism for the Nalcor Energy Leadership Team to verify readiness to move from one phase to another in a systematic manner during the lifecycle of a project;

- ❑ To demonstrate due diligence checks and balances are being applied during the execution of the NE-LCP; and
- ❑ To provide 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).

The owner of the NE-LCP Gateway Process shall be the Nalcor Energy CEO & President with responsibility for the implementation and stewardship of the process delegated to the responsible VP. The NE CEO & President is also the Gatekeeper for the Project.

Within the NE-LCP the phases are managed by the NE-LCPMT using detailed work plans and schedules while the gates, referred to as Decision Gates, are structured decision points at the end of each phase. It is a core responsibility of the LCPMT to manage the phases between the gates, in order to optimize (i.e. shorten) the time between gates.

The use of formal Decision Gates facilitates decision-making by the Gatekeeper of the readiness of a project to move from one phase to the next, whereby the capital intensity of the phase increases. Structured decision points are provided at which the Gatekeeper, who is the person empowered to enforce the use of the Gateway Process and to make a decision on the future of the Project, has to make appropriate decisions whether to:

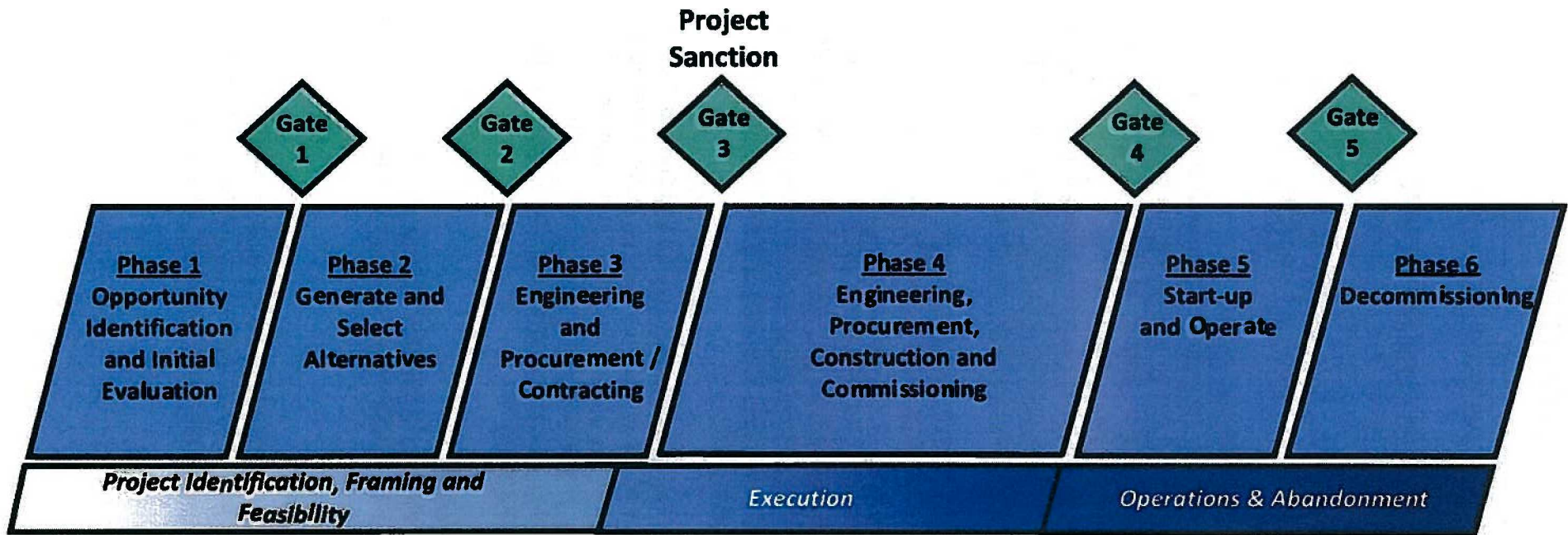
- a) hold all activity pending receipt of some final clarifications or supporting information is received, or
- b) move into the next sequential phase, or
- c) stop / terminate all activity to proceed to the next project phase.

The option to recycle to the current phase is considered an undesirable option unless caused by changes in business conditions.

The Decision Gates contained within the NE-LCP Gateway Process are:

- ❑ **Gate 1 – Approval to Proceed with Concept Selection**
- ❑ **Gate 2 – Approval of Development Scenario and to Commence Detailed Design**
- ❑ **Gate 3 – Approval to Commence Full Construction**
- ❑ **Gate 4 – Approval to Commence First Power Generation**
- ❑ **Gate 5 – Approval to Commence Decommissioning**

Figure 4.0: NE-LCP Project Gateway Process



The six (6) sequential Phases of the NE-LCP Gateway Process are:

Phase 1 – Opportunity Identification and Initial Evaluation

Includes the initial feasibility evaluation of the identified business opportunity, which in the case of the Project is the development of the hydropower potential presented by the lower Churchill River. This phase culminates at Gate 1, at which a decision on whether the Project is feasible and worth pursuing further is made.

Phase 2 – Generate and Select Alternatives

The objective of this phase is to generate and evaluate a number of development options from which a preferred option to develop the business opportunity is selected. This phase culminates at Decision Gate 2, at which point approval is sought for the recommended development option, the execution strategy, and to proceed with the start of detailed design. This phase involves aboriginal negotiations, environmental assessment process, field work, power sales and access, financing strategy, advanced engineering studies, early construction planning, and economic analysis.

Phase 3 – Engineering and Procurement/Contracting

Culminating at Gate 3, this phase involves the finalization of all front-end engineering work and completion of sizeable portion of all detailed engineering and procurement / contracting activities in order to meet the project financing requirements and to commence construction immediately after successful passage through Gate 3. Gate 3 is the point that the Project is given approval to commence construction. In this phase the environmental assessment is completed, and release from Environmental Assessment is a predecessor to passage through Gate 3.

Phase 4 - Engineering, Procurement, Construction and Commissioning

This is the building phase of the Project in which the hydroelectric facility and associated transmission takes shape and peak employment occurs. Concurrent to the start of early construction activities, the remaining engineering, procurement and contracting activities are completed. This Phase ends at Gate 4, which signifies a readiness to commence production of electricity.

Phase 5 - Start-up and Operate

The construction is substantially completed and electricity production occurs and transmission systems are energized. This includes facility maintenance and daily operation of the facilities.

Phase 6 – Decommissioning

A decision regarding the decommissioning of the hydroelectric development when the facility has reached the end of its productive life occurs at the beginning of this Phase, signified by Gate 5. Following passage through this Gate, decommissioning of the plant occurs.

9.0 Key Deliverables

For each phase of the NE-LCP Gateway Process there are a number of Key Deliverables and associated criteria that must be agreed at the start of the phase within the LCPMT and with the Gatekeeper. These Key Deliverables must be delivered to an acceptable quality in order to facilitate efficient and effective decision making at the applicable Decision Gate regarding the forward direction of the Project.

The Key Deliverables for each phase are developed specifically for the Project in consideration of both standard FEL practice, but more importantly in the consideration of the overall risk spectrum and tolerance for the Project. For the NE-LCP, these Key Deliverables will be designed to address all areas requiring focus encompassing power sales, market access, regulatory, environment, aboriginal affairs, engineering and implementation.

For ease of reference Key Deliverables are grouped under the categories of:

- a) Business
- b) Project Implementation
- c) Operations, and
- d) External

The Key Deliverable listings will be produced for each phase of the NE-LCP and will be maintained as revision controlled documents outside of this document.

10.0 Decision Gate Support Package

In order to facilitate assessment of project readiness to move through a Decision Gate a Decision Gate Support Package (DGSP) shall be prepared by the Project Team. The DGSP includes the justification and support rationale and documentation for assessment of a go / no-go by the Gatekeeper. This includes the documentation of the evidence of completion and outcomes of Key Deliverables for the respective phase.

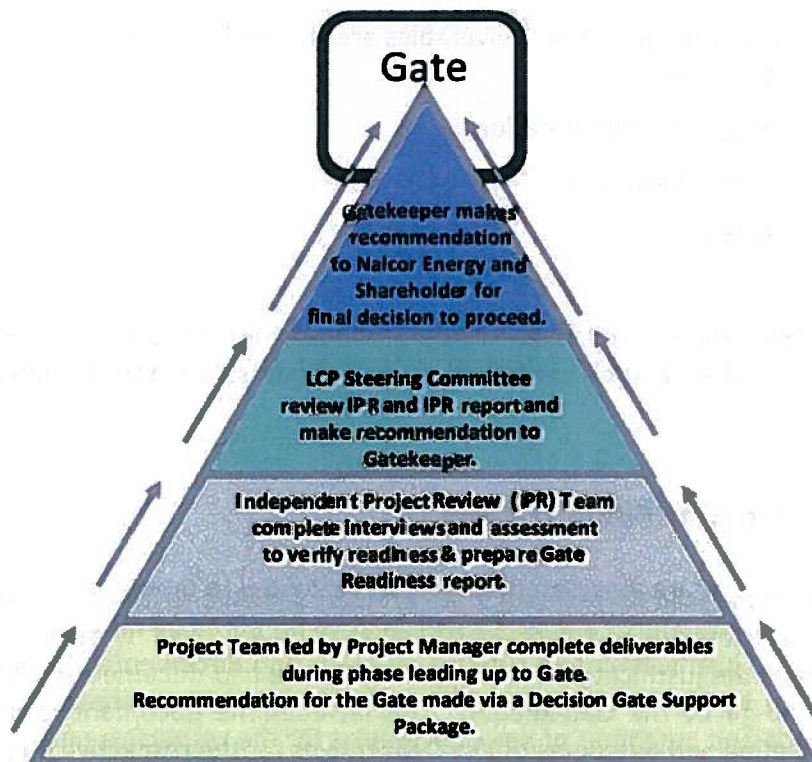
Figure 5.0 illustrates the Decision Gate Assessment Process which is made up of four sequential steps, culminating with a recommendation of the Gatekeeper to the Nalcor Energy Board of Directors and Shareholder. In order to facilitate the Decision Gate Assessment Process, the NE-LCP will utilize Independent Project Review (IPR) Teams to provide an independent assessment of the quality of the Key Deliverables produced by the LCPMT.

With respect to IPRs the NE-LCP VP together with the Project Manager will ensure the following:

- Reviews are conducted at the appropriate time and in the appropriate manner.
- Personnel with necessary competencies and experience are appointed to lead and participate in the reviews, and that availability of these personnel is secured to assure timely and adequate preparation for execution of the reviews.
- The review terms of reference are agreed with the Gatekeeper prior to the review.
- Preparation for reviews is undertaken in a timely manner.

It should be noted that the content of the DGSP, excluding the section addressing the IPR conclusions and recommendations, shall be available prior to the applicable decision gate review to allow adequate review by the IPR Team.

Figure 5.0: Decision Gate Assessment Process



11.0 Independent Project Reviews

Independent Project Reviews provide the degree of quality assurance required by the Gatekeeper for major decisions. The reviews are regarded as an opportunity to introduce external, constructive and holistic challenge to the Project team, and provide assurance that the Project will deliver the required business results. The conclusions and

recommendations from IPR, as well as a gap closure plan, are included in the final DGSP when submitted to the Gatekeeper.

The objectives of the IPR are:

- To provide external challenge to the project team at each Decision Gate, to help assess the validity and robustness of the work done in key areas requiring focused attention and to assist in maximizing the value of the business opportunity.
- To assess the suitability of the project plans and strategies.
- To appraise the readiness and justification of the project to proceed into the next phase.

IPRs can be initiated by the Gatekeeper outside of the pre-defined Decision Gates. Such reviews must have a clear objective and the end products must be clarified in a specified terms of reference for each review to be conducted.

