Project Title:	Site C – Clean Energy Project - Cost Management Plan Implementation Phase – YM80004 Document Number 1016.Z.01.001.FIN.00231.PLAN

Document Information

Document Purpose	The Cost Management Plan details how the costs will be managed throughout the project life cycle. The Cost Management Plan is managed by the Site C – Finance Director or delegate and is expected to be progressively detailed throughout the project life cycle as necessary
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Version	Date	Author	Comments
Rev 01	March 12, 2015	[redacted]	Initial Draft
Rev 02	April 6, 2016		Full Update

1 Executive Summary

This document describes the cost management plan for the Site C Project, and is based on both guidelines from the BC Hydro Portfolio and Performance Management system (PPM) tailored for the size, scale and complexity of the Site C Project and Corporate Finance Guidelines.

The Cost Management Plan clearly defines how the costs on a project will be managed throughout the project's lifecycle. It sets the format and standards by which the project costs are measured, reported and controlled. The Cost Management Plan:

- Identifies who is responsible for managing costs
- Identifies who has the authority to approve changes to the project or its budget
- How cost performance is quantitatively measured and reported upon
- Report formats, frequency and to whom they are presented

For the purposes of this plan, the cost management processes reflect the requirements for the project's Implementation Phase, which commenced in July 2015.

This plan will be supplemented by other components of the Project Plan including the Document and Records Management Plan, Risk Management Plan, Contingency Management Plan, Schedule Management Plan, the Project Change Control Plan (where additional detail will be presented on the development of cost and schedule baseline), and other management and control systems for the Project.

As a matter of principle, the management of costs is the responsibility of everyone on the project team. However this plan provides a high level overview of the responsibilities of the key Site C project team members accountable for cost management.

Table of Contents

1 Executive Summary 2

2 Introduction 4
2.1 Purpose 4
2.2 Terms and Definitions 4
2.3 Background 5

3 Cost Management Approach 7
3.1 Estimate and Forecast Versions 7
3.2 Cost Management Tools 8

4 Cost Control 10
4.1 Project Cost Reporting 10
4.2 Roles and Responsibilities 14
4.3 Forecast Development 15
4.4 Variance Analysis 16
4.5 Accruals 19
4.6 Approvals 19
4.7 Journal Entries 19
4.8 WBS Maintenance 19

5 Organizational Interfaces 23

6 Contingency Draws 23

7 Budget Transfer 23

8 Finance 24

9 IDC and In Service Assets 24

10 Accounts Payable 24
10.1 Invoice Processing 25
10.2 Corporate Credit Card 25
10.3 Expense Report 25
10.4 Local Purchase Order 25
10.5 Payment Requisition 25

11 Security (Financial Data) 26

2 Introduction

2.1 Purpose

The Cost Management Plan clearly defines how the costs on a project will be managed throughout the project's lifecycle. It sets the format and standards by which the project costs are measured, reported and controlled. The Cost Management Plan:

- Identifies who is responsible for managing costs;
- Identifies who has the authority to approve changes to the project or its budget;
- How cost performance is quantitatively measured and reported upon; and
- Report formats, frequency and to whom they are presented.

2.2 Terms and Definitions

Scope:
Project/Work Package scope is the work that has to be done to deliver the Project/Work Package.

Work Breakdown Structure (WBS):
This is a hierarchical subdivision of the scope of a project. The top level represents the full scope of the project, the second level the project phases, the third and subsequent levels subdividing through end features of the work. The elements at the lowest level of the WBS are called Work Packages. The standard WBS is based on project end features.

Work Package:
The Work Package is the lowest level of the project Work Breakdown Structure. It defines the WBS element scope and sets out the results to be achieved: deliverables, forecast cost, estimate details, target work package start and end dates, work package/activity interdependencies, references, revision history and checkers/reviewers. The work package description is entered into the project management system (Primavera P6). The project management system is the definitive repository for this information.

Work Package Agreement:
The Work Package Agreement (WPA) is a documented agreement between the Project Manager and Work Package Manager, based on the Work Package as defined above. WPAs shall be signed and on the record as evidence of the agreement and commitment to the Agreed Amount by the Project Manager and the Work Package Manager.

Network Activity:
This is the lowest element in the hierarchical subdivision of the scope of the Project (Project Structure). They are assigned at the Work Package level and define activities and associated resources, costs, dependencies, start and end dates and time durations required to deliver on the Work Package scope and deliverables. A network activity may be of any size and represents the lowest level at which scope, schedule and costs may be integrated.

Network Activity Element:
Activity element is the expense or resource associated with an activity. It is at this level that all costs are charged.

2.3 Background

Consistent with industry practices for large infrastructure projects, and given the long lead time required to develop a hydroelectric project, BC Hydro adopted a multi-stage approach for the planning and evaluation of the Site C project. This approach has provided for multiple decision points during project development and focused on specific deliverables and objectives at each stage.

A Provincial decision has been required to advance through each stage of the project. Since 2004, at each stage of the Site C planning and development process, the BC Hydro Board and the provincial Cabinet have provided a specific mandate in moving forward to the next stage.

Multi-Stage Evaluation and Planning Process for Site C	
Stage 1 (2004-2007)	The review of project feasibility concluded that it would be prudent to continue to investigate Site C as a potential resource option to address the growing electricity gap within the province.
Stage 2 (2007-2009)	Stage 2 included comprehensive consultations with Aboriginal groups, the public and stakeholders, as well as advancing environmental studies, field studies, engineering design and technical work.
Stage 3 (2010-Oct 2014)	Stage 3 includes an independent environmental assessment process by federal and provincial regulatory agencies, including a Joint Review Panel. This stage concluded with environmental approvals being granted to Site C on October 14, 2014.
Stage 4 (Oct – Dec 2014)	Following environmental certification, Stage 4 includes continued procurement and detailed design, and a decision by the BC Hydro Board of Directors and the Province to proceed to full project construction. This stage concluded with the Provincial Final Investment Decision (FID) received December 16, 2014.
Stage 5 (January 2015 through completion)	The final stage includes an approximate eight-year construction period, with additional time required for final project commissioning, site reclamation, and demobilization.

BC Hydro is currently in the Stage 5 - Construction phase. The Pre-construction stage ran from January 2015 to June 2015, and on-site construction started in July 2015.

