

Lower Churchill Management Corporation



PROCEDURE FOR COST CONTROL

Nalcor Doc. No. LCP-PT-MD-0000-PC-PR-0005-01


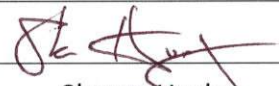

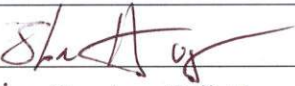
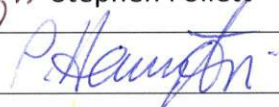
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**1 PURPOSE**

The purpose of this procedure is to define the roles, responsibilities and actions required to apply the principles of Cost Control within the Lower Churchill Management Corporation (LCMC) for the delivery of the Lower Churchill Project (LCP) and Sub-Projects in accordance with the *Project Controls Management Plan - LCP-PT-MD-0000-PC-PL-0001-01\_B2*.

**2 SCOPE**

This procedure applies to the LCP Project and Sub-Projects:

- Muskrat Falls Generation – MFG
- Labrador Transmission Asset – LTA
- Labrador Island Link – LIL

**3 DEFINITIONS**

**Accruals**

An estimate covering the value of work already carried out but unbilled for at the end of the accounting period.

**Allocated Budget**

A budget amount allocated against the elements of cost in the commitment packages.

**Allocation**

A process of distributing or assigning cost of item or activity (for indirect cost) to specific budget account.

**Allowance**

Additional sums of money included in the forecast or estimate to cover the cost of known but undefined parts of the scope of work.

**Amendment (Change Order)**

A modification of the contract by a subsequent agreement. This does not change the entire existing contract but does alter the terms of the affected provisions or requirements.

**Backcharge**

A charge against a LCP Contractor/Supplier for costs incurred by LCP project for corrective action due to unacceptable or incomplete performance by the Contractor or Supplier.

**Baseline**

The reference plans in which cost, schedule, scope and other project performance criteria are documented and against which performance measures are assessed and changes noted. The Baseline may be adjusted

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**Budgeting**

from time to time as directed by the Project Director of Generation / General Project Manager – Transmission Link.

A process used to allocate the estimated cost of resources into cost centers against which cost performance will be measured and assessed. Budgeting often considers time-phasing in relation to a schedule and/or time-based financial requirements and constraints.

**Capital Cost Project**

A project where physical assets are involved. This type of project can also include professional services. The main types of projects include, but are not restricted to:

- Cost Reimbursable
- Firm Price
- Cost, Plus Mark-up
- Target Cost Including Bonus and/or Penalty

A project can also be a combination of the above.

**Cash Flow**

Is the distribution over project scheduled time of the estimated values payable to the LCP Contractors/Suppliers and Consultants as per payment terms and conditions.

**Change Management**

The formal process, through which changes to the project plan are identified, assessed, reviewed, approved and incorporated into the project.

**Commitment**

The value of a legal liability, letter of intent, purchase order, contract, given to a supplier or contractor, which authorized the contracting party to incur expenses for activities or purchases related to the discharge or execution of the work to be carried out.

**Contingency**

An Allowance to cover undefined items of work which will have to be performed or elements of cost which will be incurred within the defined scope of work of the estimate that cannot be explicitly foreseen or described at the time the estimate is made because of lack of complete accurate and detailed

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**Contract (Agreement)**

information.

Legal agreement between two or more parties.

Types of Contracts:

Lump Sum - Contractor agrees to perform all services as specified by the contract for a fixed amount. A variation of this type may include a turn-key arrangement where the contractor agrees to furnish an entire project ready for operation, based on a clearly defined scope of work.

Unit Price - Contractor will be paid at an agreed upon unit rate for services performed. For example, technical work-hours will be paid for at the unit price agreed upon. Often field work is assigned to a subcontractor by the prime contractor on a unit price basis.

Cost reimbursable - Project costs specified by the contract are fully reimbursed to the contractor. Such contracts can be varied in their commercial terms, i.e.:

- Cost Plus Fixed Fee
- Cost Plus Fixed Sum
- Time and Materials
- Guaranteed Maximum
- Target Price
- Target Job-hours
- Target Date

**Cost Codes**

Codes allocated to items or activities that allow costs to be consolidated according to the elements of the Work Breakdown Structure (WBS). These codes can also be used for cost classification purposes.

**Cost – Pay Items**

The lowest level of information for cost control. A procurement package is broken down into cost/pay items. The cost/pay items contain commitment and incurred cost information.

**Cost Control**

The application of procedures to monitor expenditures and performance against progress of projects; to make forecasts, to measure variance from authorized budgets

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<b>Cost Estimate</b>	<p>and to take effective action to achieve minimum costs.</p> <p>A prediction of quantities, cost, and/or price of resources required by the scope of an asset investment option, activity, or project. As a prediction, an estimate must address risks and uncertainties. Estimates are used primarily as inputs for budgeting, cost or value analysis, decision making in business, asset and project planning, or for project cost and schedule control processes.</p>
<b>Cost Flow</b>	<p>Is the distribution over project scheduled time the estimated value of work completed at the end of the each reported period.</p>
<b>Direct Cost</b>	<p>The cost of installed equipment, materials, labour and supervision directly attributable to the physical construction of the permanent assets.</p>
<b>Earned Value</b>	<p>Is the periodic consistent measurement of work in terms of budget planned for that work. For cost purposes, it is budgeted cost of work performed; it is compared to actual cost of work performed obtain cost performance.</p>
<b>Escalation</b>	<p>The provision in actual or estimated costs for an increase in the cost of equipment, material, labour, etc., including contingency allowance, over that specified in the purchase order or contract due to price level changes during the project duration.</p>
<b>Forecast</b>	<p>An estimate and prediction of future conditions and events based on information and knowledge available at the time of the forecast.</p>
<b>Forecast Final Cost (FFC)</b>	<p>The forecast final cost of a project is a sum of Incurred Cost plus estimates to complete including Approved trends.</p>
<b>Forecast to complete (FTC)</b>	<p>An estimate of the cost to complete the remaining work on a project, a procurement package, or a construction package from a specific point in time.</p>
<b>Incurred Cost</b>	<p>The contractual cost achieved, or assessed value of work done, at the end of the</p>

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**Indirect Cost**

accounting period, regardless of whether invoiced or not. Includes the approved invoiced cost plus an estimate of the uninvoiced work performed to be accrued.

A cost which is not directly a part of the physical or permanent assets. Indirect costs are associated with support of the construction activity related to the permanent assets, such as temporary buildings, operation of temporary services, construction site administration, etc.

**Invoiced Costs**

The sum of all invoices for goods or services delivered.

**Organizational Breakdown Structure (OBS)**

The hierarchical structure designed to define areas of organization responsibilities for each part of a project. The organizational Breakdown Structure is used for assigning prime responsibility for elements of the Work Breakdown Structure to members of the Project Delivery Team.

**Original Budget**

The value of the initially authorized scope of work as quantified in the approved estimate.

**Package Dictionary**

The packaging of the scope of work into planned commitment packages to reflect the Project's Execution Plan. Planned commitment packages can be further divided into:

- Purchase Orders
- Construction Contracts
- Services Contracts
- Turnkey Contracts.

**PM+**

Project Cost Control tool used to track all budgets, budget changes, and report commitments, incurred costs, and final forecast costs. This tool is the primary cost reporting tool for the project.

**Project Management System (PMS)**

On-line interactive management information system which is designed to be used by project team members and informs project management of the project status during all phases of the project.

**Prism G2**

Project Management tool used by LCP to



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<b>Project Change Notice (PCN)</b>	produce project estimates, baselines and control budgets, to record and report costs and to track Project progress for the indirects and owners cost. The system is used to maintain and monitor the owners cost data, however, is not used as a reporting function. Any Approved deviation from the current scope of work. When approved, the PCN may modify the control budget, schedule and forecast final cost either upward or downward.
<b>Revised Budget/Current Control Budget(CCB)</b>	The Revised Budget is equal to the Original Budget plus the cost of the approved PCN's.
<b>Transfer</b>	The budget transfer covers changes of scope between commitment packages of the package.
<b>Trend</b>	A trend is an identified potential deviation having an impact on the final cost of a project. A trend is the first indication of potential change that must be tracked and properly dealt with. Trends are also used to update the FFC.
<b>Trending</b>	A review of current progress compared to last reported progress, which shows whether a course correction is necessary to achieve the baseline plan. Trending procedures are applicable throughout the life of a project from scope definition through estimating, engineering, procurement and construction.
<b>Variance</b>	For budget purposes, the difference between what was originally budgeted against CCB. For forecasting purposes, the difference between project's forecast of last period vs. project's forecast of the actual period. Variances are also reported between CCB and FFC.
<b>Variance Analysis</b>	Identification and analysis of cost variances to provide a detail factual account of the causes of the variances.

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**Work Breakdown Structure (WBS)**

A framework for organizing and classifying physical work areas and services that makes up a project. It is a systematic approach to reflect a top down hierarchy structure with each lower level providing more detail and smaller elements of the overall work.

