ONTARIO POWER GENERATION

Manual

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Title: PROJECT INTEGRATED CHANGE CONTROL

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PROJECT INTEGRATED CHANGE CONTROL

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Revision Summary

Revision Number	Date	Comments
R002	2020-11-02	Section 2.2.8 updated to include Risk Category Details in the CCF. Section 2.2.11 updated to remove reference to 'Change Levels' Section 4.1 and Appendix B updated to remove Change Level definition and details.
R001	2019-11-11	Change Control Form (CCF) was revised and modified.
R000	2019-03-26	Initial issue.

1.0 DIRECTION

Change is expected throughout a project life cycle. Whether the change is a result of planned progressive elaboration, or realization of an identified risk, project success is dependent on the effectiveness of the integrated change control. The objective of integrated change control is to ensure that each change to scope, schedule or cost proposed during a project is adequately defined, reviewed, and approved before implementation. The key benefit of this process is that it allows for documented changes within the project to be considered in an integrated manner with the project objectives and plans, while addressing overall project risk.

This document receives authority from Project Management standard [R1] and is a component of the overall Enterprise Project Management governance framework. The Enterprise Project Management governance is applicable to all projects planned and executed within OPG.

Each project needs to fulfil the specific integrated change control requirements for the different project levels as defined in the Scalable Project Delivery Model [R2]. This includes the use of established Project Management Information Systems (PMIS) tools and software for managing related project work.

> The Scalable Project Delivery Model [R2] provides a scaled application of project management principles and processes reflective of a projects complexity and cost. The model provides the minimum requirements for a project by knowledge area. It is expected that Project Managers will apply the intent of the knowledge area and exceed the minimum requirements as appropriate. The Business Unit Execution Line Management and/or Project Management Office may define additional requirements based on the specific project and portfolio requirements.

All project information and documentation that does not exist within PMIS should be maintained and stored within SharePoint in a standardized project working folder structure. Related project records and controlled documents should be managed in accordance with the Project Communication and Stakeholder Management manual [R3].

Note: ***Strategic Projects and/or Programs*** may have additional or varied expectations or requirements for projects within the program, and for the overall program itself. These should be documented in a project controls plan (or equivalent) for the program.

Note: Contract and commercial management related changes are excluded from the scope of this manual and are addressed in Contract Management [R4]. Changes to approved project documentation such as the Project Management Plan (PMP) are addressed in Project Communication and Stakeholder Management [R3].

1.1 Overview

Integrated change control is the process of ensuring that all changes to project scope, cost and schedule “project performance baselines” [hereafter referred to as baselines] are controlled and documented; that contingency funds allocation is managed; and that

the nature and cause of changes are documented, analyzed, approved and implemented to minimize the impact to cost schedule and scope.

The three project performance baselines that are changed through formal change control are described in Table 1.

Table 1: Project performance baselines

Scope Baseline	• Approved version of the project scope statement, work breakdown structure (WBS), and its associated WBS dictionary (as applicable) • Further defined in Project Scope Management manual [R5]
Schedule Baseline	• Approved version of the schedule • Further defined in Project Schedule Management manual [R6]
Cost Baseline	• Approved version of the time-phased project budget that includes contingency • The different types of cost baselines are further defined in Project Cost Management manual [R7]

The Project Change Control processes are:

- Plan Integrated Change Control (Section 2.1)
- Control Change (Section 2.2)
- Monitor Change (Section 2.3)

Desktop guides and templates associated with this manual are available on the Enterprise Project Management website.

2.0 CHANGE CONTROL PROCESSES

2.1 Plan Integrated Change Control

Plan Integrated Change Control is the process of developing an appropriate approach to how project change requests will be formally authorized and incorporated. The key benefit of this process is a documented approach to effectively and efficiently manage change in a timely manner.

2.1.1 The change control plan should be included in the PMP as per Project Integration Management [R8] manual, and assessed periodically throughout the project as needed.

2.1.2 The change control plan should be risk based, and reflective of the cost and complexity of the project (project level), the specific project details, as well as the risk to the portfolio. The change control plan should, at minimum, satisfy the requirements as defined in the Scalable Project Delivery Model [R2].