The IPR team will be comprised of external individuals and Nalcor Energy personnel that are able to provide an independent assessment of the project. A major selection criterion will be the proper representation of all areas and disciplines in the review team. The IPR Leader and IPR team members will be appointed by the Gatekeeper.

To ensure consistency and quality of approach, it is essential that personnel with the desired competencies and experience are appointed to lead the IPR. The following guidelines should therefore be adhered to when selecting the team leader:

- IPR Leader will be external to and independent of the project team.
- IPR Leader has experience in conducting similar types of reviews, preferably as the team leader.

IPR Leader has broad knowledge and experience covering Technical, Commercial, Operational, and Project Management issues.

IPR Team Members:

- The level, number and types of resources should be commensurate to the nature, size and significance of the review.
- The IPR Team should include a member of the project team who can act to support the review and provide guidance. The specific areas of competencies of the IPR team will vary between the different reviews depending on the focus of the decision being made. However, it is critical that the resources should cover the full range of competencies including technical, environmental assessment, aboriginal, commercial, economic, operations, project management, and business issues.
- The IPR representatives should be senior personnel who have significant experience in their area of expertise.

-
- Several of the IPR Team members should have experience from similar types of reviews.

A.0 Activity Flowchart

N/A

B.0 Attachments/Appendices

N/A



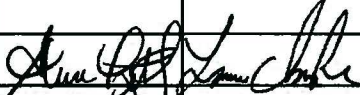

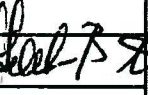

							
NEWFOUNDLAND and LABRADOR HYDRO							
System:	WBS:	Project: Lower Churchill Project		Location: ALL	Applicability Code: D – All Phases		
Document Title: Lower Churchill Project – Risk Management Philosophy					Total Pages (Including Cover): 9		
Document Number:				Management Systems Document			
MSD	—	RI	—	004	Yes	X	No
Doc. Set	Discipline		Sequence #				
Comments:							
B1	17-Apr-08	Issued for Use / Implementation	 J. Kean	 S. Lethbridge	 L. Clarke	 P. Harrington	 G. Bennett
A2	27-Feb-08	Issued for Review / Comment (IDC)	J. Kean	S. Lethbridge	L. Clarke		
A1	11-Jan-08	Issued for Review / Comment (IDC)	L. Clarke	S. Lethbridge	J. Kean		
Status/Revision	Date	Reason For Issue	Prepared By	Checked By	Checked By	Project Manager Approval	VP Endorsement
CONFIDENTIALITY NOTE:		This document contains intellectual property of the Hydro Group of Companies and shall not be copied, used or distributed in whole or in part without the prior written consent from the Hydro Group of Companies.					

TABLE of CONTENTS

1.0 PURPOSE3

2.0 SCOPE3

3.0 ABBREVIATIONS / ACRONYMS.....3

4.0 STRATEGY3

1.0 PURPOSE

The purpose of this document is to outline the philosophy for effective risk management, including risk allocation, for the Lower Churchill Project (LCP). This Philosophy will:

- Define the foundation on which a risk management framework and program will be developed and implemented;
- Identify what mechanism will be used to define and allocate these risks;
- Identify where responsibility of risk can fall among the appropriate stakeholders;
- Identify who will participate in key decisions regarding determining acceptable risk levels; and
- Identify who will participate in defining the optimal risk management strategy for the various risks.

2.0 SCOPE

This Philosophy, as part of the LCP Risk Management Framework (reference Figure 4.1) applies during planning, execution and start-up phases (Gateway Phases 2 through early phase 5) of the LCP and is meant to encapsulate all risks in the following categories: financial, market and market access, occupational health & safety, environmental, technical, schedule, cost / financial, operational / reliability, and reputation / image.

This Philosophy should be read in conjunction to the Lower Churchill Project Risk Management Policy (MSD-RI-001).

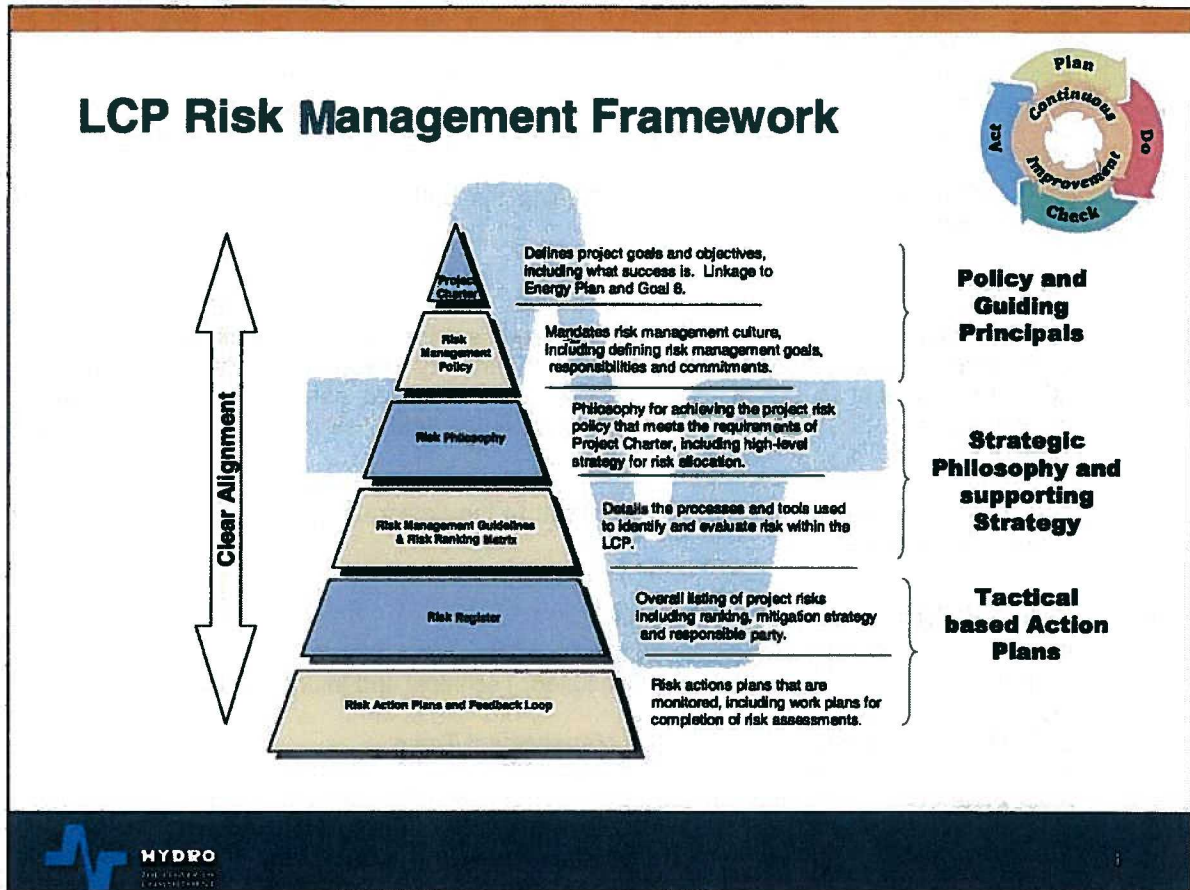
3.0 ABBREVIATIONS / ACRONYMS

ECNL	Energy Corporation of Newfoundland and Labrador
LACTI	<u>L</u> eads, <u>A</u> ccountable, <u>C</u> onsulted, <u>T</u> echnical and <u>I</u> nformed Chart
LCP	Lower Churchill Project
LCPMT	Lower Churchill Project Management Team

4.0 STRATEGY

Risk management is a responsibility of all LCP Management Team (LCPMT) members as committed to in the LCP Risk Management Policy, while many other project participants are extensively involved in managing sub-components consistent with the integrated team approach comprised of ECNL, LCPMT and key consultants including Financial Advisor, Insurance Advisor, and Risk Advisor.

Figure 4.1 LCP Risk Management Framework



The LCP has developed a Risk Management Framework (reference Figure 4.1) that provides linkage on the Project Charter down through risk identification and action plans. As a key component of this Risk Management Framework, the LCP Risk Management Policy, states that the LCP is committed to planning and executing the Lower Churchill Project in such a way as to minimize the potential negative effects of risks and to maximize opportunities. To achieve this, the LCP will implement a comprehensive, holistic risk management framework to manage all project risks and help achieve the project goals and objectives as defined in the ENCL's Goal 6 and LCP Project Charter.

The objectives of this risk management program are as follows:

- Identify, assess, respond to, manage and mitigate all key risks and uncertainties;
- Allocate project risk to the party who can most efficiently and effectively manage the risk (risk allocation);
- Identify the timeframe (i.e. Gateway Phase) in which a risk may be realized;
- Improve decision-making by thoroughly understanding project risks and uncertainties.

In addition to these four (4) objectives the LCP risk management program and encompassing Risk Management Framework must be sufficiently defined and robust enough to meet not only the management of construction risk, must convey a sense of comfort to the lenders, via the independent engineer, that this is indeed the case and re-affirm the recommended contingency level is sufficient to mitigate all open risks.

In an effort to develop this LCP Risk Management Framework, the LCPMT have engaged a specialist risk consultant to provide required risk advisory services based upon industry best-practice.

In order to ensure effective implementation of this Framework, the LCP Project Manager, with the sponsorship of the LCP Vice President, will appoint a full-time Risk Manager. The Risk Manager will work to further develop and implement the risk framework by coordinating overall risk management activities among all project participants to ensure a holistic application of the framework. One of the key roles of the Risk Manager is to monitor all project work streams so as to continuously identify and be able to effectively monitor and manage project risks. It is the Risk Manager's role to champion the risk management process. Embedment and engagement of this position within all project work streams is essential to ensure this objective is achieved.

A key component of this Risk Management Framework is that when a risk is identified and framed, a strategy must be developed in order to cost effectively manage the risk and reduce the amount of contingency required to be carried by ECNL or the lender. Careful consideration of procurement planning will be one such means by which risks will have to be cost effectively managed in order to optimize the amount of contingency required. As such early in the implementation of the LCP risk management program, significant emphasis will be placed on identifying risks through a structured discovery process. Using this information the risks will be quantified as to determine the unmitigated value of risks for consideration in developing management plans to achieve optimal risk / cost optimization.

Generally to achieve the lowest cost of risk, the LCP will be adopting a multi-dimensional strategy for considering and managing all risks to include technical, operational, procurement, market and market access, financing, and risk retention considerations. This multi-dimensional consideration of risks will focus on establishing a balanced but rigorous risk / cost optimization allowing the consideration of all risks within these categories to be considered in the context of the other risks in determining risk resolution strategies.

To identify, frame, and develop resolution strategies for these risks will require the LCPMT, ENCL Corporate, Financial Advisor, Insurance Advisor, and LCP Markets and Market Access team to work together (reference Figure 4.2) as a Risk Resolution Team in a process that will be facilitated by the LCP Risk Manager using the support of the Risk Advisor in the capacity of a risk broker in order to create common understanding of all identified risks and determine the big picture of risk and optimal allocation of risks. The roles and responsibilities of the various members of this Risk Resolution Team are captured in the high-level LACTI contained within this Philosophy (reference Figure 4.4).