- WBS Framework
- The scope of work divided into components.
- The estimate will be developed using a textual description of each component.

**4 REFERENCE DOCUMENTS**

LCP-PT-MD-0000-PC-PL-0001-01	Project Controls Management Plan
LCP-PT-MD-0000-PC-PR-0011-01	Incurred Cost Procedure
LCP-PT-MD-0000-PC-PR-0017-01	Stewardship Reporting Procedure
LCP-PT-MD-0000-PM-PR-0005-01	Project Change Management Procedure
LCP-PT-MD-0000-FI-PR-0001-01	Capital Expenditure Authorization Procedure
LCP-PT-MD-0000-PM-LS-0001-01	Project Dictionary
LCP-SN-CD-0000-PM-LS-0001-01	LCP Master Package Dictionary
LCP-PT-MD-0000-PC-LS-0001-01	Project Work Breakdown Structure and Code of Accounts
Cost Control Flow Diagram	
Cost Control Reporting Schedule	

**5 RESPONSIBILITIES**

**LCP Project Controls Manager:** Responsible for:

- Supervising and reviewing the work of the Lead Cost Controller.  
Approving all LCP Commitment Packages recommendation sheets and growth allowances to be reflected in the budget requisition documents as specified in *Capital Expenditure Authorization Procedure – LCP-PT-MD-0000-FI-PR-0001-01*.
- Ensuring proper implementation and application of this procedure and the Trending and Forecasting program for LCP Project and Components.
- Providing functional support to the component cost control teams.
- Reviewing the monthly forecast cost reports of the LCP project.
- Leading the monthly Project Controls Review to update the senior management of Generation and Transmission on the cost and schedule of each Sub-Projects.

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**LCP Lead Cost Controller:** Responsible for:

- Complying with the requirements of the Cost Management process as indicated in this procedure.
- Understanding the LCP Project scope and estimate to establish the LCP Project cost baselines and curves.
- Supervising the work of LCP Sub-Component Cost Controllers related to the update on budgets, commitments, incurred cost and change orders, trending and forecasting in the Project Management System (PMS), issuing of timely cost reports and interfacing with various groups within the LCP Project Delivery Team organization.
- Ensuring this procedure is updated to reflect changes as required.
- Ensuring proper cost allocation through the different LCP Components.
- Reviewing and validating all LCP requisitions prior to Purchase Order/Agreement award.
- Preparing all project cost reports. Analyzing, auditing and verifying all sources of information that affect the forecast of the total project cost.
- Preparing and issuing the project cost and cash flows on a monthly basis.
- Organizing cost forecast and trend review meetings with LCP Components Control Teams.
- Maintaining estimated contingency and facilitating the proper management of contingency drawdowns.
- Reviewing and validating all LCP contingency draw down required through PCNs.
- Maintaining the accuracy of the LCP cost information into the LCP PMS throughout the life cycle of the LCP Project.
- Issuing the LCP Cost deliverables to all LCP Project and Sub-Projects stakeholder in accordance with the Project Controls Manager instruction.
- Organizing Project Controls monthly review meetings with senior management of Generation and Transmission.
- Completing cost analysis as required by LCP Project Controls Manager
- Developing harmonized and effective forecasting tools for component cost control teams to implement.
- Assisting the LCP Project Functional teams, when required, in all matters related to cost control and its interface with other disciplines.

**LCP Sub-Component Project Controls Leads:** Responsible for:

- Supervising the work of the Cost Control Teams in their respective LCP Component.
- Ensuring proper implementation and application of the Trending and Forecasting program for their respective LCP Component.
- Ensuring proper preparation of cost flow reports and curves.
- Recasting the approved budget into Commitment Packages following the LCP Master Package Dictionaries document.

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- Providing to the LCP Supply Chain Management team with the commitment packages budget for tender or proposal analysis and validating the scope of work of the LCP Commitment Packages.
- Ensuring proper requisitions are in place to execute commitments.
- Estimating the FTC for the LCP monthly progress report by following clearly established principles as:
  - The LCP Project status must be clearly established in relation to budgets, commitments, expenditure, physical progress and trends.
  - Uncommitted cost, productivity and cost trends, quantities and scope changes must be carefully evaluated.
  - The expected final cost at the cost item level and the additional allowance for undefined growth must be identified.
- Understanding Earned Value Management techniques and concepts of productivity (when applicable), and how to apply them in the execution of cost control activities.

**LCP Component Cost Control Teams – Cost Controllers:** Responsible for:

- Complying with the requirements of the Cost Management process as indicated in this procedure.
- Understanding the LCP Component scope and estimate to establish the LCP Component cost baselines and curves.
- Analysing and reporting on budgets, updating commitments and incurred cost, managing change orders in the cost control system, trending and forecasting, analyzing variances, issuing of timely cost reports and interfacing with various groups within the LCP Component Delivery Team organization.
- Preparing the LCP Component cost flow reports and curves.
- Providing to the Lead Cost Controller cost information and assisting in the preparation of cost reports.
- Verifying all sources of information that affect the forecast of the total Component cost.
- Participating in the formulation of practicable and measurable pay items to be incorporated in the tender document of all procurement/construction packages.
- Identifying trends and quantifying cost variances, updating the trend list and reflecting the trend impact in the LCP Component forecast.
- Maintaining close cooperation with Contract Administrators to ensure that proper documentation is received on time from Suppliers/Contractors; especially those required for the preparation of LCP Components cost flows.
- Maintaining close cooperation with the Change Management team to account for any change that can have a cost impact.
- Assisting Package Leaders in preparing and coding requisitions.
- Notifying the LCP Component Delivery Team of a change which may or may not be considered as part of the original scope of work.

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- Monitoring the cost of all activities (engineering, procurement, construction, etc.) that could have an impact on the FFC of all the LCP Component Project Commitment Packages.
- Maintaining close cooperation with Planning and Estimating teams to establish budget, baselines and commitment package scope definitions and also to continuously update them as the LCP Component progresses.
- Uploading cost information into the LCP PMS throughout the life cycle of the LCP Component.
- Understanding the cost control common terms and definitions.
- Reviewing the processing of Change Orders and Agreement Amendments ensuring that the LCP Component forecast reflects the changes and adjustment of the commitment packages allowances as required.

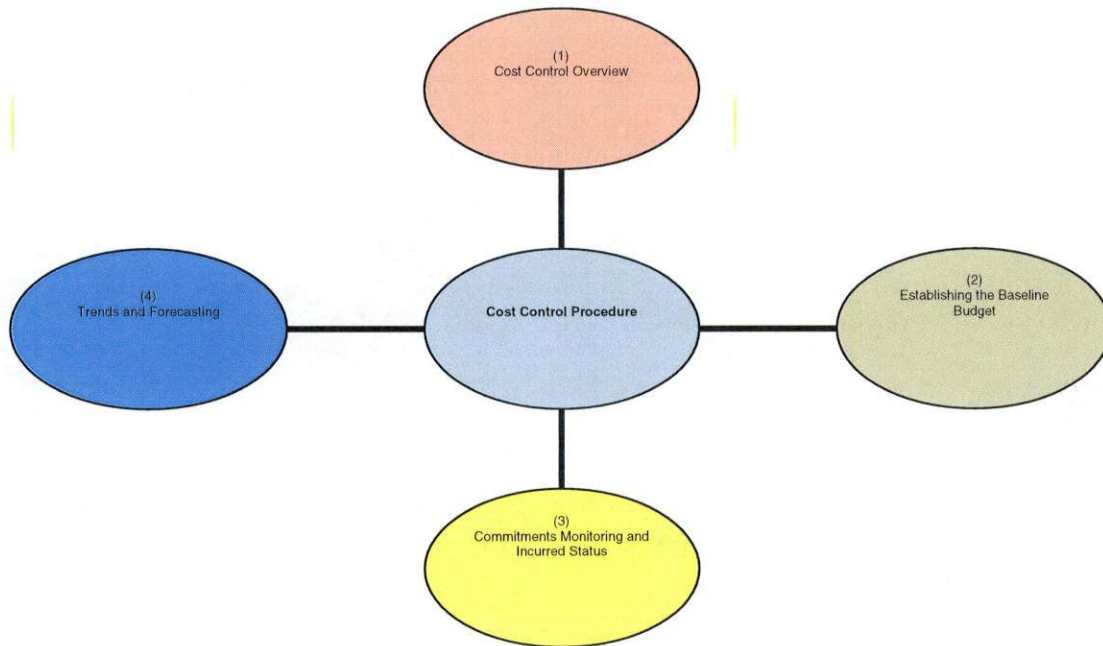
## 6 PROCEDURE

The Cost Control procedure is divided in four sections that intend to provide processes to the LCP Cost Control team in order to perform their functions throughout all phases of the LCP project life cycle. These sections provide as well the roadmap for the set of functions that are the responsibility of the LCP Lead Cost Controller. These four sections are:

1. **Cost Control Overview:** This section describes: the mandate and objective, interfaces and systems of the Cost Control process for the LCP Project and Components.
2. **Establishing the Baseline Budget:** this section describes:
  - a. Establishing Cost Control for LCP and Components
  - b. LCP Coding Structure and WBS
  - c. LCP Commitment Packages and Packages Dictionaries
  - d. LCP Process to establish and maintain budgets
3. **Commitments Monitoring and Incurred Status:** this section describes:
  - a. Commitments
  - b. Committing and Recording Commitments
  - c. Incurred cost
  - d. Cost Flow and Cash Flow
4. **Trends and Forecasting:** this section describes:
  - a. Types of trends
  - b. LCP Cost trending, forecasting and reporting process
  - c. LCP Contingency

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Figure 1: LCP Cost Control Process



**6.1 COST CONTROL OVERVIEW**

**6.1.1 Cost Control Mandate**

The senior management of Generation and Transmission promotes the basic principle that the success of any project management, engineering, procurement, and construction organization depends upon organization’s ability to complete its projects safely, on time, within budget and with the highest level of quality.