The following funding requests have been authorized under the Expenditure Authorization Request (EAR) for Site C since 2007:

Stage ($M)	EAR	Authorized	Status	Direct	IDC	Total
Stage 1	Revision 0	2007	Complete	[redacted]		
Stage 2	Revision 1	Aug. 2007	Complete			
Stage 3a	Revision 2	Aug. 2009	Complete			
Stage 3b	Revision 3	Feb. 2011	Complete			
	Revision 4	Feb. 2013	Complete			
Approved						
	Revision 5	Dec 2014	Ongoing			

Revision 4 was authorized in February 2013 and amended in September 2014 to fund Site C's pre-construction work plan for the period up to March 31, 2015. The additional funding from Revision 4 was authorized to preserve the project schedule and allow for construction works to begin immediately after the project received its environmental certification, Provincial and Federal authorizations and permits and was approved by the Board and Government.

Revision 5 was authorized by the Board in December 2014 to reflect the final approval of the project's capital cost estimate, as approved by cabinet. The EAR amount of $8.335 billion excludes the Project Reserve of [redacted] which is held by the Treasury Board.

The accounting treatment of costs through to the end of Stage 3, and Stage 4 (December 2014) were captured as deferred regulatory costs. Following the FID approval in December 2014 and effective January 1, 2015, costs that are eligible for capitalization have been treated as capital expenditures.

See Appendix C for the current Approved EAR.

3 Cost Management Approach

3.1 Estimate and Forecast Versions

Like other BC Hydro projects, Site C is required to establish a schedule and cost reporting baseline for use in a range of internal and external reporting. The Site C Project received Final Investment Decision (FID) approval in December 2014, with a planned in-service date for the final generating unit of November 2024. The FID approval is supported by an Excel based cash flow/expenditures model which supported the investment decision being made.

In October 2015, a high level forecast of expenditures was provided to BC Hydro Corporate Finance for inclusion in the F2017-F2019 BC Hydro Service Plan, for publication in February 2016. This October 2015 forecast was provided based on data from P6, and also reflected a planned in-service date for the final generating unit of November 2024.

Subsequently a Performance Measurement Baseline (PMB) was established in Primavera 6 (P6) for Site C in December 2015. This baseline is the system used by the project team to manage the delivery of the project and reflects the current approved work package scope, cost and schedule for which Work Package Agreements have been signed off. The work is being planned with the potential for generating unit in-service dates to be up to one year earlier than FID or Service Plan.

Every month, the progression process updates scope, schedule and cost forecasts in P6 (through to project completion) to reflect the current expectations and forecasts in the Prior Month Forecast Baseline (PMFB).

The FID and Service Plan expenditure forecasts reflect what was known at the time they were finalized. Over time, as project implementation proceeds, adjustments will be made to scope, schedule and cost, which will be updated continuously in P6. At any point in time, a snapshot can be taken of the P6 data which reflects the current forecast at that time. These snapshots are expected to vary from FID and F2017-F2019 Service Plan forecasts. In May of 2016, an update is expected to be finalized for the F2017-F2019 Service Plan forecasts. In the fall of 2016, a new forecast snapshot will be used to prepare the F2018-F2020 Service Plan.

Corporate BC Hydro Reporting

In order to facilitate the tracking of corporate reporting requirements, there may be several baselines set up within P6 or SAP or in other tools. The following are additional requirements beyond the project requirements that may need to be prepared and tracked for the Site C project:

- Annual fiscal plan including monthly variance reporting at the General Ledger level, including Interest During Construction (IDC)
- Aboriginal spend tracking (direct and indirect)
- 5 and 10 year capital forecast baselines including quarterly updates
- RRA applications for F17/F18/F19 and beyond
- Service Plan for F2017 to F2019 and beyond

Capitalization of Assets

Once assets are completed and in service, they will need to be set up in the Fixed Assets module of SAP. When assets are capitalized, amortization will commence the following month and be included in the calculation of customer rates. Asset capitalization will be required for all assets placed into service, including:

- Transmission
- Dam Structures
- Turbines and Generators
- Properties and Rights
- Other related assets

The Site C Finance team will be responsible for the capitalization of assets once they are in service.

3.2 Cost Management Tools

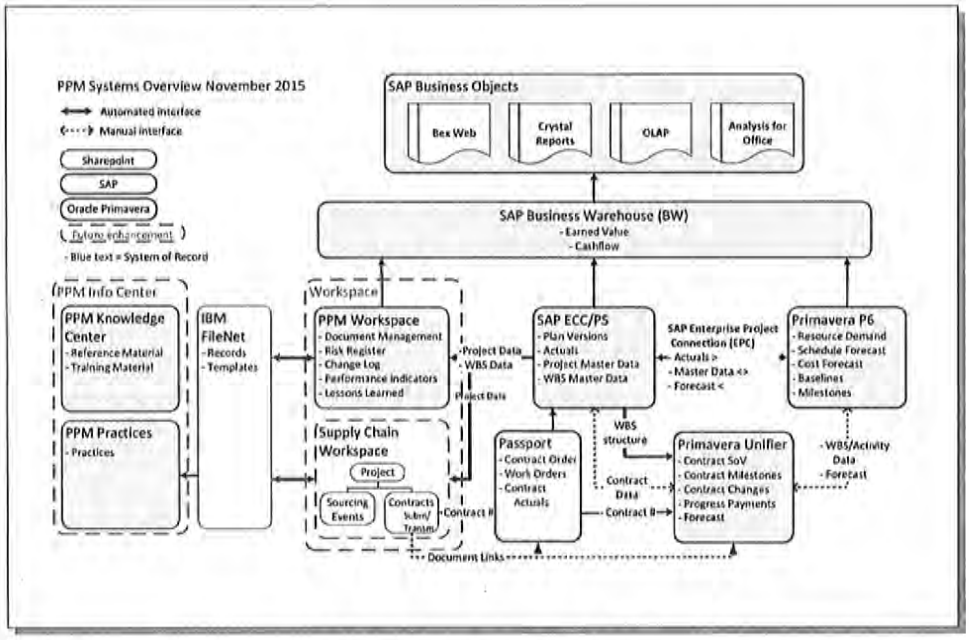
Maintaining the project cost forecast is a key BC Hydro priority. It is the subject of regular review and ongoing tracking. BC Hydro regularly monitors changes to cost drivers, and utilizes project management and project control methods to deliver the project within this mandate. Site C has implemented project management tools and process that are aligned with BC Hydro's standard Project and Portfolio Management Practices and focused on clear lines of accountability and timely control measures. All changes that affect cost, scope, and schedule are identified, formally recorded and reported. Where required, changes are approved in accordance to the Project Change Control Procedure. The Site C team has implemented value engineering processes to identify, prioritize, validate, and implement opportunities to optimize value to the ratepayer. Opportunities are prioritized by estimated dollar value and probability of success.

The tools used for cost management include the SAP Financial system, Passport (contract commitments), Primavera P6 (schedule, resources and cost forecast) and Excel for contract management.