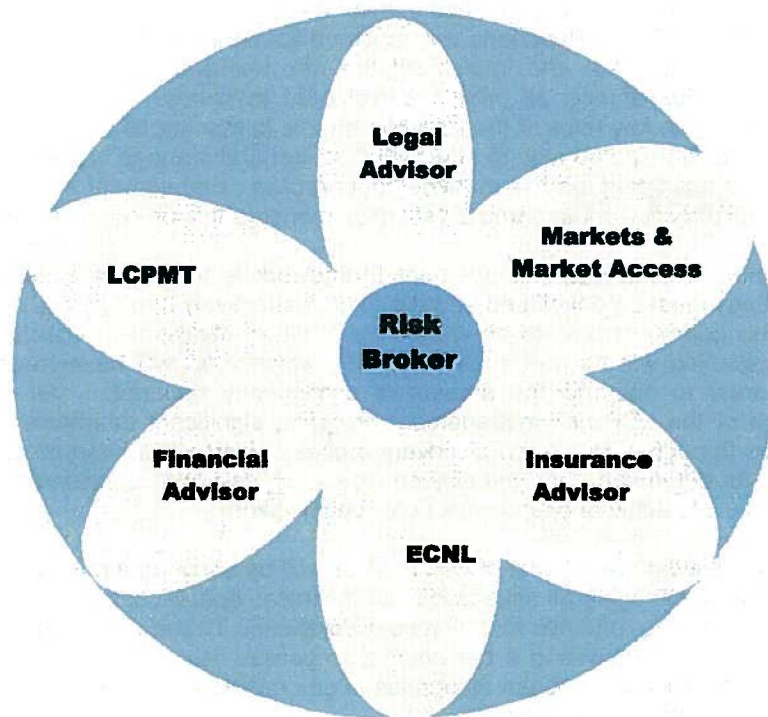
By creating a common understanding of the risks and values within the Risk Resolution Team, the risk broker is able to facilitate the determination of the optimal resolution strategy for the identified risks. The risk resolution strategy must strive to achieve a balance between what risk acceptance levels can pragmatically be achieved in the procurement and power sales market places against what the lender is willing to accept.

This Risk Resolution Team will work to package the underlying risks, develop appropriate risk resolution strategies and develop detailed LACTI for each of these risks. The first priority will be on the top 40 to 50 project risks. In addition the net result to the risk profile will be presented by way of a risk balance sheet in order to present a monetary value of the risks at play in order to

recommend a defensible contingency level. As these mitigation strategies are progressed through development and execution, regular status reporting to the Risk Resolution Team by way of regular meetings and status reports will be completed, as led by the Risk Manager.

It must be emphasized that neither the Risk Manager nor the Risk Broker are technical experts in all the risks areas, but will facilitate a structured process with the Risk Resolution Team to achieve the before mentioned objective.

Figure 4.2 Risk Resolution Team



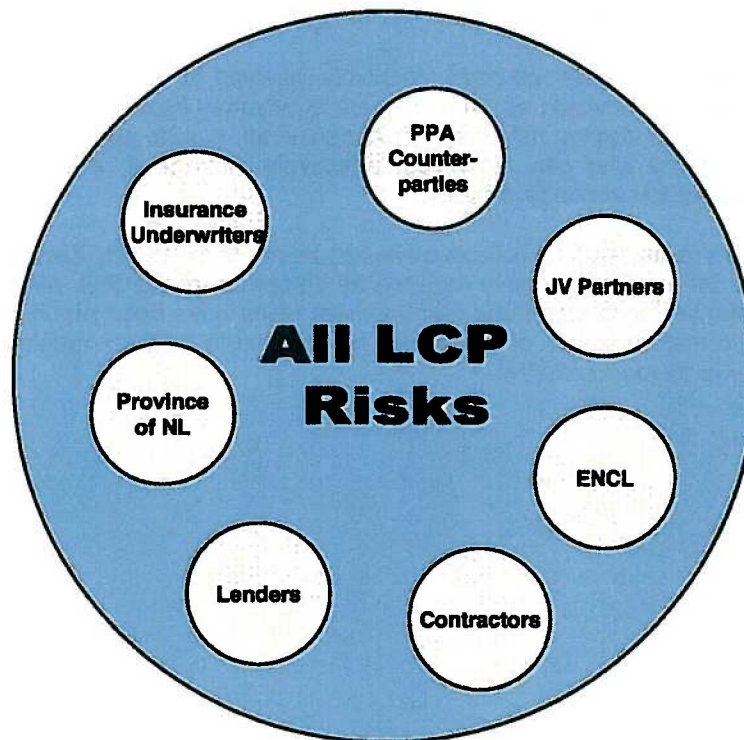
The risk resolution strategy chosen may be either of:

- **Avoidance** – eliminate the specific threat, usually by eliminating the risk cause. Can be achieved by finding an alternative approach or different route to reach the end objective of the project.
- **Mitigation** (control or abatement) – reduce the probability and/or consequence of an adverse risk event to an acceptable threshold (i.e. reduce the probability of event occurrence or minimize the consequence if the event occurs)
- **Allocation** (or transfer) – seeking to shift the consequence of a risk to a third party, together with ownership of the response, who is better able to manage the risk. This does not eliminate the risk, however reduces exposure of the project.
- **Acceptance** (or assumption / retention) – Accept the consequences of the risk (i.e. live with it – run the risk, include contingency).

In the allocation strategy, the parties (reference Figure 4.3) who are likely to assume some risk for the project along with “indicative” risks they would own a share of are:

- **ECNL** – certain execution risks (e.g. differing site conditions), image / reputation risks and financial risks as an equity partner, operational risk.
- **Lenders** – financial market risk due to fluctuation, interest, etc.
- **Contractor** – execution and performance-related risks.
- **Province of NL** – financial risks as an equity partner.
- **Insurance Underwriters** – catastrophic incident risk.
- **PPA Counterparties** – may assume certain execution risks or price risk.
- **Joint Venture Partners** – own execution and performance risks, financial risks as an equity partner and some operational risk.

Figure 4.3 Parties to Risk Allocation



In this figure the larger circle represents the entire risks for the LCP, while the smaller circles represent the risks that each of the before mentioned parties will assume. Those risks remaining (denoted by the blue-shaded area) will require the LCP Project Management Team to work to ensure they are effectively mitigated and managed.

Each of these parties will play a significant role in the mitigation efforts where possible as well. Some examples are:

- **ECNL** – LCPMT will work with ECNL executive on bigger picture. For example, if power is being regulated in NL unfavorably to LCP, ECNL could take responsibility to address the issue.
- **Lenders** – Financial expertise to best ensure the flow of cash at lending rates that make the project viable.
- **Contractors** – With their knowledge of field logistics, supervision, construction execution, etc. they will be allocated significant execution related risks.
- **LCP** – Through the LCPMT will develop a contracting and project execution strategy that encompasses industry best practice and latest marketplace realities.
- **Province of NL** – Risk to be taken on certain aspects of the LCP (i.e.: Aboriginal and regulatory issues) will be brought to ECNL executive to bring to the province.
- **Insurance Underwriters** – Will handle all insurable risk and provide advice on mitigation through audit and review.

Cost effective management of risks will be essential to the viability of the LCP. The overall net risk exposure after implementation of the appropriate risk resolution strategy will require the provision of contingent equity in order to manage all materialization of these risks.

For those risks that have not been effectively resolved by allocation or other contingent funding will be required. Provision of the contingent equity may have to be assumed by ECNL and the Lender, hence by viewing risk in a multi-dimensional, holistic approach to effectively allocate the risk to the party who can most cost effectively manage it, is an attempt to minimize the requirement for this contingent equity.

Detailed risk reviews will be completed as key points of the LCP's lifecycle as determined in order to achieve the level of certainty required by all parties of the Risk Allocation Team that all key project risks are understood and management plans have been put in-place that will prevent or mitigate the materialization of these risks as required to fulfill the requirements of the ECNL and the Lender or its representative.

Figure 4.4: Risk Management LACTI Chart

Description of Activity	ECNL Rep - CFO & VP Finance	LCP VP	LCP Project Manager	LCPMT	LCP Risk Manager	Risk Advisor	Financial Advisor	Insurance Advisor	Legal Advisor
Establish Risk Philosophy	C	A	C	C	L	T	C	I	I
Establish and Implement Risk Management Program	C	C	A	C	L	T	C	C	C
Coordinate Project Risk Activities	I	I	A	I	L	T	I	I	I
Identify Risks to Acheiving Financial Close	C	A	C	L	C	I	T	I	I
Identify and Define Insurable Risk	C	A	C	L	C	C	C	T	C
Allocation of insurable items	L	I	I	A	C	I	C	T	C
Identify and define general project risks	I	I	A	L	T	T	C	I	I
Define Insurance Philosophy	L	I	C	A	C	I	C	T	C
Management of Risks to Financial Close	C	A	C	L	C	C	T	C	C
Identify and Define Contractor Risk	I	C	A	L	C	I	C	C	T
Allocation of Contractual Risk	I	C	A	L	C	I	C	C	T
Determine Corporate Risk Appetite	L	A	C	C	C	C	C	I	T
Overall Risk Allocation	C	C	A	C	L	T	C	C	C

Legend:
L LEADS - Who leads the activity
A ACCOUNTABILITY - Who has accountability for the activity
C CONSULTED - Who needs to be consulted during the activity
T TECHNICAL - Who provides technical input on the activity
I INFORMED - Who should be informed, but is not actively participating in the activity



Nalcor Energy – Lower Churchill Project

System:	WBS:	Project: Lower Churchill Project	Location: All	Applicability Code: D – All Phases
----------------	-------------	--	-------------------------	--

Document Title: Capital Expenditure Approval Authorization Procedure	Total Pages (Including Cover): 11
--	---

Document Number:				Management Systems Document			
MSD	—	FI	—	001	Yes	X	No

Doc. Set	Discipline	Sequence #
-----------------	-------------------	-------------------

Comments:
Document contains approved list of NE - LCP positions with Capital Expenditure Signing Authority and the associated approval limits.

B2	04-APR-09	Approved for Use or Implementation	<i>T. Dumaresque</i> T. Dumaresque	<i>C. Cook</i> C. Cook	<i>J. Kean</i> J. Kean	<i>P. Harrington</i> P. Harrington	<i>G. Bennett</i> G. Bennett
A1	Aug 22/08	Issued for Review/Comment (IDC)	T. Dumaresque				
B1	Oct 15/07	Approved for Use or Implementation	C. Cook	N/A	N/A	N/A	G. Bennett
Status/Revision	Date	Reason For Issue	Prepared By	Checked By	Checked By	Project Manager Approval	VP Lower Churchill Approval



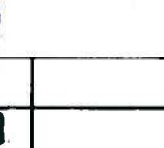
CONFIDENTIALITY NOTE: This document contains intellectual property of the Nalcor Energy – Lower Churchill Project and shall not be copied, used or distributed in whole or in part without the prior written consent from the Nalcor Energy – Lower Churchill Project.

Capital Expenditure Approval Authorization Procedure

Doc. # MSD-FI-001

Rev.B2

Additional Signatures (as required)

B2	04-APR-09	Approved for Use or Implementation				IMS Lead	
B1	Oct 15/07	Approved for Use or Implementation	N/A	D. Sturge	E. Martin		
Status/ Revision	Date	Reason For Issue	Corporate Controller Approval	VP Finance & CFO Approval	President & CEO Approval		
CONFIDENTIALITY NOTE: This document contains intellectual property of the Nalcor Energy – Lower Churchill Project and shall not be copied, used or distributed in whole or in part without the prior written consent from the Nalcor Energy – Lower Churchill Project.							

Note: Due to the requirement for additional signatures history of previous revisions are available through Document Control.