The mandate of the Cost Control team is to provide the LCP Project Management Delivery Team of Generation and Transmission with timely updated information on the Sub-Projects cost status for analysis and control to deliver the LCP Project within budget. Major activities performed as part of this mandate include:

- Budgeting ( as described in section below 6.2 );
- Reporting Commitments and incurred status (as described in section below 6.3);
- Trending, Forecasting and Reporting final cost (as described in section below 6.4);

LCP Project Cost Control is a continuous operation, beginning with the planning and conceptual engineering stage. Monitoring and trending procedures are applied throughout design phases and continue through the procurement and construction stages.

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**6.1.2 Cost Control Objective**

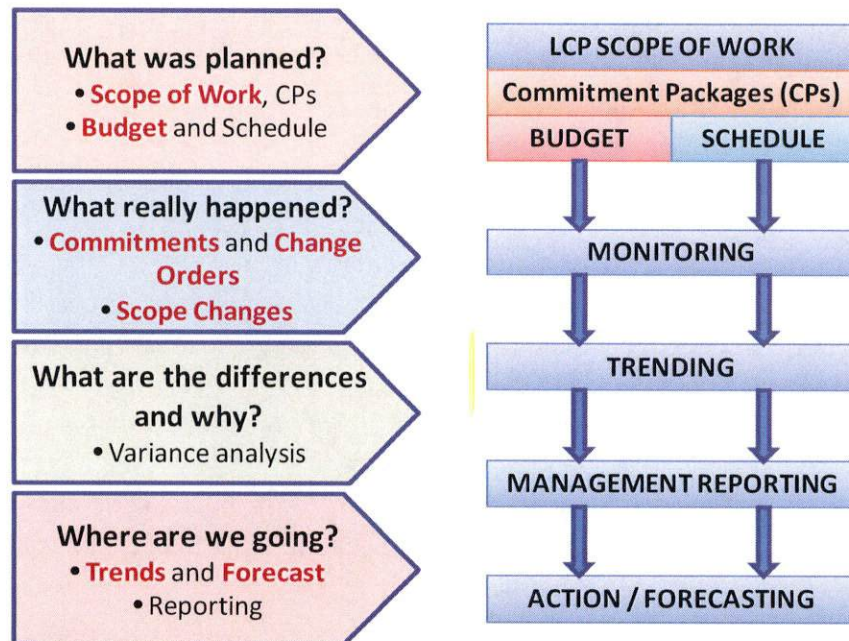
The objective of the LCP Cost Control team is to apply Total Cost Management (TCM) practice to the project execution. Total Cost Management is the effective application of professional and technical expertise to plan and control resources, costs, profitability and risk. It is a systematic approach to managing cost throughout the life cycle of any project. This is accomplished through the application of cost engineering and cost management principles, proven methodologies, and the latest technology in support of the management process.

Cost control is the application of procedures, which focus control efforts where they will be most effective and to achieve the most reasonable control expected given effort and cost constraints.

The objectives established at the beginning of the LCP Project remain firm during project execution and are constantly compared to the trend of the actual progress of the LCP project. If the trend compares unfavorably with the objectives (e.g. progress is slower than planned or cost forecasts are higher than anticipated) the reasons for the differences and possible corrective actions need to be promptly identified by the LCP Cost Control group so that the Project Management Delivery Team personnel of Generation and Transmission can make decisions on corrective actions.

The classic cost control cycle with management feedback loop is shown in Figure 2.

**Figure 2: Project Control Cycle**



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### 6.1.3 Interfaces

This section describes interfaces between the LCP Cost Control Team and various groups within the LCP Project and Components organizational matrix.

Project Control requires adequate and timely communications between LCP Project team members. To be aware where the project stands today and where it is heading tomorrow in terms of cost performance and forecast are the major tasks of the LCP Project Control Team. This knowledge is a result of continuous interface with the various disciplines of the Project Delivery Teams of Generation and Transmission.

Estimating, Planning and Scheduling, Cost Analysis and Cost Control are integral parts of Total Cost Management (TCM).

#### Communications:

It is recognized that one of the most important factor of a successful capital project implementation is communication. Some of the key aspects of communication are:

- LCP Project objectives for cost must be communicated to all responsible within the Project Delivery Teams of Generation and Transmission.
- Project Delivery Team members of Generation and Transmission must be informed of the result of their actions and the status of the project in terms of cost performance.
- The Project Director - Generation / General Project Manager – Transmission Link, Project Controls Manager and Component Managers, Area Managers and the Delivery Team must be constantly aware of items that require action in order to avoid, correct or minimize impacts to the cost performance.
- Lessons learned must be implemented to facilitate a continuous improvement process.

#### Interfaces with Engineering:

The Cost Control team will work with the Engineering team to ensure that LCP cost objectives are met.

Some principal points of interface with Engineering are:

- Lead Discipline Engineers contribute to the LCP WBS development by defining the scope of work to be provided by their respective disciplines.
- Scope of the LCP Commitment packages based on the project execution plan are detailed by the Planner/Scheduler in conjunction with the Project Package Leader/Package Engineer, Cost Controllers and Procurement Personnel.



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- Package Leader/Package Engineer complete Requisition for Inquiry (RFI) for LCP Commitment Packages which provide the Project Control Team with an updated scope of work of the package.
- Cost Controllers prepare budget information and list of cost codes to be included with the RFI and update the LCP Commitment Package forecast according to the latest scope of work.
- Package Leaders are responsible to ensure that all deviations from the original scope of work are notified to the Project Controls team to register them as trends when not already covered by a Deviation Alert Notice (DAN) or Project Change Notice (PCN). Lead Discipline Engineers are responsible to provide an update on the LCP project quantities by commodity to be included in the trending system.
- Validating Engineering Progress across design team and contractors.

#### Interfaces with Planning and Scheduling:

During the execution stage of LCP, Planning/Scheduling team will assist to identify potential deviations to the baseline documents and will recommend corrective actions – mitigations plans, cost impacts will be assessed and incorporated into the trending system. Cost controllers work with Planning teams to develop and ensure that control accounts from cost align with activity codes in the schedule.

A reliable schedule will show the probabilities of meeting the end date of the LCP project or dates of the LCP milestones and will also show how potential deviations (delays) will potentially impact project completion and cost targets.

#### Interfaces with Procurement:

The Procurement team has overall responsibility for each LCP procurement package, and requires continual interface with all other LCP project disciplines.

- Planning and Cost Control teams provide schedule and budget information to the Procurement team for the LCP package bidding process (RFI and RFP).
- The Cost Control team participates in the development of the pay items to be included in the package bid.
- Procurement obtains competitive bids for the purchase of equipment-materials and installation-construction-services contracts and distribute relevant bid tabulations to the Engineering, Project Management of Generation and Transmission and Project Controls teams. Once it is approved the bid tabulation data is used by the Cost Controller to update the project budget forecasts.
- The Cost Control team provides post-award support for Purchase Orders with the review of ECNs, change orders, progress billings, etc. Support of Construction Contracts is described below.
- Control systems accurately reflect commitments and forecasts for each package.

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#### Interfaces with Construction:

The Construction Management team is responsible for producing the weekly status report and monthly construction report which is an integral part of the LCP Monthly Report. Construction will ensure that the following are effectively tracked and provided to the LCP Sub-Component Control Leads on a monthly basis:

- Current status of Contracts and Site Purchase Orders.
- Construction schedules.
- Areas of potential concerns.
- Quantity assessment on unit price contracts.
- Trends update
- Construction direct cost forecast update.
- Site Change Notices (Field Work orders, Change Orders, etc.)
- Analysis of construction contingency (growth allowance).
- Progress billings.

#### Interfaces through Change Management Meetings:

Cost Controllers are required to participate in the weekly change management review meetings with LCP Component teams where changes are discussed. These weekly meetings include all disciplines and represent the opportunity for Cost Controllers to be updated on the latest status of each LCP Commitment Package.

