

CAPITAL EXPENDITURES – NUCLEAR OPERATIONS

1.0 PURPOSE

This evidence provides an overview of the capital expenditures for OPG's nuclear facilities for the historical years, bridge year and the test period (excluding Darlington Refurbishment) which is addressed in Ex. D2-2-1. It also provides period-over-period explanations.

2.0 OVERVIEW

OPG's capital expenditures in support of OPG's nuclear facilities are \$196.3M in 2014 and \$143.9 in 2015 (Ex. D2-1-2 Table 1). These capital expenditures represent the sum of capital expenditures included in the project portfolio, capital expenditures on special, non-recurring projects that are managed outside of the project portfolio, and capital expenditures on minor fixed assets within nuclear. As a result of these forecasts and prior capital expenditures, OPG is requesting OEB approval of forecast rate base additions of \$180.7M in 2013, \$158.3M in 2014 and \$141.7M in 2015, as presented in Ex. D2-1-3.

Nuclear capital expenditures are forecast to increase in 2014 by 15.3 per cent, relative to the 2013 budget, followed by a decrease of 26.7 per cent in 2015. The increase in 2014 capital expenditures is required for Fukushima-related projects, the purchase of additional capital spares, and increased number of projects that have transitioned from the definition phase into the execution phase of a project life cycle.

As part of its 2014 - 2016 Business Planning process, OPG is reassessing its 2015 project portfolio budget and anticipates increases in the project portfolio to address recent emerging requirements for new project expenditures.

Since the last filing, OPG has completed six major projects (cost >\$20M), five of which were completed on or under budget.

3.0 CAPITAL EXPENDITURES

Exhibit D2-1-2 Tables 2, 3 and Tables 4a - 4c present actual and forecast Nuclear Operations capital expenditures for the period 2010 - 2015. Projects are categorized in the tables as follows¹:

- **“Portfolio Projects (Allocated)”** are projects that have an AISC-approved budget and an approved business case summary (“BCS”). This includes major capital spares.
- **“Portfolio Projects (Unallocated)”** is the difference between the total approved capital budget and the amount of capital allocated to projects in the Portfolio Projects (Allocated) category. In effect, it represents the amount of approved capital that remains available to undertake projects that are currently in the project identification or project initiation phases. A list of the projects being considered for funding through the project portfolio is provided in Ex. D2-1-3 Table 5a/5b for capital projects

Exhibit D2-1-2 Tables 2 and 4 includes the capital expenditures that are in addition to those included in the capital project portfolio:

- The “P2/P3 Isolation Project” which reflects work completed at Pickering in 2010 to achieve the isolation of operating Units 1 and 4 from the non-operating Units 2 and 3 and modifications to common system controls which are currently located in Unit 2.
- “Minor Fixed Assets” (see Ex. A2-2-1, section 5.1) are expenditures on portable assets used in station or support division operations. An example is tooling used for specialized inspection and maintenance services.

3.1 Capital Project Drivers and Trends

Exhibit D2-1-2 Table 2 shows an increase in capital expenditures in 2014, the first year of the test period (Ex. D2-1-3 Table 5a/5b). Most of the projects being undertaken in the test period are sustaining projects, or projects to sustain and/or improve plant reliability at both Darlington and Pickering. They include expenditures on systems and components approaching their end of life, or for which replacement parts are no longer readily available.

¹ [“Facility Projects to be Released” is a term that was used by OPG in EB-2007-0905 and EB-2010-0008 but is no longer used by OPG. It applied to amounts identified in an approved BCS to complete the balance of a project, i.e., the project had proceeded under a developmental or partial release rather than a full release. Starting in 2012, these amounts have been included with Portfolio Projects (Allocated), as described above.

1 As well, following the nuclear accidents in March 2011 at the Fukushima Daiichi nuclear
2 plant, OPG initiated a series of projects to address regulatory requirements. In Canada, the
3 Canadian Nuclear Safety Commission ("CNSC") formed a Task Force to identify the actions
4 needed to be taken by its licensees, and others, to address the lessons learned from the
5 accidents at Fukushima. The CNSC subsequently developed an Action Plan, and OPG was
6 assigned 101 Action Items ("FAIs") for its fleet of operating reactors. Most of the fieldwork for
7 projects arising from these FAIs is forecast to be completed by the end of 2016. Notable
8 capital projects included the installation of passive autocatalytic recombiners to mitigate
9 hydrogen that is formed following a severe accident; the procurement of portable diesel-
10 driven pumps and generators to provide power and water to critical safety systems in the
11 event that engineered systems become unavailable; the modification of station systems,
12 structures and components to enable quick connection of the portable equipment; and
13 improvements to on-site and off-site emergency telecommunications in the event of
14 significant disruptions to infrastructure. The actions taken by OPG in response to Fukushima
15 are comparable in scope and cost to those initiated by other utilities worldwide.