2.1.3 The change control plan documented within the PMP should reference the change request approval authority thresholds. These may be pre-established thresholds determined by the business unit executing authority or the governing body and must not exceed OPG OAR thresholds.

2.2 Control Change

Control Change is the process of ensuring that changes to the project scope, cost or schedule are appropriately identified, assessed, approved and documented prior to being implemented. The key benefit of this process is that changes are evaluated to ensure that they are prudent and aligned with the stakeholder and sponsor requirements; that the impact of changes on scope, schedule and/or cost are understood and accepted; and that justification and decisions are documented in a change control form (CCF).

Changes to scope, schedule and cost baselines as a result of planned progressive elaboration are controlled, approved and documented through the Project Phase-Gating process (i.e. do not require a CCF), and are excluded from thismanual.

The project change control process, and use of the associated CCF, is as follows:

IDENTIFY CHANGE: The process of recognizing and categorizing a potential change to the project scope, cost and/or schedule baseline.

2.2.1 For project level D, utilization of the integrated change control process (andsubmission of a CCF) is <u>not required</u>. Changes to the project performance baseline, within the bounding scope, cost and/or schedule commitments made within the BCS, are not required. Tracking and approval of contingency draws should be completed by the project team in accordance with the PMP, and documented within the project team working file.

2.2.2 For project level A, B and C, all <u>material directed</u> changes to project scope, cost or schedule baselines should be performed through the integrated change control process in accordance with the Scalable Project Delivery Model [R2].

A material directed change is a change that has an impact to scope, cost and/or schedule baseline commitments AND that are concurred by OPG.

Examples of material directed changes include:

- Breakdown of existing work within the Work Breakdown Structure (WBS)
- Changes in contracting or execution strategy

- Changes to execution windows due to station support priorities
- Contingency draws as a result of mitigation or realization of risk, or advancement of non-released scope to address a risk or opportunity (requires Business Line Execution Management approval)
- Project contingency changes irrespective of value, either drawn or returned to contingency
- Scope, cost and schedule variances which are so severe that a revised scope, cost and schedule baseline is needed to provide a realistic basis for performance measurement

Examples of changes that are **not** typically material changes within control account, and therefore do not require a CCF, include:

- Changes to correct performance issues that are within the control of the work program owner, unless the change renders the existing baseline no longer meaningful
- Minor delays due to availability of support organizations
- Changes to update forecast missed milestones (including milestones committed within the business case summary (BCS)) due to performance. Delays should be identified in the project forecast and communicated to the appropriate stakeholders

If the change is outside the bounding scope, cost and/or schedule commitments made within the BCS, a new BCS may be required. The BCS process is defined in Developing and Documenting Business Cases [R9].

2.2.3 Changes can be identified by multiple sources including but not limited to project team members (OPG and vendor staff), stakeholders, project sponsors, integrating organizations, regulatory affairs etc.

2.2.4 Changes should be identified in a timely manner to allow for appropriate reviews and approvals prior to implementing resulting actions.

2.2.5 Where a change identification, review and assessment occurs in 'real-time' to prevent substantial delays or cost increases, the appropriate level of written approval should be received (e.g. email). The change should continue to be recorded and managed through the integrated change control process as soon as reasonably achievable.

Note: Utilization of this process should be performed on an exception basis only as the level of risk to the project and portfolio is increased as a result.

INITIATE CHANGE: The process of creating a change control form and documenting the basis of the change.

2.2.6 All change requests for scope, cost and schedule should be initiated within the EcoSys change module via a CCF by the project manager or business unit (BU) Project Management Office (PMO). An example CCF is provided in Appendix A.

2.2.7 A change log should be maintained documenting all changes that occur on the project, and their status. For project level A, B, and C, the change log is maintained electronically

within EcoSys. For project level D, a separate log in the project teams working files is recommended to track any material project changes, or contingency draws.