## **6.2 ESTABLISHING AND MANAGING BASELINE BUDGET**

### **6.2.1 Establishing Cost Control for LCP and Components**

#### Understanding the LCP Project and Components Estimate and Scope:

Two basic requirements have been established in order to define the LCP Project and components cost control framework (cost baselines and curves):

1. **Understand the LCP Project and Components Estimate (Ref. Estimate Procedure):** Cost Controllers shall have a comprehensive knowledge of the estimate structure and content including back-up documents. This is required in order to establish the LCP Project and Components cost baseline and curves. Cost Controllers must ensure that the latest official revision of the estimate, which includes all final adjustments and changes, is being used for the purpose of establishing the cost baseline. Cost elements that are going to be reviewed to ensure the lump sum amounts or allowances are clearly understood and broken down for purposes of budget allocation at the LCP commitment packages level are:

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- a. Direct Costs.
- b. Indirect Costs.
- c. Other Costs: Escalation and Contingency.
- d. WBS.
- e. Control Accounts.
- f. Basis of estimate document.
- g. Schedule Breakdown.
- h. Quantities.

2. **Study and understand the LCP Project and Components Scope of Work:** Cost Controllers shall have a clear understanding of the latest official scope of work and be able to compare with the initial scope of work used as a basis for the preparation of the project/Component estimate. This understanding will facilitate the identification of possible changes, if any. All scope of work at the commitment package level is explained in the *LCP Master Package Dictionary - LCP-SN-CD-0000-PM-LS-0001-01*, which is a revision controlled document.

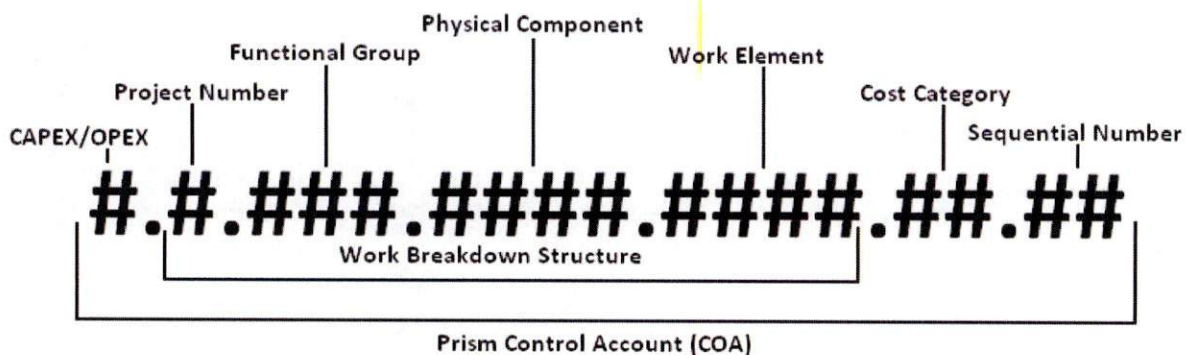
With a clear understanding and comprehensive knowledge of the estimate and the scope of work, Cost Controllers are empowered to recast the estimate into different structures to define the cost control framework for monitoring and control. These structures are named as: WBS – Code of Accounts and Commitment Packages (Refer to section 6.2.2).

### 6.2.2 LCP Coding Structure and WBS

LCP Coding Structure and Work Breakdown Structure (WBS) is defined and explained in the *LCP-PT-MD-0000-PC-LS-0001-01 - Project Work Breakdown Structure and Code of Accounts*.

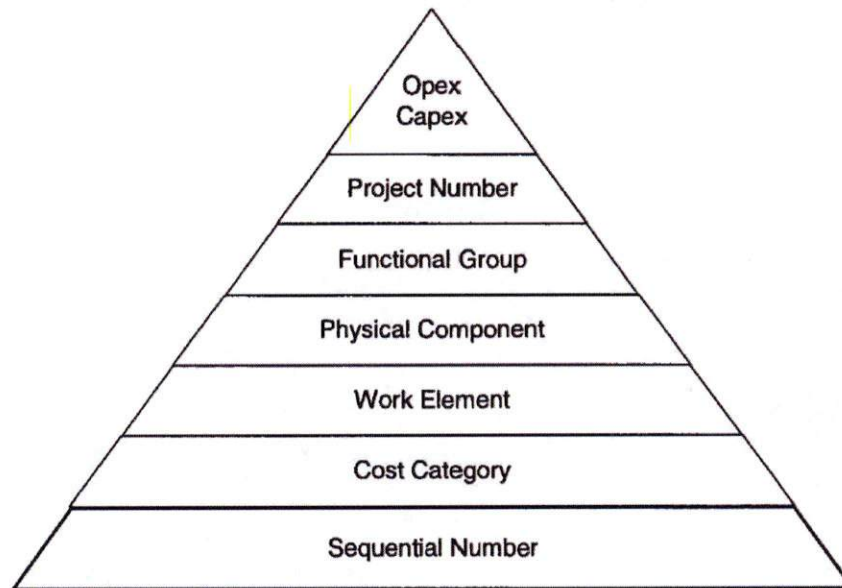
The coding Structure for LCP Project and Components is comprised of a twelve digit code embedded in the seventeen digit control account code. This code identifies the characteristics of the work activity, including the project number (which divides the LCP Project into major Components), the functional group, the physical component, and work element. The control account also contains a one digit number (first digit) which identifies the work activity as OPEX or CAPEX, a two digit number to identify the applicable cost category and a two digit sequential number. Below is the structure which builds up the code.

Figure 3: WBS and Control Account Coding definition



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Figure 4: WBS Structure and Control Account Hierarchy



Project Coding in Budget Management

The WBS is used by Estimators as a hierarchical tool to breakdown the estimate into smaller elements as well as to regroup the costs associated with each asset of LCP Project and Components. These estimated costs are further clarified, modified, and finalized as the LCP Project and Component baseline budget.

Once the LCP Project and Components baseline budget is created, Cost Controllers become responsible to assess, find and allocate the relevant available budget to different designations of the Scope of Work under LCP Commitment Packages (CP) structure. The WBS, among other tools, is used to regroup the budget items under specific facilities – physical components.

Project Coding in Cost Reporting

The LCP Project and Components WBS facilitates the communication of the direct costs related to each area, sub-area or system of the budget to the LCP Project and Sub-Projects stakeholders. Actual costs incurred and forecasts can be quickly compared to the budget at the same coding level.

A WBS-based presentation of costs can be easily rolled up or drilled down to the required levels of details depending on the purpose of the cost reporting.

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### 6.2.3 LCP Commitment Packages and Package Dictionaries

Commitment Packages have been recognized as an efficient tool used by the LCP Project and Sub-Project Management Teams to manage their projects. A complete detail and description of each Commitment Package and Package Dictionary are indicated in the *LCP Master Package Dictionary- LCP-SN-CD-0000-PM-LS-0001-01*. The Commitment Package list was developed based upon the project execution strategy, grouping together scopes of work similar in work type and timing with an aim to minimizing duplication of work and maximizing synergies. The scope of work and main elements of each Commitment Package are described in the Package Dictionary document.

The Planning-Scheduling Team works with Project Managers, Contract Administrators, Supply Chain Management (Procurement), Construction Managers and Design Leads to define and manage work packages for LCP Project and Sub-Projects. In essence looking at the work packages provides a description of how the scope of work is planned to be done as well as the contracting strategy – intended to be used in a few large turnkey agreements or it has been broken-down to small and medium packages to meet local capabilities and adapt to market conditions for a successful project execution.

The types of Commitment Packages defined for LCP Project and Components are:

- Construction Agreement (C)
- Purchase Order (P)
- Service Agreement (S)

Identifiers for each LCP Project and Components are:

- H – Muskrat Fall Generation – Component
- D – HVdc Specialties – Component
- T – Overland Transmission Lines – Component
- M – Miscellaneous Services – LCP Project

Each Commitment Package is coded with six alphanumeric digits as: (e.g. CH0032)

- First digit: Commitment Package type (e.g. C)
- Second digit: Project identifier (e.g. H)
- Last Four digits: Sequential number (e.g. 0032)

### 6.2.4 LCP process to establish and maintain budgets

#### 6.2.4.1 Recasting original budget

Cost Controllers are responsible for recasting approved estimate, including escalation, into the Commitment Package structure. They coordinate with estimators and area managers to ensure that the right scope is designated to the right Commitment Package and that the proper coding is used. No budget line shall be without a designated Commitment Package or a Code of Account.

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Verification shall be done in order to ensure that the total sum of all Commitment Packages budgets equals the baseline budget (by component and by sub-project).

Budget lines need to reflect quantities, hours and monetary value to facilitate commercial bid evaluations at a later stage of the execution.

It is the responsibility of the Component Project Controls Lead to validate the final budget recast for each component. The budget will be presented to Area Managers for approval (each manager verifying the packages he/she is responsible for).

Component Managers provide the final approval regarding the component budget recast. This budget will become the baseline budget for the component. It will be based on the original approved estimate (Gate 3) at project sanction including all amendments made to the approved estimate (scope addition or scope deletion) and approved by the Project Executive Board.