Tool	Attributes
SAP – System of record	WBS elements are added and deleted in SAP
	Actual costs from – Passport (contracts, purchases, materials, internal work orders), – BCH Time Entry and Expenses, – IDC/OH calculated at month end
	Corporate IDC and OH rates
	Work Centres (with inflated standard labour rates).
Primavera P6 - System of record	Plan and forecast dates, units, and costs
	Activities and their attributes are created in P6
	Resources and expenses are assigned to activities
	Planned IDC, Overhead, Inflation and Escalation costs are calculated in P6.
	Project schedule loaded in P6
Passport - System of record	Contracts, purchases, materials, internal work orders
Excel	Contract management (line item level)
PPM Change Log	Repository for all project and work package level changes
Design Change Management Log	Repository for all design changes

It should be noted that additional tools such as the transition from Passport to SAP for supply chain is still under development and may be implemented on the Site C project in the future.

The following diagram shows the interface of the tools



As the WBS structure is broken down into smaller and smaller components, the level of detail at which costs can be managed is increased. However, the granularity at which costs are managed should be balanced against the amount of effort takes to manage a large number of small components. The more granular the cost management, the more work is necessary to manage it. For this reason, the number of work packages has been optimized and is currently composed of approximately 300+ work packages. These numbers will continue to be reviewed to ensure an optimized balance is achieved.

Project costs will be managed at the 5th level of the Work Breakdown Structure (WBS), the Network Activity Elements (NWAE) level. Earned Value (EV) calculations, including both Cost Performance Index (CPI) and Schedule Performance Index (SPI), for the project will measure the actual cost performance of the project compared to the budget for each Work Package over time. Performance indicators from these EV calculations will be used to inform project management decisions. Although individual work packages may break costs down further by specific activities, the level of tracking for cost management is at the 5th level of the WBS.

Cost variances will have sensitivity thresholds which will act as an early warning system highlighting areas of concern requiring some form of action. Thresholds will be set in the cost and schedule performance indexes which will change the Project status to cautionary, or yellow in the project status reports. Other thresholds will be set which will change the Project status to an alert stage or red in the project status reports. This will require corrective action from the work package managers in order to bring the cost and/or schedule performance indexes below the alert level. Any corrective actions that require a project change request would need to detail the estimated effects on cost, schedule and impacts on other project components, and be approved by the appropriate authorized employees before it could be incorporated in the scope of work. The threshold limits against performance indexes are shown in section 4.4 (Variance Analysis) and may be revised as the project progresses in the lifecycle.

4 Cost Control

4.1 Project Cost Reporting

The purpose of this section is to describe the approach, methods and responsibilities for the Project team in supporting the Project cost reporting. The P6 Project Schedule plans and forecasts all project related Work Packages, the Schedulers work with the Work Package Managers to create a Resource Loaded Schedule, including activities for Milestone Events, Level of Effort (LOE), Logical Dependents [Predecessors and Successors] with Relationships to Work Packages and external projects, as required.

The Finance, Project Controls and Reporting team gives the project the ability to identify, plan, estimate, schedule, procure, contract, change and measure performance. This allows the management of work and control of resources [time, human, financial, equipment] to ensure each project is justified, safe, efficient and delivers its stated purpose within a budgeted amount of time, cost and resource usage as planned.

The Project is divided into two main cost components for management and reporting purposes. The direct costs components and the indirect costs components. The direct costs include the end features (excluding property purchases) and construction management costs. The indirect

costs include the management and engineering expenses, property purchases, sunk costs from the previous Project stages, community benefits, First Nation impact benefits, mitigation and compensation costs, tax, inflation, and IDC.

At a minimum, these are the types of cost reporting attributes for both the direct and indirect costs:

Reporting Attributes	Details
Work Package Description	Description of scope
WBS	Work package (Level 5) and responsible manager
Budget	Various Baselines (PMB, Full funding baselines)
Forecast	Current month, prior month, Stage to date, Life to date
Actuals	Current Month, Stage to date, Life to date
ETC	Estimate to Complete
Variance	Labour, Expenses, Earned Value indices if applicable
% Complete	Based on performance
Duration (Start and End)	Working Schedule and Government Approved schedule

Standard Reports

Report	Management Level	Frequency	Meeting	Description
Cost				
Cost Details	Work Package Manager Project Manager Functional Manager Team Lead	Monthly	• Progression	Provides a summary and detailed overview of financial information by sub-project and work package manager for PMB, Actuals, EAC, Fiscal Year and associated variances.
Contract Status	Contract Manager Project Manager Team Lead	Monthly	• Progression	Provides a summary and detailed overview of contract values, contingency allocations & forecasts and status
Resources				
Resource Details	Project Manager Functional Manager Team Lead	Monthly	• Functional Team Meetings • Project Team Meetings	Provides actual and remaining labour units by Fiscal Year by Functional Group, Work Package Manager or Sub-project
Schedule				
12 Month Look Ahead	Project Manager Functional Manager Team Lead	Monthly	• Functional Team Meetings • Project Team Meetings	12 month rolling forecast and status of key milestones by Work Package Manager or Sub-project
Construction Progress	Project Manager Contract Manager Team Lead	Pre Progression	• Project Management Office Leadership Meetings	Monthly snapshot of quantity progress and status on construction contracts.
Key Milestones	Work Package Manager Project Manager Functional Manager Team Lead	Monthly	• Functional Team Meetings • Project Team Meetings • Progression	Provides an overview of project milestones and deliverables that have been identified as key milestones to track project and work package performance. It includes both a list and Gantt chart of all key milestones including planned start and finish dates and days of float.
Critical Path	Team Lead Deputy CEO	Monthly	• Progression • Accountability	List and Gantt chart of critical path activities including planned start and finish dates and

Report	Management Level	Frequency	Meeting	Description
				days of float.
Scope				
Engineering Deliverables Earned Value	Project Manager Functional Manager Team Lead	Monthly	• Project Management Office Leadership Meetings	This report shows the trend of engineering earned value.
Risk Status	Project Manager Functional Manager Team Lead	Monthly	• Functional Team Meetings • Project Team Meetings • Leadership Meetings	This report identifies risk and risk treatment plans.
Change Log Report – pending & approved	Work Package Manager Project Manager Functional Manager Team Lead	Monthly	• Functional Team Meetings • Project Team Meetings • Progression Meetings	This report identifies approved changes from the previous month and pending change items for consideration.
Performance				
Project Executive Summary	Project Manager Functional Manager Team Lead Deputy CEO	Post Progression	• Accountability Meeting	This report provides executive level information of the status of the project including performance on cost, schedule, scope, risk, construction, engineering, labour and risk.
Site C Dashboard	Team Lead	Monthly	• Leadership Meetings	Includes annual measures and targets for overall performance items from both the project and business unit perspectives.