Please note that this document was originally titled *Capital Expenditure Signing Authorities*

TABLE of CONTENTS

1.0 Purpose.....4

2.0 Scope4

3.0 Definitions.....4

4.0 Abbreviations and Acronyms5

5.0 Reference Documents and/or Associated Forms5

6.0 Corporate Business Plan5

7.0 Financial Controls.....5

 7.1 CAPITAL BUDGETS AND AFES.....6

 7.2 PURCHASE REQUISITIONS.....6

 7.3 AGREEMENTS AND WORK TASK ORDERS.....7

 7.4 CHANGE IN VALUE / SCOPE.....7

8.0 Approval Process and Responsibilities7

9.0 Approval Authorization Limits.....8

10.0 Delegation of Authority.....9

 10.1 HUMAN RESOURCES MANAGER9

 10.2 CAPITAL SIGNING AUTHORITY DELEGATION.....9

A.0 Activity Flowchart – See attached9

B.0 Attachments/Appendices – N/A.....9

1.0 Purpose

The purpose of this document is to provide direction and guidance with respect to financial approvals within Nalcor Energy – Lower Churchill Project (NE – LCP). This process shall be known as the Capital Expenditure Approval Authorization Procedure. This procedure will outline and define the level of signing authority associated with each position and outline the process for commitment authorization.

2.0 Scope

This procedure shall apply to all project personnel who have signing authority for financial expenditures, who are Budget Holders, or who are seeking commitment authorization on the Lower Churchill Project. This procedure will only apply to the capital phase of the Project.

3.0 Definitions

Authorization for Expenditure

Process used for the appropriation of funds from Nalcor Energy, corporate approved budgets, to NE - LCP.

Award Authorizations

The document that endorses the approval to enter into an agreement.

Budget Holder

Person accountable for development, scheduling, commitment, control and forecasting against particular project scope.

Budgeting

A process to develop a capital expenditure plan by allocating costs or prices to the Project defined scope and time phasing the cost in accordance with the approved project schedule.

Financial Commitment

Represents the value of the Project Budget allocated for awarded goods or services. The financial obligation for procurement of goods and/or services for the scope of various project work packages and/or the estimated value of other associated project costs (e.g. Project Management/special type contracts). Committed costs for awarded goods and services include the original values plus any approved variation orders to the contracts or change orders to the purchase order (which may or may not be a project scope change).

Financial Commitment Authorization

The process of creating a legal and financial obligation to procure goods and/or services. A commitment represents a cost which has not yet been incurred and paid, but an agreement, such as a purchase order or contract, has been awarded.

Financial Commitment Authorization Limits

Establishes the financial commitment authorization limits (i.e. Approval Authorization Levels) for key positions and personnel within the Lower Churchill Project provided they are the approved Budget Holder or delegate. Individuals are only permitted to make financial commitments within the approved parameters and cannot exceed the approved project budget values.

Gatekeeper

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

Capital Expenditure Approval Authorization Procedure

Doc. # MSD-FI-001

Rev.B2

Lower Churchill Project Management Team (NE - LCPMT)

Managers, leads and project members and their delegates who report directly to the NE - LCP Project Manager.

Requisition

A written request to buy a particular good / service. A requisition form initiates the purchasing or contracting process, which will result in the issue of a Purchase Order or an agreement. Also called purchase requisition.

Shareholder

For Nalcor Energy and the NE - LCP the Shareholder is the Province of Newfoundland and Labrador.

Work Task Order

The official request and approval sheet for the authorization of work to the contractor. The Work Task Order, along with the attachments, describes the work scope, resources, hours, schedule, reporting requirements, costs, deliverables and desired outcome of the work scope.

4.0 Abbreviations and Acronyms

AAL - Approval Authority Limits

AFE - Approval for Expenditure

BGT - Budget

BOD - Board of Directors

CEO - Chief Executive Officer

CO - Contract Change Order

NE - LCP - Nalcor Energy - Lower Churchill Project

NE - LCPMT - Nalcor Energy - Lower Churchill Project Management Team

PO - Purchase Order

SCM - Supply Chain Management

VP - Vice President

WTO - Work Task Order

5.0 Reference Documents and/or Associated Forms

MSD-FI-002 - Capital AFE Preparation and Supplement Procedure

MSD-FI-004 - Capital Budgeting Process

MSD-MM-020 - Work Task Order (WTO) Process

MSD-PJ-001 - Lower Churchill Project - Capital Project Cost Management Process

MSD-PJ-007 Lower Churchill Project - Project Change Management Procedure

6.0 Corporate Business Plan

As a capital project of Nalcor Energy, the LCP falls within the Nalcor Energy budgeting and business planning process, as is described in the document MSD-FI-004 Capital Budgeting Process. This annual budget is approved by the Board of Directors and the Shareholder. Once approved and released by the Gatekeeper via AFEs, this budget will provide the basis for operations within which the NE – LCP Budget Holders must adhere.

7.0 Financial Controls

The NE - LCP have leveraged industry best-practice to build upon existing Newfoundland and Labrador Hydro financial controls in order to develop a suite of processes and tools required to effectively ensure adequate financial controls are in place for a project of the size and complexity of the NE - LCP. The Approval Authorization Limits details the established approval levels and are located under the Capital Expenditure Approval Authorization link within the online Integrated Management System. It is important to note that one Budget Holder cannot be

the sole signature (approval) on a Purchase Requisition, WTO and an invoice. The Purchase Requisition, WTO or the invoice must have an appropriate second signature for control purposes (i.e. manager).

7.1 Capital Budgets and AFEs

Following a hierarchical approach, reference Figure 1.0, approval of all funding for the NE - LCP shall be via the annual corporate capital budgeting process discussed in Section 6.0. Following confirmation of an approved capital budget, the NE - LCP Project Manager will prepare an AFE in accordance to the process outlined in document MSD-FI-002 Capital AFE Preparation and Supplement Procedure. This AFE request shall be submitted to the NE - LCP VP, CFO VP Finance, and the Gatekeeper requesting the release of all or a specific portion of this budget to the NE - LCPMT. Only following the approval of the AFE can financial commitments against this budget be made by the NE - LCPMT.

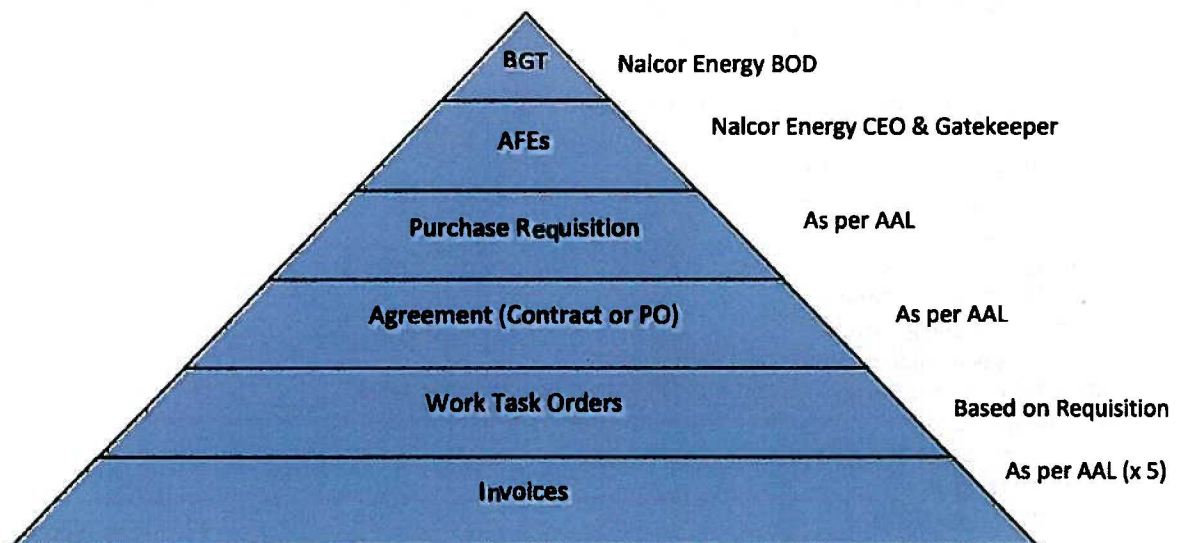


Figure 1.0 - Financial Commitment Control Points

The AFE system is used by management to approve and control the release of capital to the project against approved Nalcor Energy Corporate Business Plans. An approved AFE provides the NE - LCP with the authority to commit only to expenditures within the scope and dollar value indicated by that specific AFE. When an AFE is approved the authorized amount of that AFE reduces the remaining funds available from the annual capital budget contained within the Corporate Business Plan.

While the capital budget as a whole may be approved by Senior Management and the Board of Directors, the AFE is used to draw down that approved capital budget in increments that would correspond with specific milestones or project phases.

7.2 Purchase Requisitions

Following the approval of an AFE, agreements (Contract or PO) with third parties may be established to facilitate the execution of the scope. Requisitions and/or Award Authorizations representing a portion of the value of the scope approved under the AFE are prepared justifying the scope of work and are submitted to the required Approving Authority for endorsement. The approved requisition and/or award authorization represents the total amount of scope that can be committed with a particular contractor without seeking further management endorsement. Please refer to MSD-PJ-001 Capital Project Management Process (Appendix A). All commitments for work must be within the approved capital budget of the Budget Holder that has been released to the Project through an AFE.

7.3 Agreements and Work Task Orders

For all goods or services to be acquired by the NE - LCP, an approved agreement (Contract or PO) is required. This represents the final stage of the financial commitments process and is used to track the total amount of commitments made by the project. A WTO may be used to release or to agree the scope of the work with a contractor, depending on the contract form.

A WTO requires approval from the Budget Holder. Since the purchase requisition has approval for the total amount of scope that can be committed, the WTO is a draw down of the original requisition and must be below the total approved amount of the requisition. In addition, the cumulative amount of the WTOs must be below the total approved requisition amount. When the scope changes or other changes result in a value that exceeds that of the original purchase requisition, a revision or change requisition is required. This is completed and approved the same as an original requisition. Please refer to MSD-MM-020 Work Task Order (WTO) Process.

7.4 Change in Value / Scope

Authorization of a change in value or a change in scope of a contract shall be subject to the limits established in the NE - LCP - Approval Authorization Limits, located under the Capital Expenditure Approval Authorization link within the online Integrated Management System. The total contract value must be under the individual's limit. All change order amounts are cumulative and therefore the total value of the contract requisition as approved cannot be exceeded. Please refer to MSD-PJ-007 Lower Churchill Project - Project Change Management Procedure.

8.0 Approval Process and Responsibilities

All commitments for the NE - LCP must be verified by Project Controls before being approved. This is to ensure sufficient funding remains within the approved AFE and that the commitment is being allocated to the correct cost center. In addition Project Controls verifies the scope, schedule and cost of all commitments (see attached Flowchart).

Only designated NE - LCP Budget Holders with approval authority are authorized to approve commitments for the NE - LCP. Budget Holders must approve all commitments made from their approved budgets, regardless of the limit. No commitment can be made without the approval of a Budget Holder with approval authority.

Budget Holders can approve capital expenditures up to their assigned limits. For expenditures that are in excess of their approved limits, they are required to verify, review and approve the commitment/expenditure prior to forwarding and receiving the final approval from a higher authorization limit. The initial approval begins with the Budget Holder, and if further approval is required, the commitment/expenditure will be forwarded to the next approval limit. It is important to highlight that only leads and managers with an assigned budget or sub-budget are authorized to commit on behalf of that budget. Leads and managers without assigned budget, still require the approval of the Budget Holder in order to make a commitment. These people do not have authorization to approve commitments. If the commitment is over the limit of the Budget Holder, follow the lines on the NE - LCP organizational chart from the originator up to the next approver to determine which person should approve the commitment document.