General services packages and Owner's costs are approved by the respective budget holders. The Lead Cost Controller is responsible for grouping all the budgets in provenance of the different components, ensuring values by sub-projects are exact and aligned with the basis of estimate assumptions. The Lead Cost Controller will add the overall LCP contingency to form the global LCP Original Control Budget (OCB). The OCB is presented to senior management for final approval.

#### 6.2.4.2 Budget revisions

There are two types of budgets that will be prepared during the duration of the LCP Project and Components:

1. Original Budget : As discussed in 6.2.4.1
2. Current Budget: This budget is the Original Budget amended with all approved Project Change Notices (PCNs) submitted and approved after the approval of the Original Budget. All PCNs cost elements shall be coded with the same principles established for the coding of the Original Budget.

##### 6.2.4.2.1 Types of budget changes

Maintaining the Budget and Scope Control is a task which is performed as part of the LCP Project and Components monitoring activities carried out from the beginning of the project and continued throughout project execution and closure. During the execution phase, LCP Project and Component details are being developed. Scope of work may be added or removed from the mandate of the project while the execution plan and associated packaging (commitment packages) may evolve through the life of the project. Each of these indicated events can lead to a scope change and subsequently a budget change or transfer. For the purpose of budget management, there are three main categories of change in a project:

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1. Project Scope Change: This is a change that alters, deletes or adds scope of work to the official approved scope of work of the project and will result in a change to the LCP Project budget overall. These changes can be initiated by Senior Management of Generation and Transmission or by the Components Management Teams but must be formally identified and approved as they will affect the budget and schedules baselines. These are identified and controlled following the implemented LCP Change Management process and in accordance with contractual terms and conditions.
2. Quantity changes, estimate omissions, productivity impact, design development, market conditions: Additional funding/reduction in funding to support completion of a scope of work where initial budgets are lower/higher than estimated. These changes are within the scope of work of the commitment package and may or may not impact the budget and schedule baselines.
3. Commitment Package Level – Scope Adjustments/Budget Transfer: Changes between LCP Commitment Packages as a result of addition or transfer of scope of work that changes the Commitment Package budget and not necessarily the overall project budget. At the Commitment Package Level these changes can be caused by a transfer of scope of work from one Commitment Package to another by awarding part of the package to another Contractor/Supplier, splitting packages and/or combining several packages, adding work through the issue of Engineering Change Notices (ECN) post contract award, etc. The majority of these events change the package budget but usually don't have an impact to the overall project budget. The key element to control these changes is a proper management of the Package Dictionary changes that must be amended when scope changes have been decided for a specific package or packages.

#### 6.2.4.2.2 Change Management System

A change management system (LCP Tracker) has been implemented for LCP Project to deal with changes and transfers of scope and budget at the project and commitment package levels. This change management system includes forms for Deviation Alert Notices (DANs) and PCNs with capacity to include additional documentation related to these forms (e.g. Engineering Change Notice (ECN), etc.). [LCP-PT-MD-0000-PM-PR-0005-01 - Project Change Management Procedure.](#)

#### 6.2.4.2.3 Current Budget Update

LCP Project and Sub-Projects approved budgets can only be changed with an approved PCN. The Project Control Teams are responsible for assisting the Project Team of Generation and Transmission in the preparation of PCNs, maintaining the PCN Register and preparing the cost/schedule evaluations of each PCN. It is the responsibility of the Cost Controller to approve the cost control section in the circulating PCN for approval. The Cost Controller provides the proper coding for the change management team and validates the cost impact of the change. The cost controller coordinates with the Component Lead Project Controls before approving any PCN.

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Approved PCNs trigger the issuance of scope changes, if required. It is the responsibility of the cost controller to coordinate with the change management team to ensure that all required scope changes are entered in the PMS, each with the proper coding and linked to the right package. These scope changes will result in modifying the scopes of the affected commitment packages, and they may trigger a drawdown from contingency.

The Project Controls Manager, before approving the PCN, validates with the LCP Lead Cost Controller on the cost impact of the PCN to the existing project contingency.

Cost reports will show the original budget and current budget including all approved changes properly allocated to the asset and commitment package levels.

While scope changes may not be formally approved due to internal routing of the PCN for approval or period cut-off date for reporting purposes and not accounted in the budget at the time that the project cost report is released, a trend will be raised and recorded for forecasting purposes. All these trends will be reviewed and agreed with the Project Management Team of Generation and Transmission prior to the issue of the monthly cost reports.

All approved changes to the baseline budget shall be addressed in the Project Controls monthly Review and the update and release of the project cost reports.

**6.2.4.2.4 Change and Pro-Active Cost Control**

Throughout the LCP Project life, Cost Controllers must be well informed and kept aware of changes made to the scope of work to the project and commitment packages as soon as the changes are identified. The Project Controls Team in general is responsible to create a “cost awareness” atmosphere and interface with all functional areas at trend reviews, design reviews, schedule reviews and project managements meetings to flag, identify, define and assess changes for a proper decision-making process and cost/schedule control. The key element for it is “pro-activity” through a constant and structured communication with functional areas and sources of change (e.g. design leads, area managers, planners – schedulers, supply chain management, etc.).

Regular follow-up meetings must be established for each Component depending on the size and execution strategy (e.g. weekly, bi-weekly, monthly, etc.). In these meetings each commitment package must be discussed and reviewed to identify elements of change related to: Total Forecasted Cost, scope developments, and updated milestones dates (for cost and cash flows update).

Cost Controllers are required to participate in the weekly change management meetings review to be aware of the latest scope changes and potential deviations to the cost baselines.



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**6.3 COMMITMENTS MONITORING AND INCURRED STATUS**

**6.3.1 Commitments**

Commitments represent a commercial engagement in the form of Purchase Orders and Construction/Services Agreements between Lower Churchill Project Corporations and Contractors/Suppliers/Consultants in order to assume a financial obligation at a future date to disburse money in exchange for equipment, materials and services.

The commitment value shall exclude allowances for growth and other contingency items; it shall include taxes, duty, transportation, escalation, supplier site supervision, etc.

The commitment shall be reflected in the cost statement only once the issuance of a Letter of Award and after a Purchase Requisition is approved and authorized by Lower Churchill Project – Supply Chain Management.

**6.3.2 Committing and Recording Commitments**

The Supply Chain team enters awarded contracts and amendments in the PMS as per the approved requisitions, using the same coding highlighted in these requisitions. Cost controllers monitor the entry of these contracts to ensure proper coding and values were entered. Cost Control Team – Cost Controllers shall obtain, if required, copies of all Purchase Orders, Agreements and subsequent amendments in order to define, monitor, track and report the following:

- The total current commitment value.
- The allocation of this value by cost code (Sub-project and commitment package).
- Cost Controllers must ensure all commitments are linked to an approved requisition that covers the value of all commitments for the account/vendor.
- Cost Controllers prepares a Recommendation for Award document (RFA) before the preparation of major PO/Contracts. RFAs provide Senior Management with a comparison between the scope covered by the PO/Contract and the available budget. Over runs will be requested through PCNs from contingency and under runs will be transferred to contingency. The Project Controls Manager uses RFAs as backups to approve requisitions.

**6.3.3 Incurred cost**

Incurred cost represents the contractual cost achieved for the LCP Project at any point in time by suppliers/contractors. These costs are maintained and monitored within both the PM+ Integrated Project Management System General and Prism G2. Cost controllers are responsible to maintain the incurred costs of the project up to date, and validate against approved budgets and commitments. PM+ is responsible to report the overall project costs, however, cost details that are considered part of the Owner’s scope of work are compiled and monitored within Prism G2 and subsequently transferred to PM+ through summaries of the details via the use of spreadsheets and other reports. Incurred costs

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are compiled and reported on a monthly basis in accordance with the dates outlined in the Cost Control Calendar. Detailed information on the incurred cost process can be found under [LCP-PT-MD-0000-PC-PR-0011-01 - Incurred Cost Procedure](#).

#### 6.3.4 Cost Flow and Cash Flow

LCP management recognizes that an important aspect of the budgeting process for LCP Project and Sub-Projects is the preparation of a cost flow and cash flow at the beginning of the project implementation. These flows are a distribution of money showing where and when project execution costs may be expected to be incurred and paid. It is usually prepared based on schedule and expected payment terms and planned progress of the scope of work reflected in LCP POs and Agreements.

Cost flows are prepared on a monthly basis to establish value of work completed or earned.

Cash flows are prepared on a full project timeline basis as per the requirements of the LCP Financial and Treasury departments. The accuracy of these flows is important for management of funds in the project bank account to facilitate payments of suppliers, contractors and consultants.

##### 6.3.4.1 Cost flow methodology

Cost controllers are responsible for updating the PMS with the proper incurred values on a monthly basis as described in 6.3.3 above. After updating the PMS, the Cost Controller downloads a preliminary spreadsheet and send it to the Lead Cost Controller. This sheet includes, for each commitment package the cumulative incurred value of the package, the total FFC value of the package and the FTC. Cost Controllers distribute the remaining FTC over the duration of the project using the following criteria:

- Awarded contracts: by using the Contractors and suppliers cost forecast update ( Validated by cost controllers)
- Non-awarded contracts: use the latest schedule for start/end dates and distribute the cost following a bell curve shape; however major contracts needs to be checked with planners to confirm the bell curve used percentages.