4.2 Roles and Responsibilities

The following are the key cost management roles and responsibilities of the various project team roles as they relate to cost management:

Project Manager

- Accountable for managing interfaces between Work packages
- Accountable for ensuring the direct costs are within budget

Work Package Manager

- Responsible for detailing their work package in terms of activities, schedule, and resource requirements and entering this data into the Primavera schedule for the project
- Analyzing the Work Package status and making corrective actions within the tolerance levels of the Work Package Agreement (approved scope, cost, and schedule)
- Initiating and processing Work Package-Level Change Requests

Functional Manager

- Works with PMs to assign Work Package Managers as schedules are being developed the Functional Manager

Progression Scheduler

- Assists in the (monthly) process to progress the schedule
- Performs project variance analysis with Project Controls and works with the Project Manager and Work Package Manager to perform schedule updates as needed
- Ensures that the project schedule has baselines in Primavera that reflect the approved budget for the project

Contracts Integration Scheduler

- Ensures that contractor schedules are appropriately integrated into the overall project schedule

Project Controls/Cost Analyst

- Performs detailed review of actual cost transactions as required in SAP
- Provides feedback to Functional Manager and Project Manager or management team on the performance of a project against PPM Practices for action to be taken
- Co-ordinates with the Site C Finance and Reporting team

Estimator

- Support project forecasting efforts if thresholds for scope/schedule/cost increases exceed expected costs
- Works with Work Package Managers to develop updated estimates and co-ordinates with Project Controls as necessary

Commercial Manager/Risk Manager

- Responsible for co-ordinating any reporting and analysis with respect to Project Economics (business case, load forecast, need and alternatives) and Risk Management

Director of Finance

- Responsible for integrity of financial Information and representation that the financial statement of the Site C Business Unit are free from material error including reporting of:
  - GL Account reconciliations
  - Journal Entry Review
  - Contract Review (pre-award due diligence, post-award financial derivative)
  - Commitment and contingencies
  - Subsequent Events
  - MD&A Disclosure
- Responsible for signing the Management Representation letter
- Responsible for co-ordinating and managing :
  - Tax
  - Insurance
  - Performance Security including Advance Payments
  - Audit (internal and external)
  - Time Administration
  - Business Systems enhancements (SAP, passport, etc.)
  - Project Reporting
  - Corporate Reporting

Site C Vice President and Director

- Responsible for approving the use of Contingency for direct and indirect costs

4.3 Forecast Development

This section describes the approach, methods and responsibilities for preparing the forecast. Forecasts are required to:

- Evaluate the current status of the cost and schedule of the project
- Determine critical items for management review and action
- Provide a basis or metrics for future work
- Provide early opportunity for correction
- Ensure a regular comparison of progress, budget and milestone objectives

Frequency

Minor updates

Forecasting is done on a monthly basis as part of the schedule progression to ensure the project budget reflects the predicted expenditures of the project. The key activities of the forecast include:

- Determination of the estimate to complete which includes:
  - Reviewing anticipated changes
  - Assessing the quantities for unit price contracts
  - Reviewing status of claims
  - Reviewing resource allocation (BCH, Contractor)
  - Reviewing work methodology (shift, premium time, OT)
  - Reviewing durations and any schedule impacts

- Determination of work-around plans to mitigate problems and provide cost estimates to facilitate decisions
- Impact on supporting organizations if schedule extended

Major updates
A major reforecast will be conducted at least once per year and will include analysis of rates and factors on commodity, interest during construction, internal labour rates, and could include a recalibration of the cashflow. The expectation is that the timing for the reforecast with be in the fall of the year so that final output is available during January – March of the next year for upload into the Corporate finance annual plan reporting requirements.

Responsibilities

The work package managers are responsible for developing the reforecast information in conjunction with scheduler, estimators, Project Management Office, and project controls and providing it to the Site C finance team for review and consolidation. It may be reviewed with the Site C leadership team before incorporation into the P6 schedule depending on the nature of the change. In addition, for major updates, other reviewers may be part of the process if the updates require a change to the PMB including:

- Site C Project Board,
- BC Hydro Board
- Shareholder
- External reviewers

4.4 Variance Analysis

As part of the project cost reporting, variance analysis between forecasted and actual expenditures will be carried out monthly. The variance analysis should contain, at minimum, the following breakdown:

- Internal Labour
- External Consultant/Expenses/Contracts

This analysis should determine whether the variance is a savings, cost overrun, or a shift in the timing of the expenditure to forecast. If a savings is identified, an analysis and recommendation on whether the savings can be moved to contingency or used to offset a real cost pressure is required.

The analysis of labour should consider the variance in hours worked as well as a variance in rates. The analysis of consultant and contractor expenditures should be reconciled to the schedule of quantities for the corresponding period, and should indicate whether progress is ahead of, or behind schedule based on the progress draw requests that have been made.

Category	Yellow	Red
Cost Variances, Plan versus Forecast (Estimate At Completion)		
Overall Project	Less than [redacted] of contingency remains	Project Estimate at Completion is forecast to exceed [redacted]
Sub Project	Estimate at Completion exceeds Plan; Contingency draw required	Sub-Project's Estimate at Completion exceeds Plan by >5%; Contingency draw required
Work Package	Estimate at Completion exceeds Plan by >5%; Contingency draw required	Work Package Estimate at Completion exceeds Plan by >7.5%; Contingency draw required

Earned value and progress measurement

Typically there are four Earned Value measurements; Schedule Variance (SV), Cost Variance (CV), Schedule Performance Index (SPI) and Cost Performance Index (CPI). These four measurements can provide enough insight for effective management without overburdening the Work Package Managers with Earned Value calculations and measurements.

Schedule Variance (SV) is a measurement of the schedule performance for a project. It is calculated by taking the Earned Value (EV) and subtracting the Planned Value (PV). Since EV is a measurement of actual performance based on the percentage of work completed for a given period of time and PV is a measurement of planned performance for a given period of time, it a good indication on whether the Project is ahead of or behind the baseline schedule. If the SV is zero, then the project is on schedule. If SV is greater than zero, the project ahead of schedule, and if SV is less than zero, the project is behind schedule.

Cost Variance (CV) is a measurement of the budget performance for a project. CV is calculated by subtracting Actual Costs (AC) from Earned Value (EV). As EV considers the costs that should have been incurred based on the percentage of work completed, by subtracting the actual costs the CV provides a good indication of whether the project will be on budget. If CV is zero, then the project is on budget. If CV is greater than zero, the project is coming in under budget for the stage of completion, and if CV is less than zero, the project is over budget for the stage of completion.