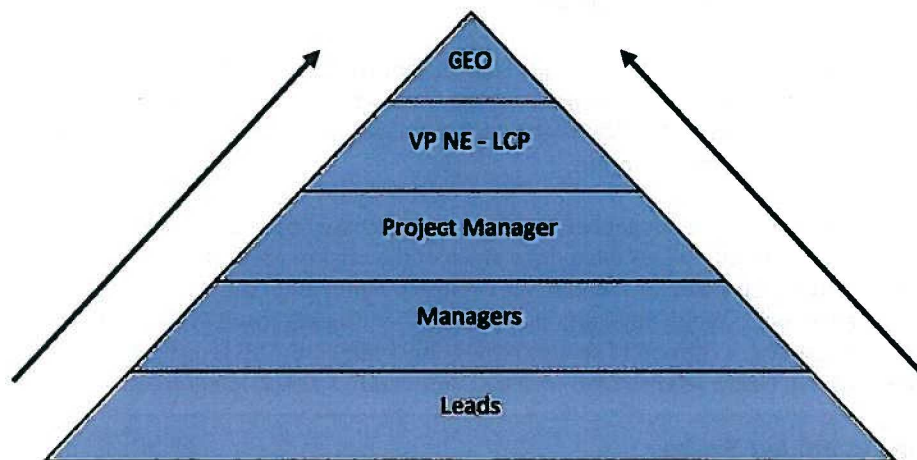


Figure 2.0 - Commitment Approval Hierarchy

NE - LCP personnel in positions with signing authority are accountable for expenditures they approve. For multiple level of approval, the highest level attested is ultimately accountable.

No individual is permitted to approve their own invoice or invoice of their employer. In addition, when personnel in positions with signing authority are contractors to NE - LCP, these contractors cannot approve requisitions, contracts, material slips, timesheets or invoices to which they are agents. These invoices must be approved by the next logical NE - LCP Manager with appropriate signing authority. The NE - LCP - Signing Authority Affiliations are located under the Capital Expenditure Approval Authorization link within the online Integrated Management System and are also provided to Nalcor Energy Accounts Payable for control purposes. This provides a listing of contractors and their affiliated company, to ensure that self approval does not occur.

9.0 Approval Authorization Limits

The Vice President, Project Manager, Managers and Leads **with an assigned budget** are authorized to make commitments for the NE - LCP, on behalf of Nalcor Energy, for expenditures related to the Project. All commitments for work must be within the approved budget of the Budget Holder that has been released to the Project through an AFE.

The personnel in each approved position are listed in the NE - LCP - Approval Authorization Limits, located under the Capital Expenditure Approval Authorization link within the online Integrated Management System and are also provided to Nalcor Energy Accounts Payable for control purposes. Only people with assigned budget responsibility in the approved positions have authority to make commitments for the NE - LCP. In addition, individuals with AAL must be employees / contractors of the NE - LCP. The signature of each person currently in each position is located under the Capital Expenditure Approval Authorization link within the online Integrated Management System and a copy is provided to Accounts Payable for reference.

In situations where the commitments exceed the approval limit of the Vice President (> \$1,000,000), approval will be sought from the Nalcor Energy CEO, who is the Gatekeeper for the NE - LCP.

Capital Expenditure Approval Authorization Procedure

Doc. # MSD-FI-001
Rev.B2

The following table illustrates the approval authority of each position relating to requisitions, agreements, WTOs, COs, and invoices.

Approved Position	Requisition (AAL)	Agreement (AAL)	WTO (AAL)	COs (AAL)	Invoices (5 x AAL)
Nalcor Energy CEO	Unlimited	Unlimited	Budget Holder can approve up to the approved requisition amount	Unlimited	Unlimited
Vice President NE - LCP	\$1,000,000	\$1,000,000		\$1,000,000	\$5,000,000
Project Manager	\$500,000	\$500,000		\$500,000	\$2,500,000
Manager	\$150,000	\$150,000		\$150,000	\$750,000
Lead	\$25,000	\$25,000		\$25,000	\$125,000

This table will be reviewed periodically as the Project progresses to ensure that the approval levels are appropriate.

Budget Holders can approve commitments up to the value of the approved Requisition, provided the Requisition does not exceed the approved capital budget.

Signing Authority may be temporarily assigned to cover absence from a position (see Section 10).

10.0 Delegation of Authority

10.1 Human Resources Manager

The Manager, Human Resources maintains the corporate record of signing authorities in the Corporation's on-line employee database. The Manager of Human Resources must be notified electronically of all changes. This database is updated quarterly, as well as when there are position changes.

10.2 Capital Signing Authority Delegation

A person in a position with approved signing authority may temporarily assign a position's signing authority to another individual to cover an employee's absence from the position. Authority cannot be delegated beyond a lead position. Implementation shall be through electronic notification to Human Resources Department, specifying the employee's name and position who is delegating their authority, the name and position of the employee who the approval authority is being delegated to, and the period of time for which the delegation is in effect. The Project Manager should also be notified electronically of all delegations.

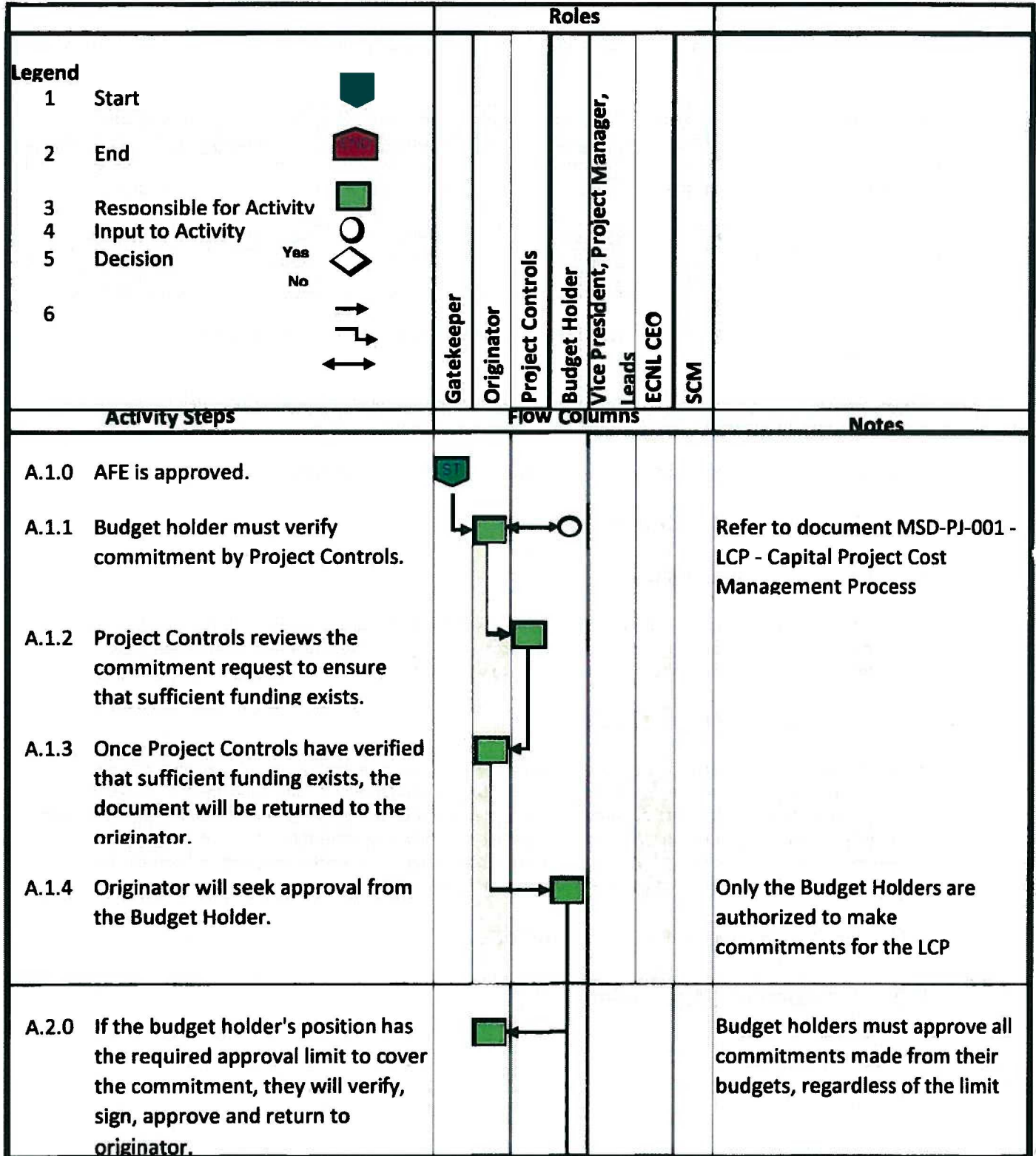
A.0 Activity Flowchart – See attached

B.0 Attachments/Appendices – N/A

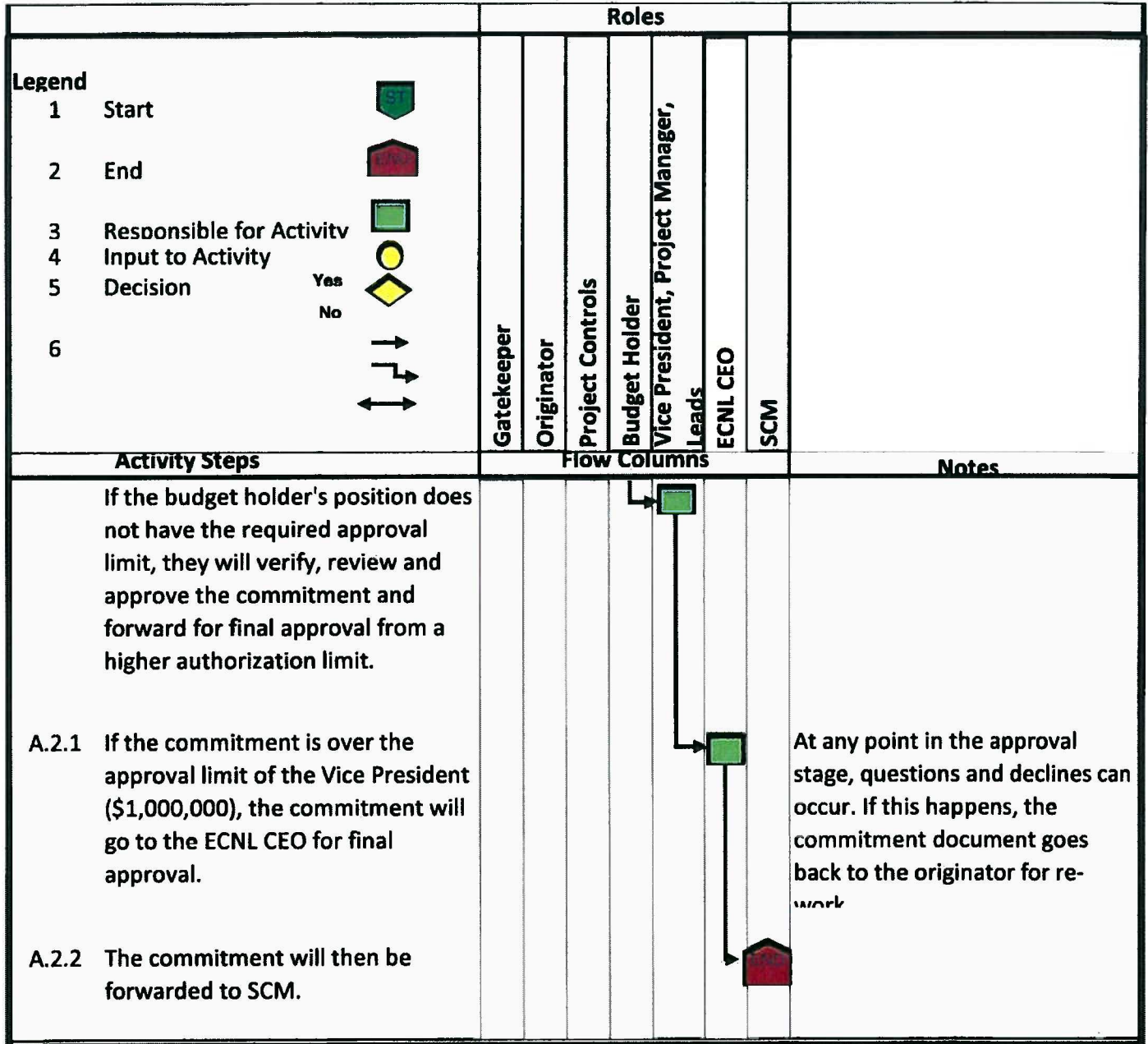
Capital Expenditure Approval Authorization Procedure

Document Number: MSD-FI-001
Rev: B2

Activity Flowchart



Activity Flowchart





NEWFOUNDLAND and LABRADOR HYDRO

System:	WBS:	Project: Lower Churchill Project	Location: All	Applicability Code: D – All Phases
---------	------	--	-------------------------	--

Document Title: Lower Churchill Project – Project Steering Committee Charter	Total Pages (Including Cover): 6
--	--

Document Number:	Management Systems Document
------------------	-----------------------------

MSD	—	PM	—	015	Yes	X	No	
Doc. Set	Discipline			Sequence #				

Comments:

A1		Issued for Review/Comment						
			S. Lethbridge					
Status/Revision	Date	Reason For Issue	Prepared By	Checked By	Project Manager Approval	VP Lower Churchill Approval	Gatekeeper Approval	

CONFIDENTIALITY NOTE: This document contains intellectual property of the Hydro Group of Companies and shall not be copied, used or distributed in whole or in part without the prior written consent from the Hydro Group of Companies.