Lead Cost Controller provides a sanity check on the numbers, compiles all the cost information provided by the cost controllers, and ensures the alignment of the values with the overall components / sub-projects. The Lead Cost Controller then generates the final cost flow table and curves by sub-projects/ Overall LCP.

##### 6.3.4.2 Cash flow methodology

The Lead Cost Controller uses the issued cost flow to generate:

- A full project cash flow ( in CAD currency) intended to the Department of Finance and Treasury. This cash flow is produced on a monthly basis.

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In the above mentioned cash flows, the following business rules are used:

- Incurred cost is estimated to be paid out after 60 days, i.e. incurred cost for September is expected to be paid in November.
- HST is not accounted for
- Holdbacks will be paid one month after the initial invoice payment
- Adjustment to contract payment terms ( Incl. Holdback, cash advances, milestones payments, etc...) is accounted for.

No cash flow curves are produced, only the tables.

#### 6.4 TRENDING AND FORECASTING

The preparation of an FFC requires a series of steps to provide the best cost information to the senior management of Generation and Transmission . It involves a team work and the participation of many disciplines. The FFC is backed up by many deliverables such as cost reports, cost flow curves, variance sheets, contingency draw down analysis and others. This section will explain the nature of all these deliverables and the processes to achieve them.

During the LCP Project execution stage, the two main objectives to implement a forecasting process are:

1. Providing an Approved FFC for LCP Project and Components based on current status and Approved trends.
2. Highlighting those trends or potential budget deviations that require management intervention for proactive cost control.

Accurate cost forecast is the result of an effective project control system based on a realistic estimate of work remaining, early identification of potential variances, management mitigation actions and decisions taken for a successful cost control relative to the budget.

The trending and forecasting process is time critical, in order to increase the value of the trending process, changes must be identified early enough to facilitate implementation of corrective actions as required. All identified potential impacts are to be raised through the Change Management Program. Effectiveness of the trending process is based on a systematic and continuous execution of variances analysis to identify the deviation between the actual performance and the plan or baseline budget for the project activity, commitment package or agreement being evaluated. By analyzing the current variances, Cost Controllers are able to trend potential future deviations in scope, quantities, unit prices, site conditions, market conditions, productivity and other project factors.

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#### 6.4.1 Types of Trends

The most common type of trends identified during project execution are:

1. **Changes in Project Scope:** Occurs as a result of deleting or changing entirely or partially the scope of work, systems and performance specifications.
2. **Design Development:** occurs as a result of more advanced engineering definition during the execution stage that might change layout, civil and structural requirements and material and equipment specifications.
3. **Changes in Commitment Package Scope:** the result of changes in the contracting strategy, transfer of scope of work between construction packages and addition to scope of work to commitment packages. These trends need to be monitored to assess the budget performance and the forecast to complete of the commitment package.
4. **Equipment and Material Quantity and Cost Changes:** the result of quantity variations for tagged equipment, commodities and bulk materials plus economic conditions of the international and local markets impacting the cost of equipment, materials and transportation.
5. **Changes in the Productivity Rate:** construction productivity can have a major impact on the cost of labour and construction indirect costs. The site planning team usually evaluates construction productivity using earned value management methods and rules of credit or quantity installed as a basis for progress measurement. These methods provide productivity factors (PFs) or budget production rates, which will represent guidelines for cost forecasting. The source of workers, local competition or other projects in the area and lack of good supervision can all have impacts on contractors and Components production, Union and Labour issues also require continuous surveillance and analysis. A decrease in construction productivity may be caused for many reasons such as: availability of qualified workers and local supervision, weather conditions, work area congestion, work sequence, lack of access, etc.
6. **Schedule Changes:** delays on schedules can be caused by some of the following:
  - Delays in permitting
  - Weather conditions
  - Labour disputes
  - Late Supplier drawings and approvals
  - Material delivery delays for equipment and materials, specially for international sourcing
  - Fabrication shops overbooked
  - Lower contractor/sub-contractor productivity
  - Added contractual growth.

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Schedule delays and contract (agreement) prolongation will have a secondary impact in all time sensitive indirect costs such as: construction overheads, supervision and management, etc. Mitigation plans to recover schedule delays typically include planned spot overtime or even an extended overtime program that will impact productivity and construction costs.

7. **Site Conditions:** occurs as a result of site condition changes such as: weather conditions, access, interfaces, soil investigation, local authorities and regulations, etc.
8. **Indirect Costs:** includes indirect construction costs such as temporary facilities, field office expenses, field staff, temporary utilities, indirect labour and materials, small tools and consumables, some equipment rental, construction parking, site clean-up and other costs. In remote locations, it may include the cost of building and operating accommodation facilities for workforce labour. Indirect costs are time sensitive and will be directly impacted by the project schedule and can be affected by extensions due to added work or slippages.
9. **Change Requests by Contractor/Suppliers:** These may arise from the requirement for additional staff, or unexpected circumstances, to carry out additional work as a result of the items listed above.

#### 6.4.2 Responsibilities for Trending

**Cost Controller:** Responsible for:

- Daily update of trends, potentials, and scope changes in PMS using DAN reports, trend reviews, CR / CO, progress and productivity reports, and reviews with the engineering, procurement and construction team.
- Monthly reviews with Area Managers, Construction Area Managers to update on cost status of their packages.

**Component Project Controls Leads:** Responsible for:

- Updates Area Managers on cost status of their packages.
- Reviews with control team the cost status of the Component and approve the following Component deliverable: Cost reports, Budget allocation sheet, Forecast deviation sheet, potential deviations. KPIs (for MFG only)
- Monthly reviews with the Component manager to present the monthly deliverables and obtain approval on the Component FFC.
- Recommends actions to promote/demote potentials and recommend trends for approval.

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**Owner's (Indirects) Team Cost Controller:** Responsible for:

- Provides the Lead Cost Controller with monthly update on the cost status of the following scopes of work: Owner's team, SOBI, EPCM, Environmental, Aboriginal affairs, Commercial and Legal.

**Lead Cost Controller:** Responsible for:

- Monthly reviews with Component Project Controllers Leads of the overall cost status of the component and discuss changes and mitigations.
- Produces final numbers and the following deliverables: LCP Cost reports, Cost Flow curve , Forecast Approval Form (LCP), Contingency draw down analysis, cash flows, Budget and Contingency allocations, Incurred variance analysis, list of risk items, Potential deviations not included in the FFC, summary of Owner's cost by sub-categories, contingency draw down curves.
- Organize a monthly Project Controls review with each of the senior management of Generation and Transmission to present the cost status of the LCP project and obtain approval of the FFC. During this meeting, the Project Controls Manager will update the senior management on the schedule and milestones of each sub-project, and the Deputy Project Controls Manager will update them on the Risk items identified by the Project Delivery Team.

#### 6.4.3 LCP Cost Trending and Forecasting Process

The LCP Cost Trending and Forecasting Process is managed at the lowest level in the PMS using the Trends workflow. An approved Trend is the basis upon which the Projects FFC is adjusted and an unapproved Trend is a Potential change that is under review and development.

##### Unapproved Trends (Potentials):

All deviations (DAN's, unapproved PCN's, Forecasting tools (progress and productivity), change requests, ECN's etc.) that have been raised within a component, are to have a trend number assigned via the Cost Controller.

Each trend is to be developed and worked by the Component teams to either mitigate or move to validate. While an unapproved trend is active, the Cost controller will ensure at least monthly that the estimated Cost impacts are maintained up to date, adjusting for latest mitigations and forecasts of the issue.

Once the trend has both a very high probability (90%) that it will be actualized, and the cost value is reasonably quantified, the Cost Controller will recommend to the Component Project Controls Lead, Project Manager and Lead Cost Controller for approval of the trend.

Upon Approval of the Trend, the PMS system will be updated and the Projects Final Forecast Cost will be adjusted.

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**6.4.3.1 Updating PMS**

Trends related to engineering, procurement and construction deviations with cost impact are created and updated by the Cost Controller who uses the DAN reports to achieve that on a daily basis. The value of these trends must be cross checked with estimators. Trends associated with deviations, may, at an early stage be described as “under study” indicating that they will require further follow up.

In addition to the DAN reports, the Cost Controller uses the Change Notice Register (CNR, maintained by the contract administrator) to create/update trends or change notices in PMS for all CR (received and sent by/from the contractors). The Cost Controller must also have access to the Correspondance Register (CCR, maintained by the contract administrator) to create/update trends related to potential claims or deviations. Contract administrators must support the cost control team by providing a read only access to the CNR and CCR registers. The budget allocation of any new scope is the responsibility of the site Cost Controller if it is post mobilization of the contract. The Cost Controller uses the Approved PCN report to create new scope changes in PMS, revises the budget accordingly with the appropriate cost coding and allocate the budget of any new scope.

A final update of the trends and the Change Notices is completed once a month by the Cost Controller after the monthly trend reviews with the package team.