2.2.8 All CCFs should document the proposed change accurately, concisely, and with the level of detail required to evaluate and demonstrate that:

- Change is prudent and aligned with the stakeholder and sponsor requirements.
- Impact of changes on scope, schedule and/or cost are understood and accepted.
- Drawdowns of contingency are detailed by risk category (Discrete Risk, Cost Uncertainty, Schedule Uncertainty) and includes a discrete risk ID where applicable. For project level A and strategic projects, all categories are applicable to be updated if contingency is being drawn. For project level B and C, only discrete risks and cost uncertainty options are applicable, as schedule contingency is not calculated for project level B and C projects.

Note: All required data on the CCF should be completed and supporting documents may be attached to provide additional details or show commitment of other support groups.

2.2.9 All change requests should be evaluated on the severity of the change and its impact to the scope, cost and/or schedule baselines. The approval level is defined in the PMP.

2.2.10 Funds resulting from real savings or forecasted underspends may be returned to the contingency account.

2.2.11 To facilitate trend reporting, all change requests should identify the change driver (OPG or Vendor) and the change category Change categories are provided in Appendix B.

2.2.12 The effort associated with the documentation and review of the change should be

REVIEW CHANGE: The process of evaluating the change to ensure change is prudent and aligned with the stakeholder and sponsor requirements, and that change impact is fully understood.

proportional to the severity and impact of the change. For complex changes, the review may include an assessment of the alternatives that were considered and why the option was selected.

2.2.13 The change initiator should engage the appropriate functional department or subject matter experts to perform an independent evaluation of the impacts of the change. The outcome of these reviews should be documented within the CCF and supporting documents.

2.2.14 The impact of the change should be thoroughly reviewed to ensure consequences are understood. Potential areas to be evaluated include but not limited to:

- Scope
- Cost
- Schedule
- Risk
- Estimate
- Commercial
- Union jurisdiction
- Work and radiation permits
- Regulatory commitments
- Asset Risk
- Environmental
- Human resources
- Business value
- Safety Nuclear/conventional/ radiological
- Design
- Material handling and storage

- Social license
- Work control & station operations
- Extent of condition for subsequent units
- Legal

2.2.15 For changes that request a contingency draw greater than $1Million, it is recommended that they are reviewed and endorsed by the EPMO estimating subject matter expertprior to submission.

APPROVE/REJECT CHANGE: The process of approving or rejecting the change request and documenting the decision.

2.2.16 The CCF (electronic or paper) should be routed to the appropriate approval authority for signature as per the change control plan and pre-determined thresholds. Decisions should be document on the CCF.

2.2.17 Approval authorities should approve/reject the change request on the basis that:

- Change is prudent and aligned with the stakeholder and sponsorrequirements.
- Impact of changes on scope, schedule and/or cost are understood andaccepted.
- Impact of changes on contractual obligations and existing contracts are understood and accepted.

APPLY CHANGE: The process of implementing the approved changes to the scope, cost and schedule baselines, and communicating the change to the stakeholders.

2.2.18 Approved changes should be implemented in the appropriate PMIS application. Where possible, implementation should occur prior to the next project management month-end reporting cycle defined in Project Integration Management [R8].

2.2.19 The project manager should communicate approved changes to the project team and any affected stakeholders as required. For high impact changes, a change management plan may be used to ensure communication is effective and that the change is adopted.

2.3 Monitor Change

Monitor Change is the process of reviewing project performance against the approved change and confirming that change is achieving the intended benefits. The key benefit of this process is that changes are periodically assessed and the project teams can provide early or preventive corrective action if required.

2.3.1 Project performance against the implemented changes to scope, cost and schedule baselines should be performed as part of regular project monitoring and control activities.

2.3.2 To facilitate continuous improvement and identify potential inefficiencies, the PMO may periodically perform analysis to trend change information including change impact, review times, frequency of change contingency usage and change classification. Any reports or self-assessments should be communicated to appropriate stakeholders.

3.0 ROLES AND RESPONSIBILITIES

3.1 Project Sponsor

As required, reviews changes to confirm prudent and aligned with stakeholder and sponsor requirements (the charter).

