DETAILS OF OM&A PROJECTS –
REGULATED HYDROELECTRIC

1.0 PURPOSE
This evidence provides a project listing and business case summaries for OM&A project expenditures for the regulated hydroelectric facilities during the test period.

2.0 OVERVIEW
A tiered reporting structure for OM&A projects has been used:
- Tier 1: For projects with a total cost of $10M or greater and which have budgeted expenditures during the test period, business case summaries are provided if available.
- Tier 2: All projects with a total cost of $5M to $10M are individually listed, with the project name, description and project cost information provided.
- Tier 3: An aggregated total of the budgeted expense for all projects with a total cost of $0 to $5M is provided.

Based on the tiered reporting structure, there is one regulated hydroelectric project that falls into Tier 1 (Ex. F1-T3-S3 Table 1), and none that falls into Tier 2 (Ex. F1-T3-S3 Table 2). Tier 3 projects are shown in Ex. F1-T3-S3 Table 3.

2.1 New Projects without a Business Case Summary
The one regulated hydroelectric project greater than $10M is not released and therefore does not have a Business Case Summary. This project is described below. Other project information including in-service dates and test period costs are shown in Ex. F1-T3-S3 Table 1.

2.1.1 Sir Adam Beck Pump Generating Station - Units 1 to 5 Overhauls (SABP0036)
The scope of this project is to overhaul the Pump Generating Station (“PGS”) units 1 to 5. The project is currently in the identification phase.
The units at the PGS employ very complicated Dariaz runners. This runner design uses an 
internal servomotor arrangement to adjust turbine blade pitch to optimize operating efficiency 
through a wide range of head heights and generator loadings. In addition, the blade pitch can 
be adjusted so that the unit functions efficiently as a pump.

A unit overhaul program at the PGS was last completed in the mid to late 1990s. There was 
an expectation, at that time, that after completing these overhauls the runner life at these 
units would be 25 to 30 years. This period is consistent with the life expectancies of the 
Francis type runners at OPG's other generating stations and was consistent with the 
previous unit's service life at the PGS. However, since the unit overhauls were completed, 
the number of start-stop and pump-generating cycles that the PGS units have experienced 
has increased significantly. The number of cycles is expected to further increase in response 
to changes in the Ontario generation mix and electricity system operation.

In 2008, the seals on the unit PG6 runner failed after approximately ten years of service 
necessitating an emergency unit overhaul (Ex. F1-T1-S1, section 4.1). Based on a careful 
inspection of the condition of the PG6 runner internal mechanisms, OPG has concluded that 
15 years is a more reasonable service life expectation, given the complicated nature of the 
runner and the expected number of start-stop and pump-generation cycles. In addition, 
inspection of the runner blades indicated that there is significant blade deformation that is a 
result of cavitation repairs conducted in the past. Correcting the blade deformation of the 
remaining units will increase unit efficiency and energy production.

Unit overhauls will begin with units PG1 and PG3 as these units were the first to be 
overhauled in the 1990’s and currently have the greatest risk of failure. The results from the 
inspection of runner internal mechanisms during these overhauls will be used to confirm the 
15 year life expectancy of these runners and to justify the overhauls on units PG2, PG4 and 
PG5. The first unit overhaul (PG1) is planned for 2012. The remaining four unit overhauls are 
planned for after the test period.