**6.5 MONTHLY COST REVIEWS**

**6.5.1 The Area Managers level**

The Control team of each component convene with Area Managers/Construction Area Managers and their teams once a month to review the cost status of the packages under their supervision. In this meeting, the control team presents to the Area Manager and Package Leads a summary of the cost status of their packages, information related to the incurred cost to date, revised budget and final forecasted values. The control team highlights all the ongoing trends and change notices compiled during the month and reviews each of them with the Area Managers, challenging on real requirements and getting feedback about their mitigation plans to reduce their cost impact. This meeting provides the Area Managers with a full understanding on the cost status of their packages and an opportunity to agree with the control team on the deviations to be considered in the forecast and the deviations to be kept potential for additional follow up. After the review, the Cost Controller makes the final adjustments to the forecast to reflect the input from the Area Managers.

**6.5.2 The Component Managers level**

After preparing all the deliverables outlined in section 6.6 below, the Component Project Controls Lead convenes with the Component Manager to present the latest cost status of the component.

They discuss the basis of the numbers, the possible mitigations and any additional reporting requirements (if required) to detail some major deviations.

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The Component Project Controls Lead, with input from the Component Manager, revises the major strategy elements to execute the work and obtains feedback on possible deviations not captured in previous meetings.

Another area discussed with the Component Manager is the cost impact resulting from any ongoing package bid evaluations and the lessons learned that might impact other similar packages. Due to reasons of confidentiality, this section is not shared with others.

At the end of the meeting, the Component Manager gives instructions and approval on the final cost numbers related to the component and the Component Project Control Lead adjusts the deliverables accordingly.

### 6.5.3 Internal cost reviews-LCP Lead Cost Controller and Component Project Controls Teams

After the meeting at the Component Managers level, the LCP Lead Cost Controller convene with the Components control team to obtain their feedback regarding their respective packages. The Lead makes sure that the deliverables were provided according to the approved processes and that all the LCP cost elements are ready for review by the senior management of Generation and Transmission. The Lead He conducts a full review for all the cost elements of the packages and challenges on the forecast deviations, mitigation plans, potential deviations, budget allocations and claims. The Lead agrees with the control teams on the final forecast and the potential deviations and includes the outcome in the monthly deliverables (outlined in section 6.6 below) before getting final approval from the senior management of Generation and Transmission.

## 6.6 PROJECT CONTROLS DELIVERABLES

### 6.6.1 Component Project Controls Teams

Prior to the review with the Component Manager, the Component Project Controls Lead is responsible for producing the following component related deliverables:

- Cost reports
- Budget allocation sheet
- Forecast deviation document
- Potential deviation document
- KPI sheet for major packages (MFG only)

After review with the Component Manager, the Component Project Controls Lead makes the final adjustment to these deliverables as per the direction of the Component Manager.

### 6.6.2 Owner's Project Controls Team

The Owner's team project controls team is responsible of all the scope related to the following packages:



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- EPCM
- SOBI
- Owner's cost
- Historical costs
- Environmental approval

The Owner's team project controls team is not linked directly to any component but coordinates with the LCP Lead Cost Controller for matters related to cost. They have the responsibility to provide the lead cost controller with a complete cost status of the above mentioned packages since they represent an integrated part of the entire LCP project. The deliverables to be provided to the Lead Cost Controller are the same as mentioned in section 6.4.2 above.

### 6.6.3 Lead Cost Controller

The Lead Cost Controller rolls up all the numbers discussed with the component project controls team and produces the following LCP deliverables:

- The Forecast Approval Form
- Cost reports by Sub-projects ( MF/LITL/LTA), by Component and by LCP
- Cost flows by Sub-projects ( MF/LITL/LTA), and by LCP
- Contingency draw down analysis and curves by Sub-projects( MF/LITL/LTA) and by LCP
- Summary of Owner's Cost by Sub-Categories
- Budget and Contingency allocation tables (MFG) and Contingency allocation tables (LIL/LTA)
- Cash Flow
- Cost back up used to update the construction reports and the Monthly report - see *LCP-PT-MD-0000-PC-PR-0017-01 - Stewardship Reporting Procedure*.
- A Sub-Project cost highlights covering Risk items, Potential deviations not included in the FFC, a summary of the incurred variance and the forecast deviations of the month.
- Material Contract Cost Summary – see *LCP-PT-MD-0000-PC-PR-0017-01 - Stewardship Reporting Procedure*.

## 6.7 MANAGEMENT REVIEW

On a monthly basis, the Project Controls Manager and the Lead Cost Controller jointly review the cost status of the Project outlined in the deliverables highlighted in Subsection 6.6.3 above. The monthly overview is also reviewed with and/or presented to each of the Senior Management of Generation and Transmission, at which time potential deviations, Risk items and possible or ongoing mitigation activities are further discussed. The Deputy Project Controls Manager, the Component Managers and

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Component Project Controls Leads participate in the review process and the discussion of mitigation activities.

Each of the Senior Management of Generation and Transmission provide approval of the official forecast of their corresponding Sub-Projects for the current month for publication in the project reports as outlined in *LCP-PT-MD-0000-PC-PR-0017-01 - Stewardship Reporting Procedure*.

## 6.8 ALIGNMENT WITH CHANGE MANAGEMENT

On an ongoing basis, Cost Controllers exchange information with the Component Change Management Engineers in order to ensure alignment between cost control and change management. Also, regular reports from the Change Management Lead ensure that a high level of awareness is maintained by the cost control team. On a regular basis, the cost control team meets with the Change Management team and reconciles the variance and potential deviations mentioned in section 6.3.3 above with the change management DAN and PCN reports. Gaps between DANs / PCNs and the trends must be addressed. This optimizes the follow up on all deviations in the change management reviews conducted every week.

## 6.9 LCP CONTINGENCY

### 6.9.1 Establishing the Project Contingency

The LCP Project and Sub-Projects contingency was initially calculated on a deterministic basis as a percentage of the estimated capital cost following the WBS and Commitment Package Structure and rolled-out at the Sub-Projects level. Contingency value depends on the level of detail available at the time that the estimate is performed (Estimate class), generally the greater the class of the estimate and level of detail available, lower values result for contingency allowance.

The contingency must be allocated by category over the project schedule to develop a baseline drawdown of the contingency account to control, monitor and report usage of contingency. Contingency value depends also on the contracting strategy (e.g. Lump sum agreements may require lower contingency than Unit rates or Reimbursable agreements).

It is important to consider these important points about contingency:

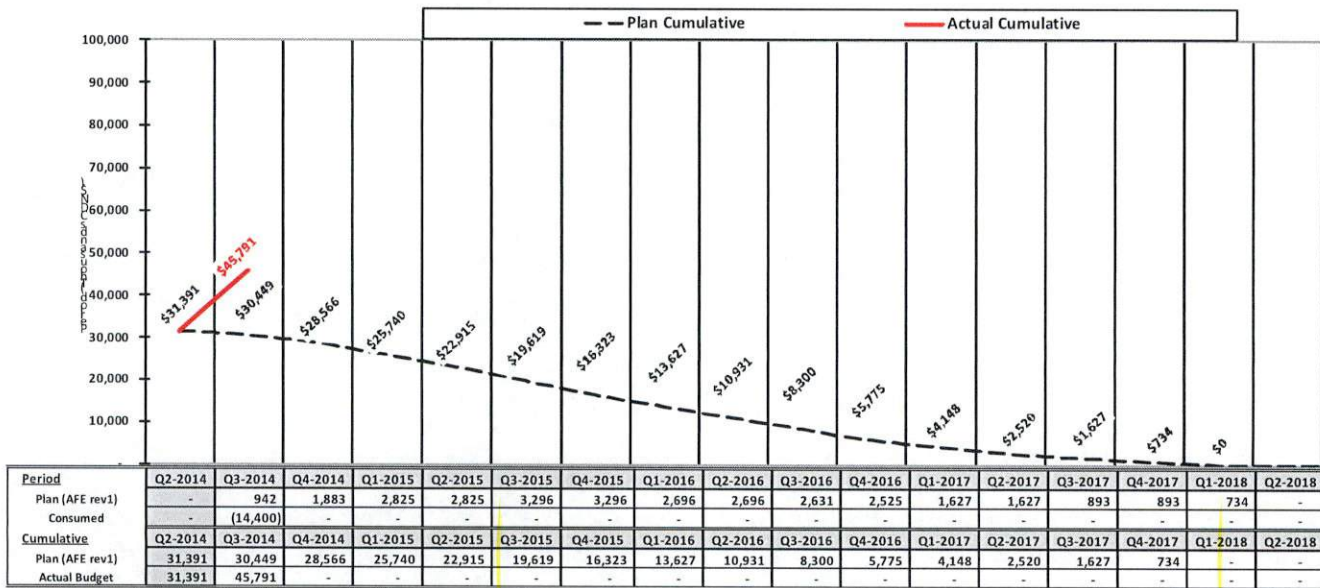
- The contingency does not cover risk items outside the project scope or unforeseen events outside the control of the LCP Project and Sub-Projects.
- The contingency is not to be confused with other estimate allowances for design development or other allowances for specific known work in the direct or indirect costs.
- The contingency is expected to be spent over the life of the project and is an integral part of the estimate.