Schedule Performance Index (SPI) measures the progress achieved against that which was planned. SPI is calculated as EV/PV. If EV is equal to PV the project is on schedule. If EV is less than PV the project is behind schedule and EV is greater than PV the project is ahead of schedule. A well performing project should have its SPI as close to 1 as possible.

Cost Performance Index (CPI) measures the value of the work completed compared to the actual cost of the work completed. CPI is calculated as EV/AC. If CPI is equal to 1 the project is on budget. If the CPI is greater than 1 the project is under budget, and if CPI is less than 1 the project is over budget.

If the Schedule Performance Index or Cost Performance Index has a variance of between 0.1 and 0.2 the Work Package Manager must report the reason for the exception. If the SPI or CPI has a variance of greater than 0.2 the Project Manager must report the reason for the exception and provide management (Site C VP & Director) a detailed corrective plan to bring the Project's performance back to acceptable levels.

Performance Measure	Yellow	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2

Earned value analysis will be conducted at the Sub-Project Level for the following sub-projects:

- Main Civil Works
- Generating Stations and Spillways
- Turbine – Generator
- Highways
- Transmission

Cost Variance Response Process

This section of the Cost Management Plan defines the control thresholds for the project and what actions will be taken if the project triggers a control threshold. As a part of the response process the Project Manager & Director of Operations, Project Managers and Work Package Managers will present options for corrective action to the VP & Director, who will then approve an appropriate action in order to bring the project back on budget. The Project Manager may propose to increase the budget for the project, reduce scope, or some other corrective action.

The Control Thresholds for this project are proposed to be a CPI or SPI of less than 0.8 or greater than 1.2 (see table above). If the project reaches one of these Control Thresholds a Cost Variance Corrective Action Plan is required. The Project Manager & Director of Operations will present the Site C VP & Director and Site C Finance Director with options for corrective actions. The Cost Variance Corrective Action Plan will detail the actions necessary to bring the project back within budget and the means by which the effectiveness of the actions in the plan will be measured. Upon acceptance of the Cost Variance Corrective Action Plan it will become a part of the project plan and the project will be updated to reflect the corrective actions.

A review of all the work packages will be undertaken to categorize which packages would be subject to earned value analysis and which will not. In some cases, level of effort work packages or other lump sum payment work packages may not be subject to earned value. This

will be at the discretion of the Site C VP & Director, Project Manager & Director of Operations and Finance Director after discussion.

Any updates to documents based on corrective actions that require Project change will be documented as per the Project Change Control Plan.

4.5 Accruals

Each month, Work Package Managers are responsible for preparing accruals for work performed for the month but not yet invoiced. The Work Package Manager will either obtain a draft PPE to calculate the accrual or contact the contractor directly to obtain this information. This information must be forwarded to Site C Finance inbox (Finance.SiteC@bchydro.com) on the designated day of the monthly calendar in order to accurately reporting of accruals. Site C Finance will adhere to Accrued Liabilities Policy MAPP 2.1.4A .

In general, an accrued liability should be recorded when a purchased good has been received (or a service has been performed), but has not already been entered in trade payables. If an invoice has not been received, the accrual should be based on the next best information available (e.g. purchase order, contract order, estimates, etc.). In the event the value of the good or service already received is under dispute with the contractor (i.e. a claim has been filed for work completed but the claim is not yet resolved), then the amount accrued should reflect the best estimate of the amount that will be ultimately paid under the claim. If it is not possible to assess the likelihood of amounts to be paid under the claim, then no accrual would be made.

4.6 Approvals

FAAP (Financial Approval Authority Policy) levels are assigned Site C team employees as per MAPP 1.2.1B.2 .

4.7 Journal Entries

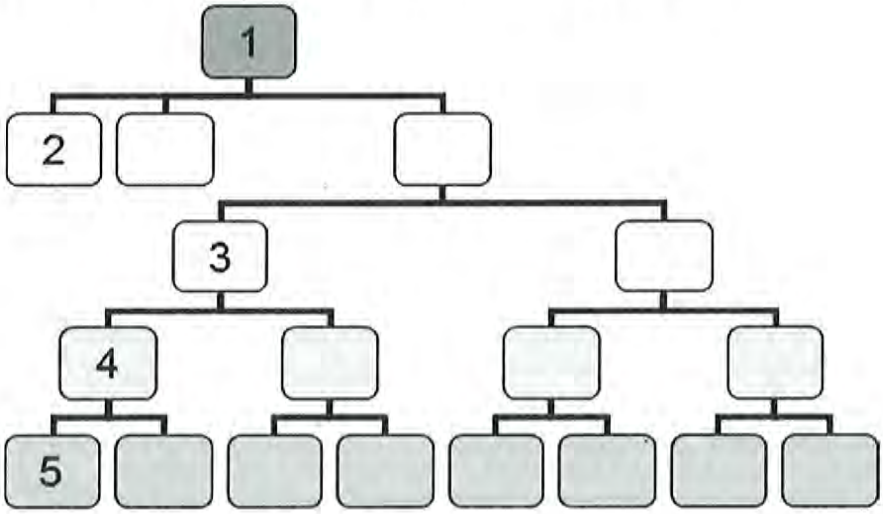
Journal entries to correct coding errors, allocation or reallocation of expenditures, amortization of prepaid expenses are processed on an as-needed basis by the Site C Finance team with appropriate backup and will be reviewed and approved by the Finance Director or delegate prior to posting in SAP.

4.8 WBS Maintenance

The WBS will be maintained in SAP by the Site C Finance Team. Any changes requested will be reviewed and approved by the Finance Director before they are made in SAP.