16
17 OPG is currently reassessing its 2015 capital budget in light of emerging project
18 requirements. OPG intends to make capital investments associated with critical equipment at
19 Darlington and Pickering in 2015 to meet regulatory requirements as well as improve
20 ongoing and future reliability as Darlington units are taken offline for refurbishment.

21
22 Year-over-year variances over the 2010 - 2015 period are presented in Ex. D2-1-2 Table 4
23 and are explained below. Exhibit D2-1-3 presents details of specific capital projects.

24 25 **4.0 PERIOD-OVER-PERIOD CHANGES – TEST PERIOD**

26 **2015 Plan versus 2014 Plan**

27 The decrease in planned spending (-\$52.4M) is primarily due to a reduction in the number of
28 currently identified capital projects at both Pickering and Darlington.

29 30 **2014 Plan versus 2013 Plan**

The increase in planned spending in 2014 compared to 2013 (+\$26.1M) is due to a planned increase in capital expenditures for sustaining investments at Darlington and Pickering. As detailed in EX D2-1-3 Table 5a, a large number of projects that started in 2012 and 2013 will see the majority of their spending occurring in 2014.

5.0 PERIOD-OVER-PERIOD CHANGES – BRIDGE YEAR

2013 Budget versus 2012 Actual

There is an increase in planned spending (+\$8.8M) split evenly between project spending and the allocation for minor fixed assets. The increase in project spending is mainly driven by sustaining capital spare purchases (primary heat transport pumps) at Darlington (+\$20.2M) and an increase in regulatory project spending at Pickering (+\$7.0M) including project #49146 - Fire Code Compliance for Relocatable Structures in Un-Zoned Area for Pickering Station and project #46605 - Passive Auto-catalytic Recombiners for long-term post-accident hydrogen mitigation, a Fukushima-related project. These increases are offset by lower sustaining project expenditures at Pickering (-\$18.3M) and lower spending on project #25609 - Physical Barrier Security System (-\$3.9M) reflecting the completion of this project.

6.0 PERIOD-OVER-PERIOD CHANGES – HISTORICAL YEARS

2012 Actual versus 2012 Board Approved

The decrease in planned spending (-\$30.1M) is primarily due to under spending on project #31717 - Improve Maintenance Facilities at Darlington (-\$12.6M) due to design changes and deferral of some work to 2013, a decision to delay project #49267 - Pickering Replacement of Standby Boilers (-\$5.6M) to allow for further assessment of alternatives and under spends on capital spares including project #36002 - Darlington Main Output Transformer (-\$3.8M) due to purchasing delays and project #49150 - Pickering Low Pressure Turbine Spindle (-\$5.3M) due to delays in overhauling the equipment.

2012 Actual versus 2011 Actual

The increase (+\$13.2M) is primarily due to the return to the typical portfolio expenditure level following an under spend in 2011 (see below for 2011 actual vs. budget analysis), and increased Minor Fixed Asset expenditures (+\$2.6M) due to Fukushima-related purchases.

2011 Actual versus 2011 Board Approved

The decrease in planned spending (-\$43.5M) reflects a decision to intentionally delay major project expenditures to allow for further assessment of alternatives associated with project #31717 - Improve Maintenance Facilities at Darlington (-\$14.0M), project #49267 - Replacement of Standby Boilers at Pickering (-\$10.0M) and project #62568 - Feeder Repair by Weld Overlay (-\$34.5M). In place of the Feeder Repair by Weld Overlay project, OPG was able to develop some new advanced analytical techniques for assessing feeder integrity. This significantly reduced the number of feeders requiring repair or replacement, allowing OPG to defer the project.

In addition, several projects were either cancelled or incurred scope reductions as a result of value assessment reviews including project #25901 - Security Hardening Project (-\$4.0M) and project #25902 - Controlled Area Improvements (-\$3.3M).

2011 Actual versus 2010 Actual

The variance (-\$30.1M) primarily reflects the under spend in the 2011 project portfolio, as discussed above (-\$21.7M year-over-year), and completion of the P2/P3 Isolation Project in 2010 (-\$5.9M).

2010 Actual versus 2010 Budget

The decrease in planned spending (-\$22.7M) primarily reflects the planned deferral of project #62568 - Feeder Repair by Weld Overlay (-\$34.5M), under spending of minor fixed assets (-\$4.8M) and lower than planned expenditures associated with the P2/P3 Isolation Project (-\$2.9M). These decreases were offset by increased expenditures on major capital spares (+\$19.3M).