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### 6.9.2 Managing the Project Contingency

A contingency planned drawdown or expected usage curve will be prepared for LCP Project and Sub-Projects and it will be the baseline to monitor and report usage or depletion of the contingency. A sample of a drawdown curve is indicated in Figure 5.

Figure 5: Contingency Drawdown Plan Curve



Note 1: AFE rev1 = Authorization for Expenditure approved by Nalcor Energy Board of Directors on June 2014

A contingency drawdown is executed only at a PCN approval. Everytime a PCN is approved, the Change Management Lead provides a copy of the approved PCN, with the required actions, to the cost control team who updates the contingency in PMS accordingly.

On a monthly basis, and during the Project Controls Review, the Contingency allocation is reviewed at the Package level, and , the remaining value of contingency required to complete the scope of work is also assessed to ensure adequacy of the contingency value.

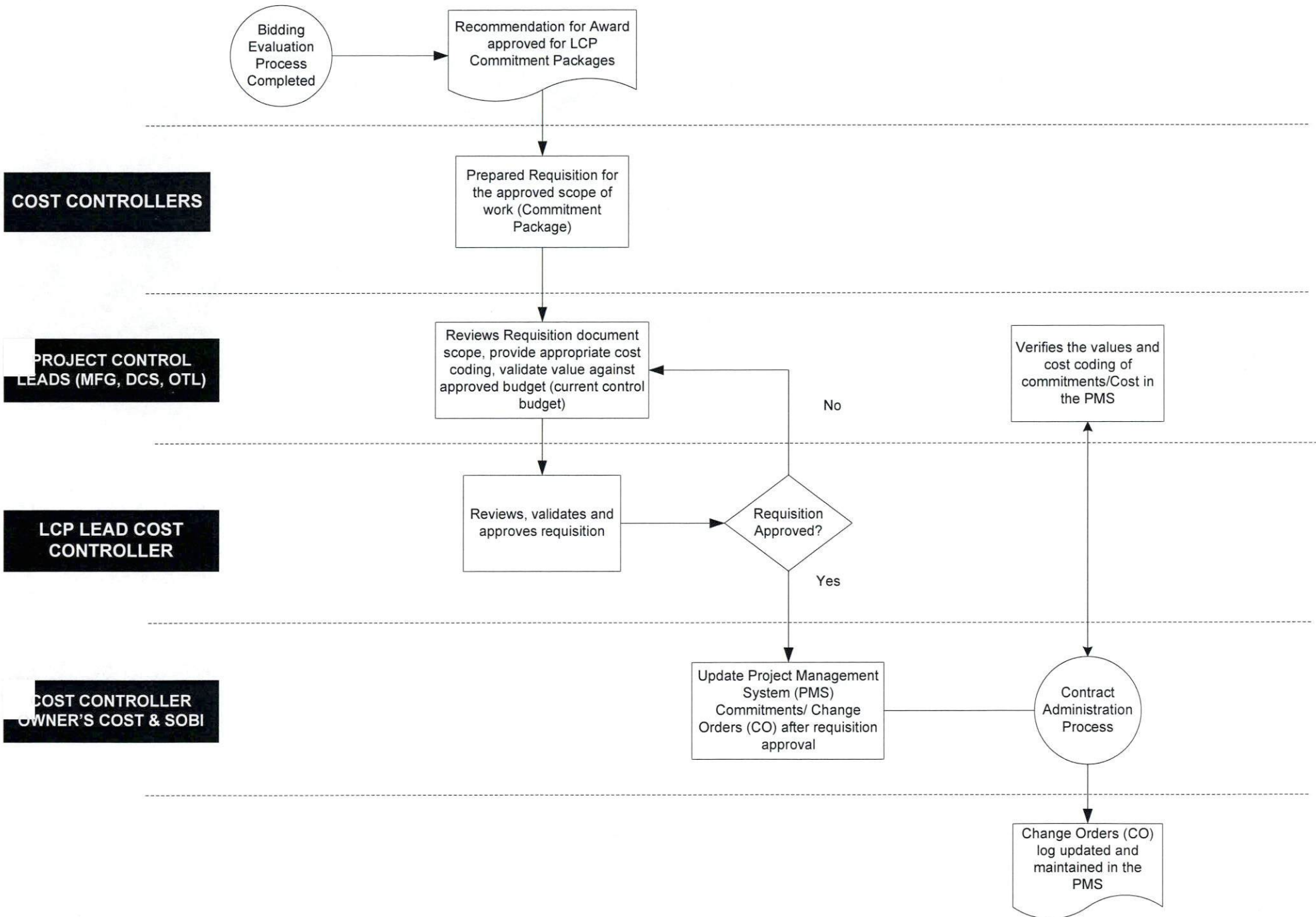
## 7 ATTACHMENTS

Cost Control Flow Diagram

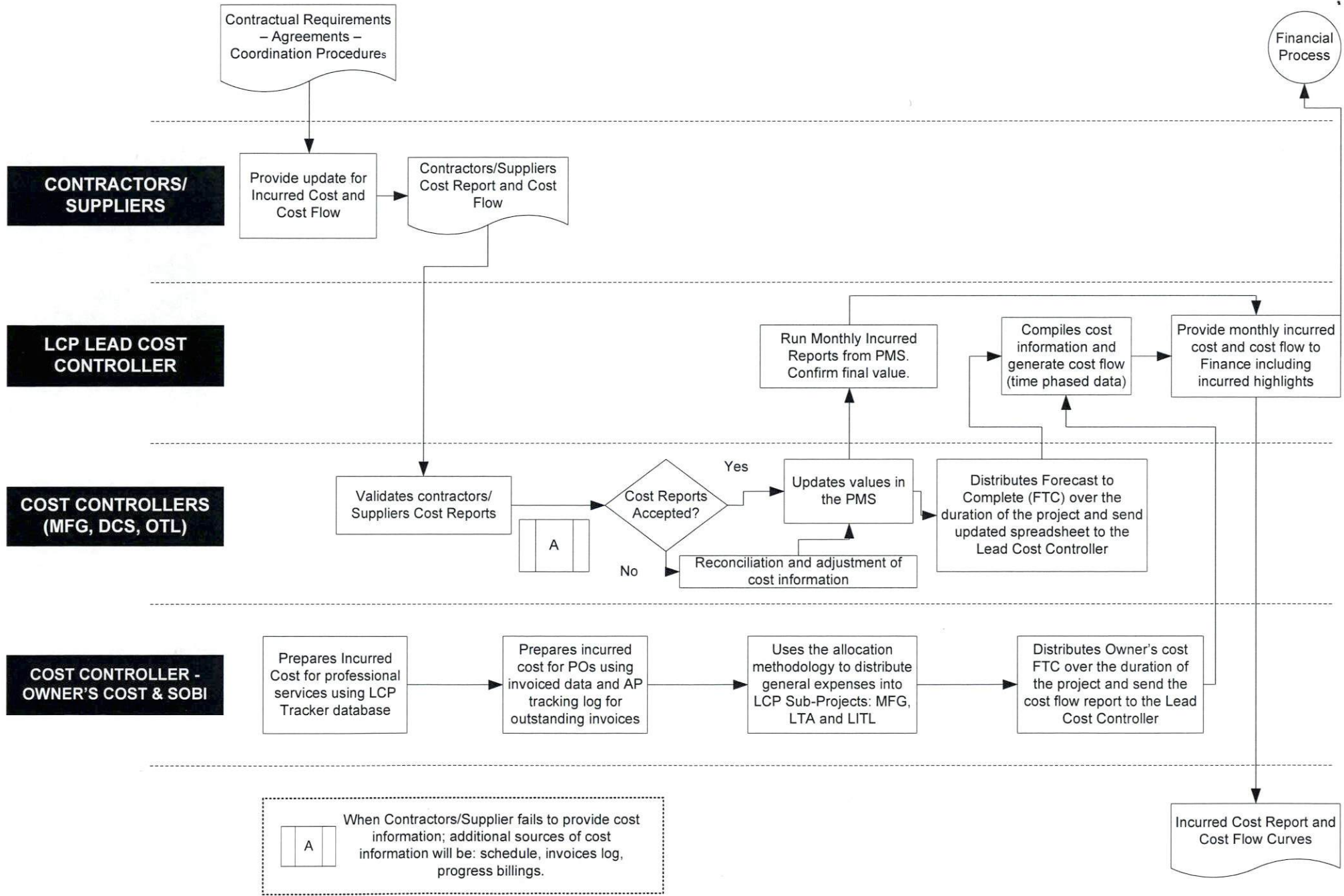
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**ATTACHMENT  
COST CONTROL FLOW DIAGRAM**

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Lower Churchill Project	LCP-PT-MD-0000-PC-PR-0005-01	Cost Control	Forecast Cost	3 of 3	Revision	Date issued	Approved by
					B2	20-Apr-2018	