TABLE of CONTENTS

1.0	Background	3
2.0	Abbreviations and Acronyms	3
3.0	Reference Documents and/or Associated Forms	3
4.0	Purpose	4
4.1	Primary Functions	4
4.2	Responsibilities	4
4.3	Gatekeeper Responsibilities	4
5.0	Steering Committee	4
5.1	Membership	4
5.2	Role of a Steering Committee Member	5
6.0	Steering Committee Meetings	6
6.1	Meeting Schedule and Process	6
6.2	Meeting Agenda	6

1.0 Background

The purpose of a Project Steering Committee is to provide guidance and advice to the project, not to manage it. A project steering committee typically comprises of senior management figures within the company and invited committee members from outside the company with extensive project experience at a senior level. Steering Committee members shall have knowledge of business objectives and drivers to facilitate the provision of guidance and advice.

This Charter defines the agreed purpose, scope, and member composition for the Lower Churchill Project (LCP) Steering Committee. The LCP Steering Committee will be developed to provide overall guidance and advice to the LCP as it progresses through Gate 2 up to Full Power Delivery (post Gate 4).

Figure 1, below, presents a high-level depiction of the organizational structure indicating the interactions between the Shareholder, ECNL Board of Directors, Gatekeeper, VP Lower Churchill, LCP Project Manager, LCP Project Management Team and the LCP Steering Committee. The project's Governance Approach (LCP document MSD-PM-003) documents the various levels of authority of these parties.

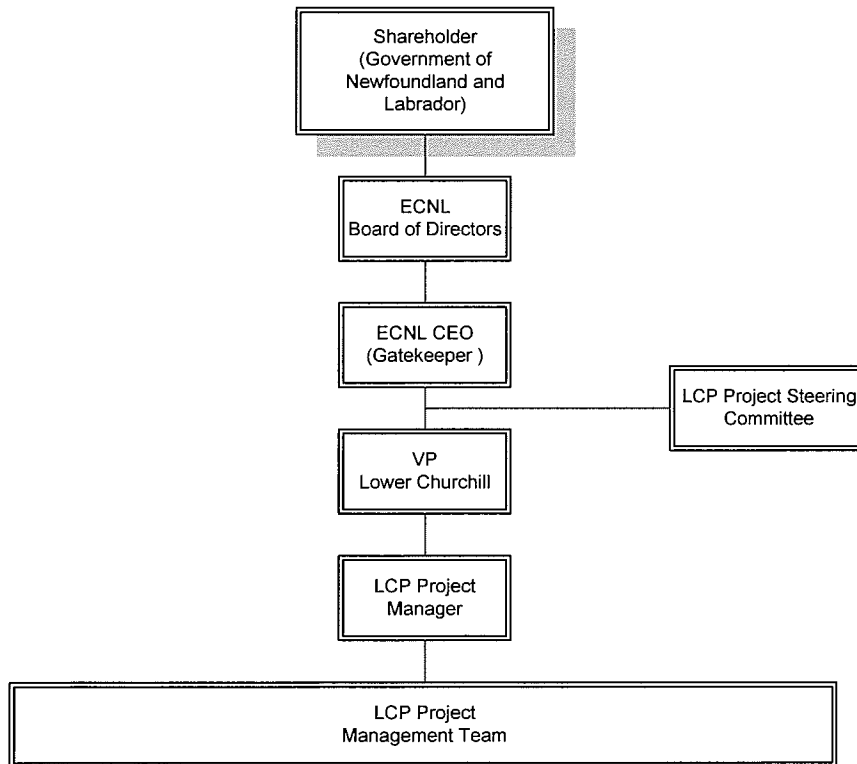


Figure 1: High-level LCP organization chart

2.0 Abbreviations and Acronyms

- CFO Chief Financial Officer
- ECNL Energy Corporation of Newfoundland and Labrador
- LCP Lower Churchill Project
- PM Project Manager
- VP Vice-President

3.0 Reference Documents and/or Associated Forms

- MSD-PM-001: LCP – Project Charter
- MSD-PM-003: LCP – Governance Approach

4.0 Purpose

4.1 Primary Functions

The primary function of the Steering Committee is to provide guidance and advice to the LCP. The LCP Steering Committee will monitor and review the project status, as well as provide oversight of the project deliverable rollout.

The Steering Committee provides a forum for the LCP to update current progress, identify challenges, raise issues and seek input, guidance and advice on specific items with a high significance. The Steering Committee provides insight on long-term strategies in support of management mandates. Members of the Steering Committee shall seek assurances that business objectives are being adequately addressed and the project remains under control.

In practice, these responsibilities are carried out by performing the following functions:

- Monitoring and reviewing the project at regular Steering Committee meetings
- Providing assistance and support to the project when requested
- Monitoring project scope as emergent issues force changes to be considered, thereby ensuring the scope aligns with corporate objectives and the agreed business requirements of project sponsor and key stakeholder groups
- Resolving project conflicts and disputes, providing guidance and advice to assist in reconciling differences of opinion and approach
- Making recommendations on formal acceptance of project deliverables
- Monitoring effectiveness of the project's governance approach
- Identifying LCP initiatives that should be applied in other departments of the corporation

4.2 Responsibilities

The Steering Committee is responsible for providing guidance, advice and making suggestions on major project elements such as:

- Prioritization of project objectives and outcomes as identified in the Project Charter (LCP document MSD-PM-001)
- Deliverables as identified in the project Scope Statement
- Budget, ensuring that effort, expenditures, and changes are appropriate to stakeholder expectations
- Schedule
- Risk management strategies, ensuring that strategies address potential threats to the project's success have been identified, estimated, and approved; and that the threats are regularly re-assessed
- Project management and quality assurance practices

4.3 Gatekeeper Responsibilities

The Gatekeeper is responsible for:

- Directing the project, including making decisions affecting changes in project scope
- Making the decision at each Decision Gate of the Gateway Process
- Endorsement of the Project Charter and its' communication to the ECNL Board of Directors
- Endorsement of the LCP Governance Approach and to mandate the LCP VP and PM to fully implement

5.0 Steering Committee

5.1 Membership

In addition to the project sponsor as ex-officio member, the Steering Committee will consist of the following stakeholder members:

Name	Role	Steering Committee Role
Gilbert Bennett	ECNL VP Lower Churchill	Chairperson
Paul Harrington	LCP Project Manager	Secretary
Derrick Sturge	ECNL VP Finance & CFO	Member
John Mallam	ECNL VP Engineering Services	Member
Jim Keating	ECNL VP Business Development	Member
Gerard McDonald	ECNL VP Human Resources and Organizational Effectiveness	Member
Tom Garner (or Mark Hughes)	Finance Advisor	Member
Derrick Owen	PM Advisor	Member

Stakeholder members will be identified by the VP Lower Churchill.

5.2 Role of a Steering Committee Member

It is intended that the Steering Committee leverage the experiences, expertise, and insight of key individuals in the organization committed to building professionalism in project management. Steering Committee members are not directly responsible for managing project activities, but provide support and guidance for those who do. Thus, individually, Steering Committee members should:

- Understand the strategic implications and outcomes of initiatives being pursued through project outputs
- Appreciate the significance of the project for some or all major stakeholders and represent their interests
- Be genuinely interested in the initiative and be an advocate for broad support for the outcomes being pursued in the project
- Have a broad understanding of project management issues and approach being adopted

In practice, this means they should:

- Review the status of the project using the LCP Monthly Reports
- Seek verification that the project’s outputs meet the requirements of the business owners and key stakeholders
- Provide guidance and advice regarding conflicting priorities and resources
- Provide guidance to the project team and users of the project’s outputs
- Consider ideas and issues raised and provide guidance, advice and suggestions
- Seek verification that there is adherence of project activities to standards of best practice both within the organization and in a wider context
- Foster positive communication outside of the Team regarding the project’s progress and outcomes

6.0 Steering Committee Meetings

6.1 Meeting Schedule and Process

The Team will meet quarterly, or as required, to keep track of issues and the progress of the project's implementation and on-going statewide support to its stakeholders.

The VP LCP chairs the Steering Committee and facilitates the Steering Committee Meeting. For a meeting to be considered "official", a quorum of four (4), consisting of, as a minimum, VP LCP, VP Finance & CFO, LCP PM, and one (1) other member, shall be required.

Meetings shall be coordinated and minuted by the Project Manager acting in the capacity of Committee Secretary.

6.2 Meeting Agenda

At each meeting, project status will be reported to the Team by the project manager using an agenda outline such as the following:

- A. Introductory Items such as:
 - Introductions
 - Review Agenda
 - Minutes from last meeting
 - Review of actions arising from previous Steering Committee meetings
- B. Review Project Status
 - Overall Status
 - Scope status
 - Schedule status
 - Budget status
 - Reason for deviation from budget
 - New issues arising since the last Team meeting
 - Review and approval of project change orders
 - Milestone review
 - Formal acceptance of deliverables
 - Accomplishments against last meeting's plan
 - Plans for the next reporting period
 - Outstanding issues, open points, project conflicts
 - Specific requests for assistance of the Steering Committee
- C. Consideration of other items relevant to the project
- D. Review and summarize new actions from this meeting
- E. Plans, date, and location for next meeting



NEWFOUNDLAND and LABRADOR HYDRO

System:	Project: Lower Churchill Project	Location: ALL	Applicability Code: A
Document Title: Cost Estimate Classification System			Total # of Pages: 18

DOCUMENT #: MSD-PJ-006	Management Systems Document <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
----------------------------------	--

Comments:

Lower Churchill Project
Cost Estimate Classification System



TABLE OF CONTENTS

1 **PURPOSE**.....3

2 **SCOPE**.....4

3 **DEFINITIONS**.....5

 3.1 General Definitions.....5

4 **RESPONSIBILITIES**7

5 **COST ESTIMATE CLASSIFICATION MATRIX**8

6 **CHARACTERISTICS OF THE ESTIMATING CLASSES**9

 6.1 Class 5 Estimate10

 6.2 Class 4 Estimate11

 6.3 Class 3 Estimate12

 6.4 Class 2 Estimate13

 6.5 Class 1 Estimate14

7 **Estimate Maturity Model**15

8 **Gateway Model Relationship**16

9 **ESTIMATE ACCURACY**.....17

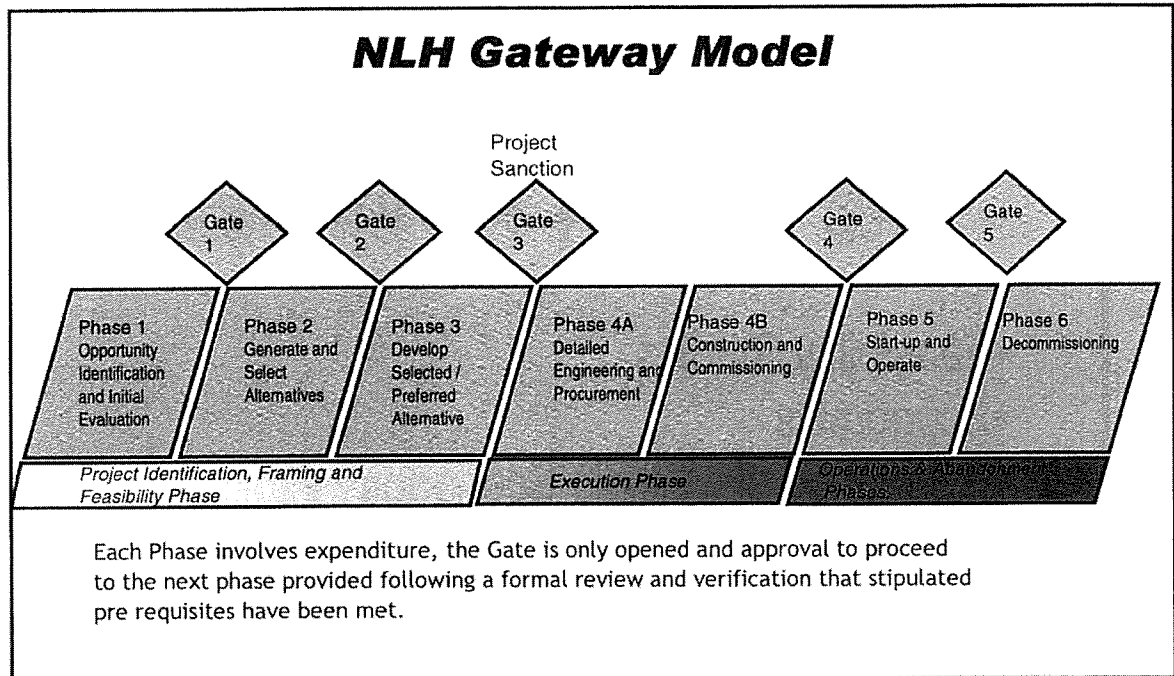
10 **ESTIMATE INPUT CHECKLIST AND MATURITY MATRIX**18

**Lower Churchill Project
Cost Estimate Classification System**



1 PURPOSE

Based on the Association for Advancement to Cost Engineering (AACE) estimating standards and practices, the Cost Estimate Classification System provides guidelines for applying the general principles of estimate classification to project cost estimates (i.e., cost estimates that are used to evaluate, approve, and/or fund the phases, deliverables and/or scope of the Lower Churchill Project (LCP). The Cost Estimate Classification System maps the phases and stages of project cost estimating together with a generic maturity and quality matrix, which can be applied globally.



Lower Churchill Project Cost Estimate Classification System



2 SCOPE

The scope of this procedure is to outline the cost estimate classification guidelines that will be used during the various phases and activities of the Lower Churchill Project. The classification of estimates, based on the level of project definition, will establish the types of estimates, general estimating methodologies and accuracy ranges applied to the scope, time and cost estimating effort throughout the project, providing the project stakeholders and project team members with a clear understanding of the estimate quality and expected/anticipated outcomes. The resultant estimates will provide a basis for decision making, will establish project baselines and will determine the level of effort required to provide effective monitoring and control of the project's scope, time and cost.

This system provides a guideline for estimate classification and is not meant to describe the methodology for preparing estimates.

Use of Cost Estimates

- Feasibility Studies
- Economics
- Evaluation of Multiple Scenarios / Projects
- Budgeting / Business Planning Decisions
- Fund Allocation
- Cost and Schedule Control

Lower Churchill Project
Cost Estimate Classification System



3 DEFINITIONS

3.1 General Definitions

Approval for Expenditure (AFE)	The AFE represents the appropriation of funds from the Energy Corporation of Newfoundland & Labrador (ECNL) business plan to the Lower Churchill Project (LCP). The subdivision of the AFE will be consistent with the project execution strategy and project Work Breakdown Structure (WBS).
Analogous Estimate	Analogous estimate - an estimate based on previous similar projects.
Baseline	The project scope, in terms of quantity, quality, timing, hours, costs, etc, that establishes a formal reference for comparison and verification of subsequent efforts, progress, analysis and control. The only mechanism to change a baseline is by an approved PCN.
Budgeting	A process to develop a cost plan by allocating costs or prices to controllable cost accounts or activities and time phasing the cost in accordance with the approved project schedule.
Contingency	An amount added to an estimate to allow for unknown items, conditions, or events that experience shows will likely result in additional costs. Contingency is typically estimated using statistical analysis (risk analysis) and / or judgment based on past asset or project experience and the perceived risk. Contingency does not cover: <ul style="list-style-type: none"> • Project scope changes • Events such as strikes or natural disasters Escalation and currency effects
Cost Coding	The assignment and use of code numbers for each project activity to facilitate control and reporting.
Cost Estimate	The anticipated cost of performing a task or acquiring an item, used for assembling and predicting the cost of a project.

Lower Churchill Project
Cost Estimate Classification System



Estimating	An evaluation of all the costs and durations of the elements of a project or effort as defined by an agreed-upon scope and includes an indicator of accuracy (e.g., order of magnitude estimate, budget estimate or definitive estimate).
Forecast Final Cost	The anticipated cost of a project or component when it is complete. The value of the Incurred Costs plus the estimated value of work left to complete. The value of the work left to complete is calculated based on Past Performance, Pending Contracts, Pending Variation Orders, Approved Trends, assigned Technical Allowance and applied Contingency.
Order of Magnitude Estimate	A "ball park" estimate, usually reserved for the concept phase only.
Parametric Estimate	An estimating methodology where the basis of the estimate can be quantitatively determined by multiplying the quantity of work to be performed by historical productivity rates.
Project Budget	The translation of the Sanction Cost Estimate into man-hour rates, quantity units of production, etc. allocated by WBS so that these cost elements can be compared to actual costs and variances developed to highlight performance and alert those responsible to implement corrective action if necessary.
Project Scope	<p>A concise and accurate description of the end products or deliverables to be expected from the project and that meet specified requirements as agreed between the Project Stakeholders.</p> <p>The combination of all project goals and tasks, and the resources and activities required to accomplish them.</p>
Technical Allowance	An amount added to cover the items, conditions, or events that contribute to scope growth resulting from the progressive elaboration of the detailed design phase of the project.

Lower Churchill Project
Cost Estimate Classification System



**Work Breakdown Structure
(WBS)**

Decomposition of the project scope into more manageable packages of work or deliverables. Each WBS element will have an approved budget that will be defined in the Project Budget.

4 RESPONSIBILITIES

Estimator : Recommendation of estimate accuracy based upon level and quality of estimate information available including assumptions and exclusions.

Project Controls : Maintenance of this standard.

Lower Churchill Project
Cost Estimate Classification System



5 COST ESTIMATE CLASSIFICATION MATRIX

The five estimate classes are presented below in relationship to the identified characteristics. Only the level of project definition determines the estimate class. The other four characteristics are secondary characteristics that are generally correlated with the level of project definition. The characteristics are typical but may vary from application to application.

Estimate Class	Gateway Model	Primary Characteristic	Secondary Characteristic			
		LEVEL OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]
Class 5	Gate 1	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogous	L: -20% to -50% H: +30% to +100%	1
Class 4	Gate 2	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	Gate 3	10% to 40%	Budget, Authorization or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	Gate 4	30% to 70%	Control or Bid / Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	Gate 5	50% to 100%	Check Estimate or Bid / Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

Notes:

[a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.

[b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

Lower Churchill Project Cost Estimate Classification System



6 CHARACTERISTICS OF THE ESTIMATING CLASSES

The following sections provide detailed descriptions of the five estimate classifications. They are presented in the order of least-defined estimates to the most-defined estimates. These descriptions include brief discussions of each of the estimate characteristics that define an estimate class.

For each chart, the following information is provided:

- **Description:** a short description of the class of estimate, including a brief listing of the expected estimate inputs based on the level of project definition.
- **Level of Project Definition Required:** expressed as a percent of full definition. For the LCP project, this correlates with the percent of engineering and design complete.
- **End Usage:** a short discussion of the possible end usage of this class of estimate.
- **Estimating Methods Used:** a listing of the possible estimating methods that may be employed to develop an estimate of this class.
- **Expected Accuracy Range:** typical variation in low and high ranges after the application of contingency (determined at a 50% level of confidence). Typically, this results in a 90% confidence that the actual cost will fall within the bounds of the low and high ranges.
- **Effort to Prepare:** this section provides an indicative level of effort (in hours) to produce a complete estimate for a US\$20,000,000 project. Estimate preparation effort is highly dependent on project size, project complexity, estimator skills and knowledge, and on the availability of appropriate estimating cost data and tools.
- **ANSI Standard Reference (1989) Name:** this is a reference to the equivalent estimate class in the existing ANSI standards.
- **Alternate Estimate Names, Terms, Expressions, Synonyms:** this section provides other commonly used names that an estimate of this class might be known by. However, an alternative name may not always be correlated with the class of estimate as identified in the chart.

Lower Churchill Project
Cost Estimate Classification System



6.1 Class 5 Estimate

CLASS 5 ESTIMATE	
<p>Description: Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systemic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with little effort expended—sometimes requiring less than an hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation.</p> <p>Level of Project Definition Required: 0% to 2% of full project definition.</p> <p>End Usage: Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, longrange capital planning, etc.</p>	<p>Estimating Methods Used: Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 5 estimates are - 20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): As little as 1 hour or less to perhaps more than 200 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Order of magnitude estimate (typically -30% to +50%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of-thumb.</p>

**Lower Churchill Project
Cost Estimate Classification System**



6.2 Class 4 Estimate

CLASS 4 ESTIMATE	
<p>Description: Class 4 estimates are generally prepared based on limited information and subsequently have fairly wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 15% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems, and preliminary engineered process and utility equipment lists.</p> <p>Level of Project Definition Required: 1% to 15% of full project definition.</p> <p>End Usage: Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.</p>	<p>Estimating Methods Used: Class 4 estimates virtually always use stochastic estimating methods such as equipment factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to +30%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.</p>

**Lower Churchill Project
Cost Estimate Classification System**



6.3 Class 3 Estimate

CLASS 3 ESTIMATE	
<p>Description: Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineered process and utility equipment lists</p> <p>Level of Project Definition Required: 10% to 40% of full project definition.</p> <p>End Usage: Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimates" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.</p>	<p>Estimating Methods Used: Class 3 estimates usually involve more deterministic estimating methods than stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for USS20MM project): Typically, as little as 150 hours or less to perhaps more than 1,500 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to +30%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.</p>

**Lower Churchill Project
Cost Estimate Classification System**



6.4 Class 2 Estimate

CLASS 2 ESTIMATE	
<p>Description: Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the "bid" estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, piping and instrument diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc.</p> <p>Level of Project Definition Required: 30% to 70% of full project definition.</p> <p>End Usage: Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program.</p>	<p>Estimating Methods Used: Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detail takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances</p> <p>Effort to Prepare (for US\$20MM project): Typically, as little as 300 hours or less to perhaps more than 3,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Definitive estimate (typically -5% to + 15%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Detailed control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.</p>