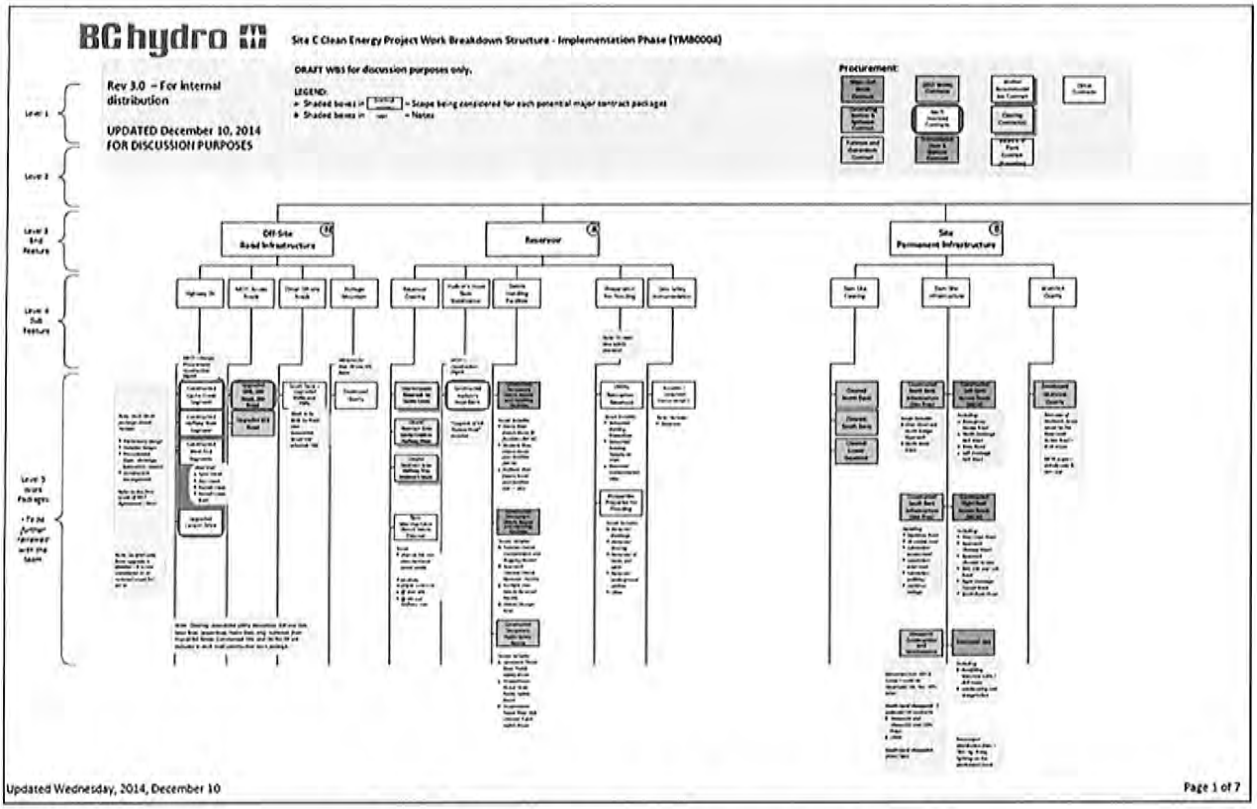
The Site C Work Breakdown Structure (WBS) is aligned with the end features of the project and has been set up with 20 - level 3 end feature components, ~100 Level 4 and ~300 Level 5 work packages.

Below is the hierarchy of the WBS showing levels 1-5.



Level 1 – Project
Level 2 – Phase
Level 3 – Stage / End Feature / System and General Management (Asset Alignment)
Level 4 – Sub-Feature / Sub-System
Level 5 – Work Package (Accountability Assignment)
Cost & Schedule Management (budget, actuals, timing)

The following is an example of the WBS in MS Visio form, identifying contract packaging. See Appendix G for more detail.



The WBS Structure includes level 3 components from A – Z .The Level 3 components from A – W are considered to be the direct components for the project and are managed by the Project Manager. Level 3 components (X,Y,Z) are managed by a number of work package managers that do not fall under the management of the Project Manager with the exception of the level 4 components of Z.05, Z.06, Z.07. The WBS tree, as shown, is still under review and may be modified from time to time to incorporate additional reporting requirements.

Level 3 WBS

YM-80004.4.N	Off Site Road Infrastructure-L3
YM-80004.4.A	Reservoir -L3
YM-80004.4.B	Site Permanent Infrastructure -L3
YM-80004.4.C	Diversion Works-L3
YM-80004.4.D	Dam-L3
YM-80004.4.F	Approach and Tailrace Channel-L3
YM-80004.4.P	RCC Buttress - L3
YM-80004.4.E	Intake and Penstock-L3
YM-80004.4.G	Spillway Facility-L3
YM-80004.4.H	Powerhouse Structure - L3 IMP-L3
YM-80004.4.Q	Generating Equipment-L3
YM-80004.4.J	Ancillary Equipment -L3
YM-80004.4.K	P&C & Telecom Systems-L3
YM-80004.4.M	Const'n Infrastr (TempFacilities)-L3
YM-80004.4.T	Transmission Lines-L3
YM-80004.4.R	Removals-L3
YM-80004.4.S	Stations-L3
YM-80004.4.X	General Rights Taxes & Grants-L3
YM-80004.4.Y	Mit & Comp & Benefit Agreements-L3
YM-80004.4.Z	General Management System - L3

Level 4 elements (indirect costs) under X,Y, Z are shown below:

YM-80004.4.X.01	Land/ROW/Tenure-L4
YM-80004.4.X.02	Water License-L4
YM-80004.4.X.03	Royalties-L4
YM-80004.4.X.04	Insurances-L4
YM-80004.4.Y.01	Community Benefits-L4
YM-80004.4.Y.02	Aboriginal Benefits-L4
YM-80004.4.Y.03	Fish & Fish Habitat-L4
YM-80004.4.Y.04	Vegetation & Wildlife-L4
YM-80004.4.Y.05	Heritage-L4
YM-80004.4.Y.06	Social & Land Programs-L4
YM-80004.4.Y.07	Monitoring Physical-L4
YM-80004.4.Z.01	Project Management System-L4
YM-80004.4.Z.02	Design Management System-L4
YM-80004.4.Z.03	Procurement Management System-L4
YM-80004.4.Z.04	Supply Contract Management System-L4
YM-80004.4.Z.05	Construction and Contract Mgmt System-L4
YM-80004.4.Z.06	Safety Mgmt-L4
YM-80004.4.Z.07	Quality Management-L4
YM-80004.4.Z.08	Environmental Management-L4
YM-80004.4.Z.09	Public Affairs-L4
YM-80004.4.Z.10	Property-L4
YM-80004.4.Z.11	Aboriginal Relations-L4
YM-80004.4.Z.12	Labour Relations-L4
YM-80004.4.Z.13	Other Management Systems-L4
YM-80004.4.Z.14	Contingency-L4

In addition the components of tax (PST), inflation and Interest during construction (IDC) are under the management of the Site C Director and are allocated to the WBS components as applicable to build up to the total project costs.

5 Organizational Interfaces

There are a number of other functions that are required to support the cost management of the project. These are in addition to the responsibilities of the work package managers and Site C leadership team. In particular there are 5 key interface points:

Interface with Project Controls
This group is responsible for initiating and initial approval of Project Change control, Work Package Agreements and Activity planning sheets upload into the P6 resource loaded schedule. Approval is only valid within their delegated authority.

