nalcor energy
LOWER CHURCHILL PROJECT

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:

Status/ Revision	Date	Reason For Issue	Prepared By	Checked By	Checked By	IMS Lead	Project Manager Approval
B1	24-MAR-09	**Approved for Use or Implementation**	J. Kean	R. Power	L. Clarke	M. Peddle	P. Harrington

TABLE of CONTENTS

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.

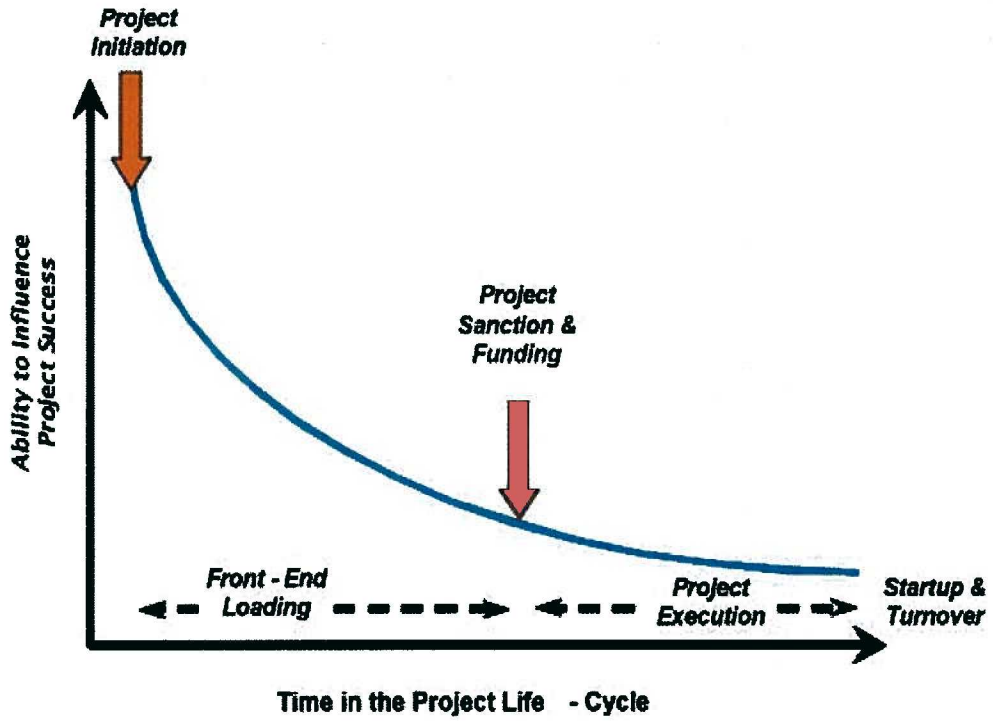
7.0 Background

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]



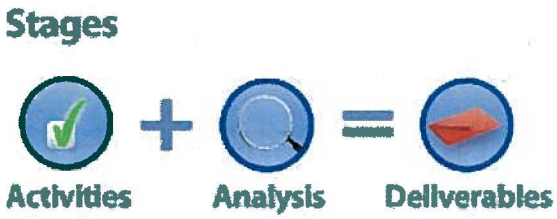
Within a stage-gate process stages, also referred to as phases, the following applies:

- 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.

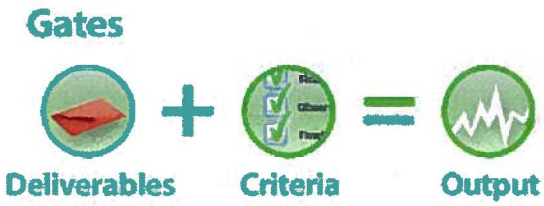
Figure 2.0: Depiction of Process during Stages or Phases