3.2 Project Manager

(a) Identifies and controls all material directed changes to scope, cost, or schedule baselines.

(b) Manages changes through the CCF process, including obtaining reviews and approvals.

(c) Monitors changes by reviewing project performance to confirm changes are achieving intended benefits.

3.3 BU PMO

(a) Approves changes based on project level per the Scalable Project Delivery Model [R2].

(b) Produces and implements a CCF within the EcoSys when change to the project scope, schedule, or cost baseline is required per the Scalable Project Delivery Model [R2].

3.4 Enterprise PMO

(a) Acts as subject matter expert for integrated change control methodologies, processes and associated tools and templates.

(b) Provides support to the BU PMO as required based on size and complexity of the program/project.

(c) Periodically performs analysis to trend change information including change impact, review times, frequency of change contingency usage and change classification.

4.0 DEFINITIONS AND ACRONYMS

4.1 Definitions

Baseline	See Performance Measurement Baseline.
Change	For the purposes of this procedure, a change is any deviation from an approved plan or procedure that results in a real or potential impact on project cost or schedule.
Change Classification	Used to differentiate the reasons for a change to facilitate trending analysis.
Change Control Form	Used to document changes for trending and approval purposes.

Change Control Process

Change Control is the Project Management process (including the supporting tool) that provides a framework to identify and record changes in cost, schedule and or scope against the approved baselines.

Engineering Resources Request

Used to request planned or emergent Engineering work.

Executing Organization

The Project Team, OPG Function or Contractor's organization executing the scope of work.

Forecast

Forecast represents the projected cost of the Control Account or Work Package, including any pending changes yet to be approved.

Performance Measurement Baseline

The Performance Measurement Baseline is the Project scope, cost and schedule approved during the Gated process for Project Releases.

The approved budget and schedule allocated to Work Packages indicate cost and schedule performance which must be measured against control budget in the Cost Management System and the Project Baseline Schedule.

The Performance Baseline must be established for both Cost and Schedule:

- Project Performance Baseline – Must be established at each Gate and updated per change control
- Functional Performance Baseline – Must be established at each Release

The Performance Measurement Baseline must not include:

- Contingency
- Management Reserve

Project Burn Rate

The cost a project incurs on a daily or weekly basis as a result of overheads, direct expenses (e.g. equipment rental) and labour.

Work Breakdown Structure

A hierarchical decomposition of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables. The main purpose is to breakdown the scope of work into more controllable components and to identify responsible organizations for the completion of all components.

4.2 Abbreviations and Acronyms

BCS	Business Case Summary
BU	Business Unit
CCF	Change Control Form
COMS	Constructability, Operability, Maintainability, and Safety
EPMO	Enterprise Project Management Office
OPEX	Operating Experience
PMIS	Project Management Information Systems
PMO	Project Management Office
PMP	Project Management Plan
SBCS	Superseding Business Case Summary
WBS	Work Breakdown Structure

5.0 REFERENCES

5.1 Performance References

Ref #	Document Number	Document Title
R1	OPG-STD-0148	Project Management Standard
R2	OPG-MAN-00120-0010	Project Integration Management – Appendix A: Scalable Project Delivery Model
R3	OPG-MAN-00120-0017	Project Communication and Stakeholder Management
R4	OPG-STD-0153	Contract Management
R5	OPG-MAN-00120-0011	Project Scope Management
R6	OPG-MAN-00120-0014	Project Schedule Management
R7	OPG-MAN-00120-0012	Project Cost Management
R8	OPG-MAN-00120-0010	Project Integration Management
R9	OPG-STD-0076	Developing and Documenting Business Cases

5.1.1 Developmental References

PMI. Project Management Body of Knowledge (PMBOK)

Construction Industry Institute (CII)

Appendix A: Change Control Form [Example]

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OPG Confidential
CHG-FORM-001 R004
Change Control Form (CCF)

Change	12345-PMCCF-004559 Contingency drawdown for realized risk 11111		
Program	Projects and Modifications	Change Type	Budget Change
Project(s)	12345 - Replacement of Values		
Change Impact	☐ Impacts Scope	☐ Impacts Schedule	☑ Impacts Contingency
Change Category	Directed Change		

Change Description

Project 12345 is seeking project contingency to cover the cost associated with risk acceptance (Risk11111). The risk of material delay to site has been realized, therefore increasing vendor cost (refer to approved PCA 001). The PO value must be increased, therefore the project requires contingency funds to cover the additional cost. This delay has also impacted the project completion milestone by six months, thus changing the schedule and cost baselines.