Lower Churchill Project
Cost Estimate Classification System



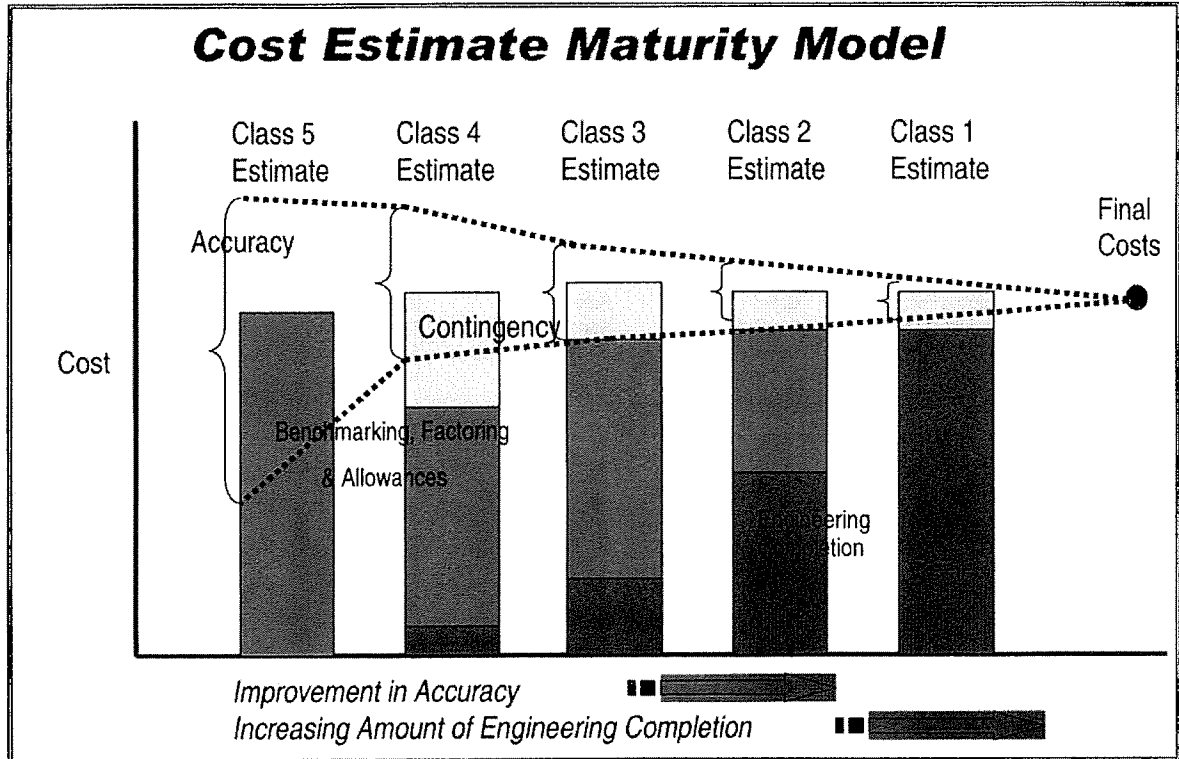
6.5 Class 1 Estimate

CLASS 1 ESTIMATE	
<p>Description: Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans.</p> <p>Level of Project Definition Required: 50% to 100% of full project definition.</p> <p>End Usage: Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.</p>	<p>Estimating Methods Used: Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Definitive estimate (typically -5% to + 15%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms:</p> <p>Synonyms: Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.</p>

Lower Churchill Project Cost Estimate Classification System



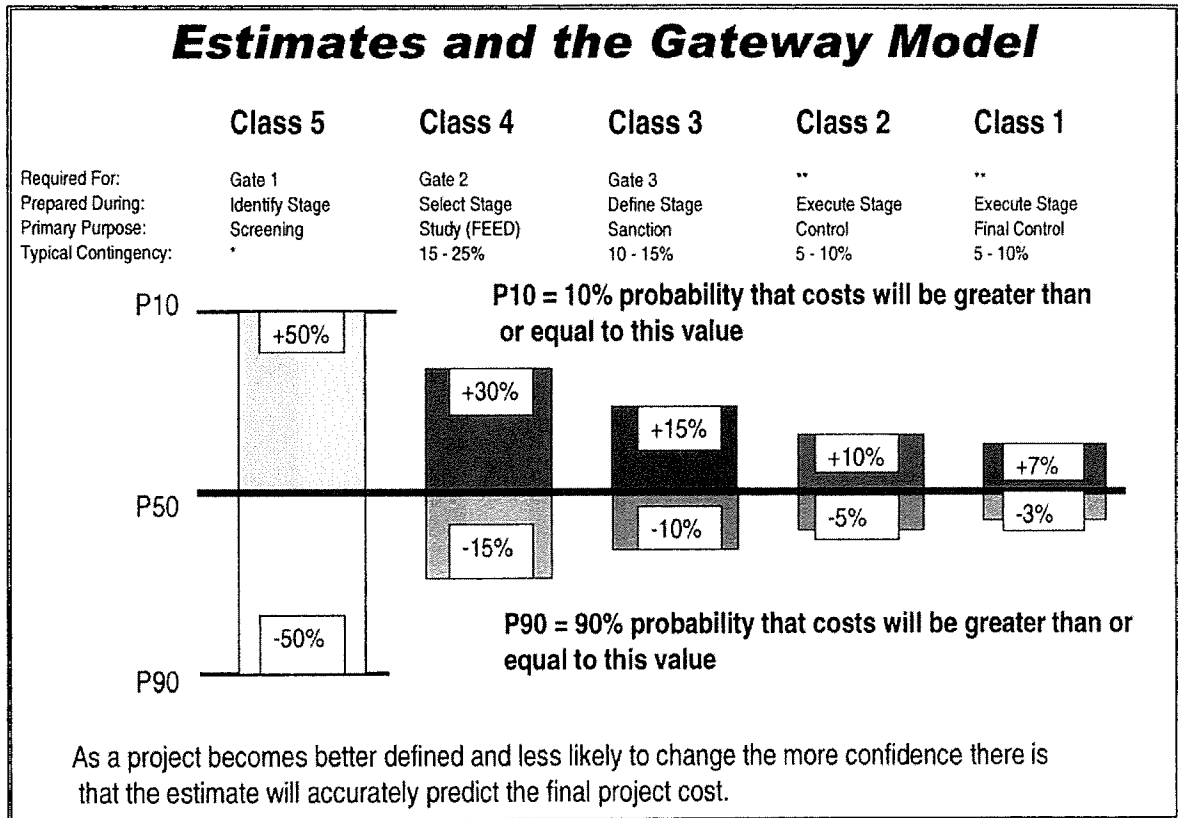
7 ESTIMATE MATURITY MODEL



Lower Churchill Project
Cost Estimate Classification System



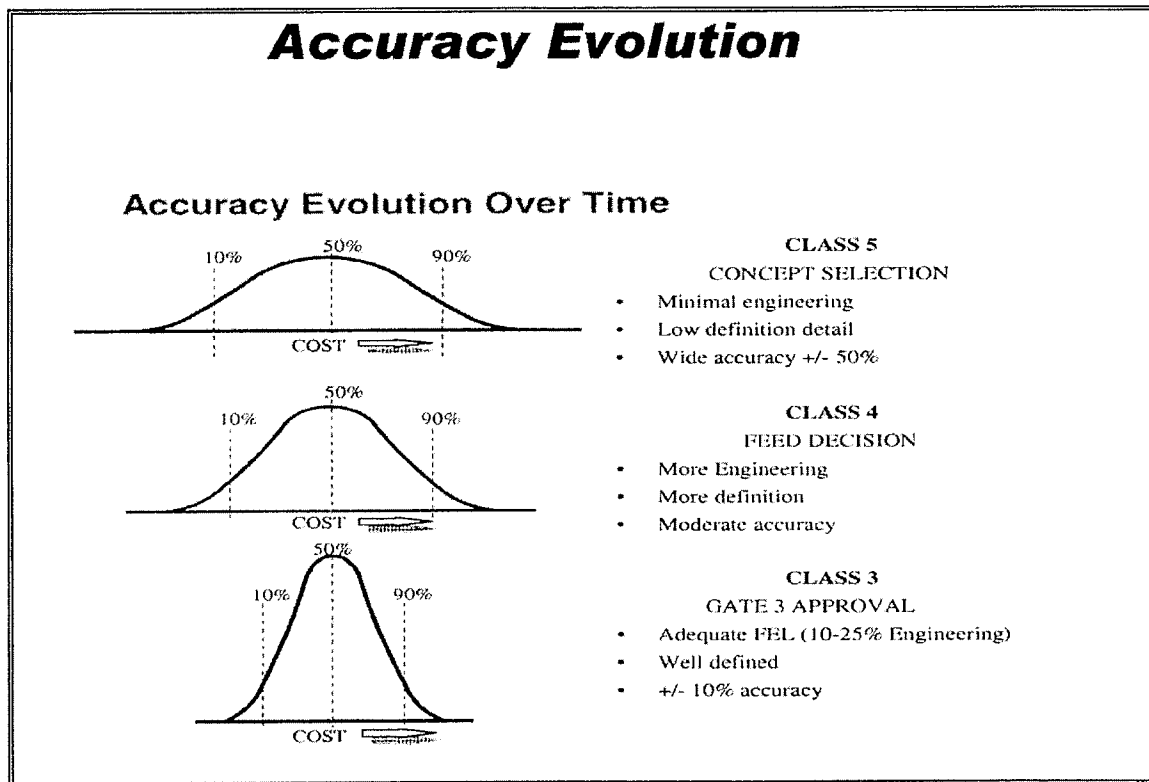
8 GATEWAY MODEL RELATIONSHIP



**Lower Churchill Project
Cost Estimate Classification System**



9 ESTIMATE ACCURACY



Lower Churchill Project
Cost Estimate Classification System



10 ESTIMATE INPUT CHECKLIST AND MATURITY MATRIX

Maps the extent and maturity of estimate input information (deliverables) against the five estimate classification levels. This is a checklist of basic deliverables found in common practice. The maturity level is an approximation of the degree of completion of the deliverable. The degree of completion is indicated by the following letters.

- **None (blank):** Development of the deliverable has not begun.
- **Started (S):** work on the deliverable has begun. Development is typically limited to sketches, rough outlines, or similar levels of early completion.
- **Preliminary (P):** work on the deliverable is advanced. Interim, cross-functional reviews have usually been conducted. Development may be near completion except for final reviews and approvals.
- **Complete (C):** the deliverable has been reviewed and approved as appropriate.

CHECKLIST	ESTIMATE CLASSIFICATION				
	Class 5	Class 4	Class 3	Class 2	Class 1
General Project Data :					
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production/Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location / Layout	General	Approximate	Specific	Specific	Specific
Soils, Hydrology & Geotech. Conditions	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
Design Criteria	None	Preliminary	Approximate	Defined	Defined
Constructability Review Complete	None	Preliminary	Approximate	Specific	Defined
Engineering Deliverables:					
Block Flow Diagrams	S/P	P/C	C	C	C
Plot Plans		S	P/C	C	C
Process Flow Diagrams (PFDs)		S/P	P/C	C	C
Utility Flow Diagrams (UFDs)		S/P	P/C	C	C
Piping & Instrument Diagrams (P&IDs)		S	P/C	C	C
Heat & Material Balances		S	P/C	C	C
Process Equipment List		S/P	P/C	C	C
Utility Equipment List		S/P	P/C	C	C
Electrical One-Line Drawings		S/P	P/C	C	C
Specifications & Datasheets		S	P/C	C	C
General Equipment Arrangement Drawings		S	P/C	C	C
Spare Parts Listings			S/P	P	C
Mechanical Discipline Drawings			S	P	P/C
Electrical Discipline Drawings			S	P	P/C
Instrumentation/Control System Discipline Drawings			S	P	P/C
Civil/Structural/Site Discipline Drawings			S	P	P/C