Interface with Reporting and Scheduling
This group is responsible for initiating and initial approval of Scheduling upload into the P6 resource loaded schedule. Approval is only valid within their delegated authority.

Interface with Engineering Cost Controls
This group is responsible for budget development for the Engineering components of the project.

Interface with Corporate Finance
This group is responsible for providing the financial tools and processes as well as guidance on accounting treatment.

Interface with T&D Project Controls
This group is responsible for settling Site C Transmission project monthly Journal Entries and accruals, P6 upload and interface for Estimate To Complete calculations, Budget and roll-up per Site C requirements. Approval is only valid within their delegated authority.

Interface with Capital Infrastructure Project Delivery
This group is responsible for the development and sustainment of the PPM tools and P6, work centre maintenance, and Governance between Site C and BC Hydro T&D.

6 Contingency Draws

Project Contingency is held in order to address risks and uncertainty with respect to the Site C project. While Project Contingency can be notionally earmarked for a specific work package, it is held in a central work package rather than within those specific work packages. Contingency Draws are approved and allocated to fund work packages as required. Upon allocation to a work package, the funds are no longer considered Project Contingency. See Contingency Management Procedures for further details.

7 Budget Transfer

If a work package manager wishes to redistribute the budget within his/her work package then a Project change control form must be completed and signed off. Please see the Project Change Control Plan [1016.Z.01.001.PMO.00031.PLAN) for more details.

8 Finance

In addition to the Project Cost management and controls, the Finance team is responsible for overseeing the Financial and commercial aspects of the project including Insurance, Tax, Performance Security, and Procurement.

Insurance for the project is managed by the Site C Finance Director and procurement documents will be amended to include the appropriate Terms and Conditions for contractors. Corporate Treasury will be consulted in co-ordination with the Site C team.

Provincial Sales Tax (PST) is chargeable to the project. A PST tax consultant has been engaged to ensure that the appropriate terms and conditions have been incorporated into procurement documentation.

Performance security provisions are looked at on a case by case process for each major procurement package in conjunction with consultation with Corporate Treasury. This includes review of advance payment, letters of credit, bonds etc. The management of this security is done jointly with Site C Finance and Corporate Treasury.

The Finance team is also responsible for overseeing the governance of direct award contracts over $100,000 which are awarded to non-aboriginal groups. The Site C VP & Director is required to sign-off on all direct award contracts.

All Site C Project professional service and consulting contracts are required to comply with the corporate requirements described in MAPP 1.2.1B.7 Procurement of Professional and Consulting Services.

The Finance team is responsible for reviewing and processing of all exceptions from FAAP levels provided by MAPP 1.2.1B.2.

9 IDC and In Service Assets

The general principles with respect to applying IDC on the Site C Project are:

Assets are placed in service and impact customer rates when:

- Those assets are ready for their intended use, and
- They can be run independently from any remaining assets under construction.

Application of IDC stops when an asset is Technically Complete (TECO) and ready for capitalization to asset. Site C assets will adhere to MAPP 3.1.1A and obtain approval from BCH Financial Reporting and Policy department for any significant accounting decisions.

10 Accounts Payable

The purpose of this section is to document the external and internal BCH responsibilities to ensure that invoices are paid in a timely manner and allocated to the appropriate Work Breakdown Structure (WBS) cost element, in this case a NWAE (Network Activity Element) for internal labour resources and Network Activity for expenses and contracts.

10.1 Invoice Processing

Invoice processing will follow Invoice Matching and Payment Policy MAPP 5.3.1A once any additional Site C specific review and approval procedures have been met and, as applicable, the Site C Executive Approvals Process is complete.

Backup information for some invoices can be quite voluminous and AP is not able to file all the backup information with the invoice in the passport system. If backup is required to be maintained with the invoice then construction management files the backup information in the document management system electronically (Filenet, SharePoint)

10.2 Corporate Credit Card

Most employees within the project team will be issued a BCH corporate credit card at the discretion of their manager. The credit card includes single transaction limits as well as total limit. These limits are flexible depending on the nature of the person's role. At least one person on the team will be issued a procurement card with single transaction and total limits that can facilitate the processing of multiple transactions. The project team is encouraged to use the credit card for purchases under $10,000. Credit cards are processed through expense claims in SAP. See MAPP 5.3.1A on use if the BCH credit card for procurement purposes and MAPP 5.6.1A for the Business and Travel Expense Policy.

10.3 Expense Report

Employees are requested to process their expense reports once per month. If transactions are not processed within 90 days then the credit card may be suspended pending finance approval. Policies identified in Section 10.4 apply.

10.4 Local Purchase Order

Expenses which cannot be processed through a credit card and are under the threshold of $5,000 (subject to change by Corporate Finance) can be processed through a Local Purchase Order. These are limited to low risk items that are usually non repeatable. Any requests for a Local Purchase Order should be co-ordinated through Site C Finance.

See Appendix B for further details.

10.5 Payment Requisition

Expenses which cannot be paid by credit card and are not covered by contracts can be paid via a payment requisition. Payment requisitions can facilitate time sensitive payments (3-5 business days) of items to the groups listed below. Typical types of payments include:

Municipal Government Entities

Provincial Government Entities
First Nations
Revenue Canada

All payment requests should be co-ordinated through the Site C Finance Team. See MAPP 1.2.1B.6 for Payment requisition policy and Form MAPP 1.2.1F.3.

11 Security (Financial Data)

The Site C Project requires a unique security framework for data due to the confidential nature of some budget information in the project.

The PPM Solution encompasses a number of applications; below is a diagram of the applications and their interconnections. In order to protect the confidentiality of the Site C project, all requests for access to the source systems are approved by the Finance Director.

Further, the Site C Leadership Team approved the Decision Document, PPM Reporting Security Access, which limits Business Warehouse access to select Site C internal team members in the Project Services, Finance, and Work Package Manager teams. There is **no access** for external Site C project team members.