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**

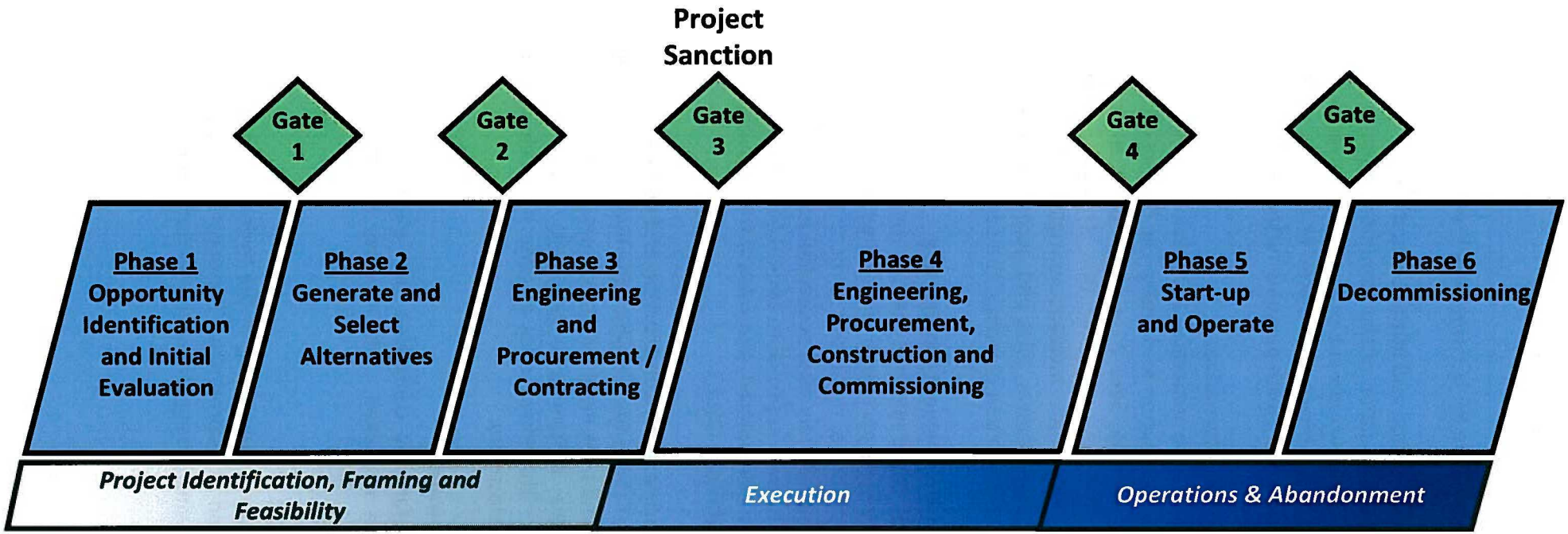
- **Gate 2 – Approval of Development Scenario and to Commence Detailed Design**

- **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.

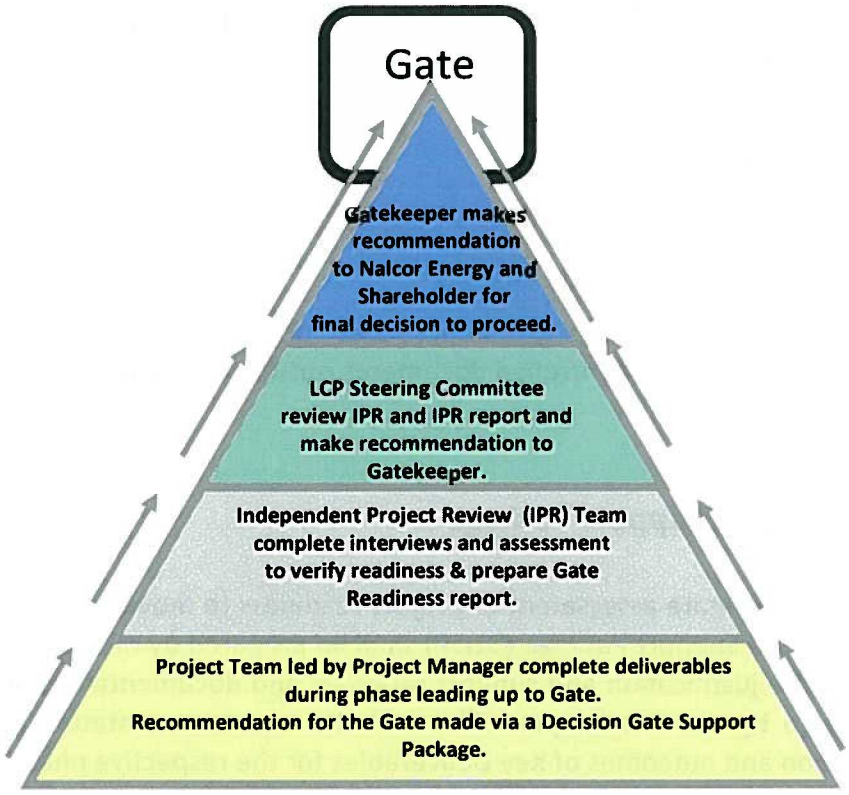
Figure 5.0 illustrates the Decision Gate Assessment Process which is made up of four sequential steps, culminating with a recommendation of the Gatekeeper to the Nalcor Energy Board of Directors and Shareholder. In order to facilitate the Decision Gate Assessment Process, the NE-LCP will utilize Independent 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