Scope Impact of Change

No impact to overall scope as this is a delay in schedule.

Cost Impact of Change

Contingency Draw Amount	$50,000	*Cumulative Draw*	$ -	*Released Contingency Remaining*	$ -

Adding $50k from contingency to procurement and construction work within Project 12345.

Schedule Impact of Change

BCS Milestone Impact	
Change In-Schedule Float	

BCS Milestone (ID, Name)	Original Baseline Date	Revised Date	Variance
12345MO123, Material Delivery	4/1/2020	10/1/2020	183
12345MO125, Construction Start	5/1/2020	11/1/2020	184
12345MO, Project Completion	10/1/2020	4/1/2021	183

The project completion date will be delayed by 6 months.
Original Completion Milestone date = October 1,2020
New Completion Milestone date= April 1, 2021.

Risk Impact of Change

Risk Category	Cost Uncertainty Type	Risk ID	Drawdown Amount for Risk
Discrete Risk		11111	$35,000
Cost Uncertainty	Estimating Uncertainty		$15,000
		Total	$50,000

Business Justification

This directed change is required to increase the PO value in support of the approved PCA001 and realized risk Risk 11111. If this change is not approved, the project completion milestone will remain incorrect and performance will be impacted and thus will not correctly represent the true project status.

Approvals

Title	Name	Signature	Date	Approve/Reject
Initiator	Jane Doe		10/1/2020	
Approval Level 1	Project Manager		10/5/2020	Approved
Approval Level 2	Section Manager		10/5/2020	Approved
Approval Level 3		N/A		
Final Approver	BU PMO Section Manager	System Approved	10/11/2020	Approved
Approval/Decision Notes	Approved - The contingency draw by was approved by the Section Manager, as per the Nuclear Projects Contingency Drawdown Authorization Memo			

Appendix A: Summary of Cost Changes

WBS Path ID	WBS Name	Change in Hours	Change in Cost	Change in released Funding
PM.DN.DN.99.U).12345_0_09_01	Project Contingency	0	-50,000	-50,000
PM.DN.DN.99.U).12345_4_01_01	Procurement	0	30,000	30,000
PM.DN.DN.99.U).12345_5_01_01	Construction	0	20,000	20,000

Appendix B: Summary of Schedule Changes

To be attached.

Appendix B: Change Categories

Change Category	Examples of factors causing change
Contract Management	- Change in contracting strategy - Issues encountered in Contract Negotiations
Design	- Change in Design Requirements - Issues with Code Design non-conformance - Changes in Software categorization - Unclear Design Requirements - Delay in delivery of design deliverables
Directed Change	- Changes directed to the Project Director / Manager from Owner management organization - Changes to schedule as a result of outage rescheduling - Changes as a result of outage delays - Management directed change in priorities
Estimate	- Changes as a result of foreign exchange - Updated cost estimates received - Issues with cost estimation - Estimate from Operating Experience (OPEX) on previous estimation
Execution Performance	- Less than expected or more than expected performance - Optimistic schedule planning

Front End Planning	- Configuration management issues - Issues with scoping (causing change in scope) - Issues with Constructability, Operability, Maintainability, and Safety (COMS) - Issues with project planning - Issues with stakeholder involvement
Project Management	- Issues with project management and controls - Issues with risk mitigation - Insufficient communication to sponsors and stakeholders - Issues with accruals - Failure to process in-service declarations - Failure to process project closure documentation
Materials and Equipment	- Equipment operation failure - Equipment test failure - Equipment/Material quality not as expected - Procurement of equipment delayed - Existing material condition not a expected
Resources	- Insufficient resources - Insufficient tools