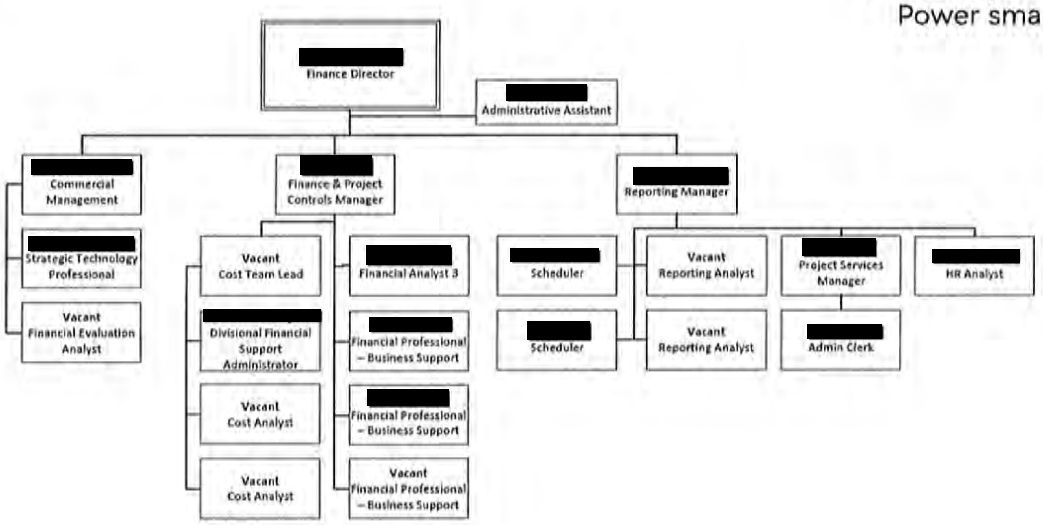
Appendices

Appendix A	**Finance Organization Chart**
Appendix B	**LPO Template**
Appendix C	**EAR**

Appendix A Finance Organization Chart

SITE C | FINANCE

BC Hydro
Power smart



Appendix B: Local Purchase Order (LPO) TEMPLATE

APPENDIX 1 - HOW TO USE THE LOCAL PURCHASE STAMP

Provide all of the following:

- Contact – The person who can answer any questions about the invoice.
- Local – Contact's telephone number.
- Location – Location of the contact.

Provide *all* of the following:

1. Approver Name – The name of the FAAP approver who has the authority to approve payment for the invoice.
2. Approver Signature – Signature of the FAAP approver.

Provide *all* of the following:

- FAAP Position # – The FAAP position # of the approver. FAAP position #'s are available in PeopleSoft. Search "FAAP Lookup Tool" in the BC Hydro Intranet to get the link.
- Date: The date when approver signed the stamped invoice.

LOCAL PURCHASE STAMP

Contact (please print):	Local:	Location:
Approver Name (please print):	Approver Signature:	
Position #:	Date (YYYY-MM-DD):	

Account Distribution

Account #	Cost Object		Amount
	Type	Number	
GST/HST Portion			

Account # – Provide the GL account code that is to be charged. This is a 6-digit number.

Amount – If the charges need to go to more than one Account Distribution, indicate how the charges should be split by dollar amount ONLY.

When entering an amount for each cost object, do not include GST or HST. Document the tax amount (i.e. the total tax amount) on the GST/HST Portion line.

GST/HST Portion: Enter the total GST/HST amount in this line in the Amount column.

Cost Object Type – Provide one of the following cost object types (write in the 2 or 3 character abbreviation):

- CC (Cost Centre)
- IO (Internal Order – also used for PassPort Work Order)
- WBS (Project Work Break-down Structure Element)
- NW (Network Order + Network Activity)

Cost Object Number – Provide the cost object number to be charged. Note that you need both the Account # and the Cost Object number. Each cost object type requires a different number, as listed below:

- CC: 5 digit numerical code
- IO: max 12 digit alpha-numerical code (also includes PassPort Work Orders – these start with "P")
- WBS: max 19 digit alpha-numerical code
- NW: max 16 digit alpha-numerical code (6-12 digit network order code and a 4 digit activity number)

LOCAL PURCHASE STAMP

Contact (please print):	Local:	Location:
Approver Name (please print):	Approver Signature:	
FAAP Position #:	Date (YYYY-MM-DD):	

Account Distribution

Account #	Cost Object		Amount or %
	Type	Number	

Appendix C: EAR

Expenditures Authorization Request (EAR) Form

BC Hydro
Power smart

Section 1

1.1 Project Creation *(Complete Section 1.1 before starting Section 1.2)*

IPID Project Name			Current Date	P10	IPID Number	Rev. No.
Site C Clean Energy Project			20-Apr-16	☐ P10 Attached	1115778	5
Group with Approval Authority	Project Type	Group	In-service Date:	Request Phase		Request Reason
	Generation	Site C	2024-11-30	Full Implementation		New Phase
					SDA %	0%
					Other %	100%
					Total % (100%)	100%

1.2 Investment LTD Actual Costs (inlc. IDC and COH) [ ] Project Forecast Authorized Cost $ [redacted]

Request Dollars (000's)	Prior Requests (000's)	Current Request (000's)	Total Expected Amount (000's)	Project Reserve (000's) Complete Section 1.5	Total Authorized Amount (000's)
Direct Costs					
– Capital, (incl Recurring Cap.)	$				
– Operating Costs (OMA)					
– Cost of Energy					
– Deferred DSM					
– Asbestos, PCB, Other Regulatory (Deferred)					
– Capital Reserve for Operating Amount *					
Capital Overhead (COH)					
IDC					
Total Investment Cost *(A)*	$				
Less: CIA / CIK / Customer Payment					
Total Net Investment Cost (Incl. CIA)	$				
Retirement Of Capital Assets					
Asset Value (Greater of NBV or Market)	$				
Estimated Dismantling Cost					
Total Authorized Retirement Cost *(B)*	$				
Cumulative EAR Total *(A+B)*	$				**

EAR P11 Value $ [redacted] EAR P12 Value $ [redacted]

1.3 Required Review & Approvals *Automatically Determines approvers based on Phase, Project Type, Group, Forecast and Total Authorized Amount

	Name	Position #	Signature	Date
Finance				June 2/16
Senior or Executive Vice President				June 3/16
Project Sponsor				June 3/16
Chief Financial Officer				June 7/16
President & CEO				[illegible]

1.4 Delegation of Approval Authority for Contracts and Commitments

Contract / Commitment	Up To Amount (000's)	Delegated to (Name)	Delegated by (Name)	Signature	Date

1.5 Delegation of Project Reserve

	Delegated to	Delegated by	Signature	Date
	Treasury Board	Treasury Board		

Template Version 1.02

* This amount represents the PV of expected commitments to benefit payments to First Nations and Communities to be made during the operating period. This amount does not reflect the nominal amount of those commitments, nor does it include estimated operating costs.
**Subject to further approvals by the Board, for expenditures in excess of the Board approved spending limit, up to the Authorized Amount.

Approvals:

Role	Name	Signature	Date
Prepared by:	[redacted]		July 5/16
Reviewed by:			July 19/16.
Reviewed by:			July 16
Accepted by:			July 6/16.