Attachment 1: Project Lifecycle Phases and Gates

Once a project has been identified through the asset management and investment planning process, and approved through the business planning process, a project enters the project lifecycle. There are fives phases to the life cycle of a nuclear project:

(i.) Project Initiation – The purpose of the initiation phase is to evaluate viable alternatives and identify the initial project scope, schedule, conceptual funding and applicable stakeholders for the preferred alternative, this phase is generally funded from the project OM&A budget (Ex. F2-3-1 Section 3) in order to prepare the development phase Business Case Summary ("BCS").

(ii.) Project Development – The objective of the development phase is to prepare the preliminary design, schedule and cost information along with relevant project strategies and the project management plan with the ultimate objective for most projects being the development of a definition phase BCS. Potential projects are screened and success at this phase will lead to an allocation of future funding from capital or project OM&A budget.

(iii.) Project Definition – The goal of the definition phase is to further define the project and demonstrate readiness for execution, including completion of sufficient engineering to determine bulk material requirements, development of the project cost estimate and execution plan, assessment of risk and development of mitigating plans, identification of and application for any requirements for regulatory approvals, and procurement of engineered equipment. Generally, a Class 3 estimate would be prepared for the completion of the project, and a full release or partial release execution phase BCS would be developed. This estimate would form the basis to measure the performance of project execution.

(iv.) Project Execution – The execution phase includes completion of detailed engineering, procurement (if not completed in the definition phase), and detailed construction/installation planning and/or physical execution of the project and commissioning work.

(v.) Project Close-out – The close-out phase is the last phase in the project life cycle and includes the administrative closeout of contracts and the project, as well as the preparation of a project close out report to document final costs and lessons learned.

Following the project close-out phase, a Post Implementation Review is conducted, as applicable, to assess whether the project benefits were achieved as intended and as documented in the approved BCS;, and to capture the key lessons learned for OPG to use in improving future undertakings.

As part of its project management process, OPG uses cost estimate ranges that are consistent with industry best practices as reflected in the Association for the Advancement of Cost Engineering ("AACE") Estimate Class guidance. Estimate Class is a cost estimate classification system which defines the "quality" of the estimate based on the input information used and the project's stage of development. AACE uses five estimate classes with Class 5 being the least accurate, and Class 1 being the most accurate. For example, execution phase releases would generally be Class 3 and for a large pool of projects, on average, an accuracy range of -20% and +30% is expected. A summary of the Estimate Class and expected accuracy range is provided in Figure 1 below.

Figure 1

AACE Estimate Class and Accuracy Range

ESTIMATE CLASS	MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES Expressed as % of complete definition	EXPECTED ACCURACY RANGE Typical variation in low and high ranges
Class 5	0% to 2%	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	L: -3% to -10% H: +3% to +15%

Given the amount of assessment and engineering completed at each state of a project life cycle, OPG works to ensure that project scope is appropriately defined prior to the next stage in the process. In general, a project is approved for execution when project engineering, scope definition, and planning execution are sufficiently complete. The scoping process, combined with phase-gating and the ongoing PMOC review and approval processes, enhances OPG's ability to bring projects to completion within budget and on schedule.