

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 the Darlington Refurbishment Program ("DRP") which is addressed in Ex. D2-2). Period-over-period explanations are also included in this exhibit.

2.0 OVERVIEW

OPG's capital expenditures in support of its nuclear facilities are \$279.0M, \$258.0M, \$282.4M, \$278.5M and \$199.3M in 2017, 2018, 2019, 2020 and 2021, respectively (Ex. D2-1-2 Table 1). As shown in Chart 1 below, these expenditures represent the sum of the following:

- a) Capital expenditures included in the nuclear project portfolio. Test period annual capital expenditures in the nuclear project portfolio vary from \$238.0M to \$259.0M over the 2017-2020 period, before declining to \$180.0M in 2021. The key drivers of the capital expenditure component of the nuclear project portfolio are discussed in section 3.1 below.
- b) Capital expenditures on special, non-recurring projects that are managed outside of the project portfolio. There are no capital non-portfolio expenditures during the test period.
- c) The capitalized portion of Darlington new fuel (see Ex. F2-5-1 section 2.0 for new fuel treatment).
- d) Capital expenditures on Minor Fixed Assets within nuclear. These are capitalized expenditures on portable assets used in station or to support division operations. An example is tooling used for inspection and maintenance services. Minor fixed assets do not require a business case summary and are not managed as part of the project portfolio process.

As a result of these and prior capital expenditures, OPG is requesting that the OEB approve forecast rate base in-service additions of \$389.0M, \$315.2M, \$239.3M, \$300.4M and \$215.6M in 2017, 2018, 2019, 2020 and 2021 respectively, as presented in Ex. D2-1-3.

Chart 1

Nuclear Operations Capital Expenditures

Line No.	Category	2017 Plan	2018 Plan	2019 Plan	2020 Plan	2021 Plan
		(a)	(b)	(c)	(d)	(e)
1	Project Portfolio - Capital	253.0	238.0	248.0	259.0	180.0
2	Darlington New Fuel	0.0	0.0	15.3	0.0	0.0
3	Minor Fixed Assets	26.0	20.0	19.1	19.5	19.3
4	Total Capital Expenditures	279.0	258.0	282.4	278.5	199.3

3.0 CAPITAL EXPENDITURES

Exhibit D2-1-2 Tables 2, 3 and 4 present the actual and forecast Nuclear Operations capital expenditures for the period 2013-2021. Projects are categorized in the tables as follows:

- “Portfolio Projects (Allocated)” are projects that have an Asset Investment Screening Committee approved budget and an approved business case summary. 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 capital projects being considered for funding through the project portfolio is provided in Ex. D2-1-3 Tables 5a and 5b.

Exhibit D2-1-2 Tables 2 and 4 include capital expenditures that are in addition to those included in the capital project portfolio. These projects are approved separately from and are in addition to the total approved capital budget referred to in the discussion of “portfolio

1 projects” above and include minor fixed assets, capital expenditures on non-recurring
2 projects that are managed outside of the project portfolio, and the capitalized portion of
3 Darlington new fuel.

4 5 **3.1 Capital Expenditures in the Nuclear Project Portfolio: Drivers and Trends**

6 Exhibit D2-1-2 Table 2 shows an increase in capital expenditures in the nuclear project
7 portfolio that ranges from \$238.0M to \$259.0M over the 2017-2020 period, before declining
8 to \$180.0M in 2021. The trend reflects the following:

- 9 • In 2014, a review of costs and projects categorized as DRP costs under the 2013
10 Release Quality Estimate (“RQE”) was conducted with the objective of ensuring costs
11 were properly categorized as Nuclear Operations versus DRP (see Ex. D2-2-10). This
12 exercise resulted in certain Facilities and Infrastructure Projects (“F&IP”) as well as
13 some other projects, including the Operations Support Building Refurbishment, the
14 Auxiliary Heating System, and the Darlington Primary Heat Transport Pump Motor
15 Replacement and Overhaul being included in the Nuclear Operations project portfolio
16 rather than being part of DRP. These projects were determined to be necessary to
17 support Darlington operations before, during and post-refurbishment. Exhibit D2-1-3
18 section 3.0 provides additional details on the projects transferred to Nuclear
19 Operations. Of these reclassified projects, only the Primary Heat Transport Pump
20 Motor Replacement and Overhaul project has expenditures during the period 2017-
21 2021.
- 22 • Additional requirements due to regulatory programs such as the Darlington Integrated
23 Implementation Plan (“IIP”) and the Fukushima response, as discussed below.
- 24 • Additional capital funding to replace obsolete and/or life-expired plant equipment at
25 Darlington. This capital spending for Darlington operations is separate and distinct
26 from capital spending on refurbishment, as OPG must replace obsolete and/or life-
27 expired plant equipment to ensure safe and reliable operation before, during, and
28 after refurbishment. The ramp-up in these capital expenditures began in 2014 and is
29 expected to continue until 2020 after which it will return to normal levels. The
30 projected level of capital expenditures over the test period is reasonable, as
31 benchmarking of OPG’s capital expenditures against industry peers using the EUCG

1 database shows that historically OPG's capital expenditures were below the industry
2 median (see Ex. F2-1-1 Attachment 1).

- 3 • Maintaining capital expenditures at Pickering to address life cycle aging of equipment
4 and regulatory requirements as part of OPG's plan to operate Pickering until
5 2022/2024 (see Ex. F2-2-3). Capital expenditures at Pickering begin to decline in
6 2021 in anticipation of the end of commercial operations in 2022/2024.

7
8 Most of the projects being undertaken in the test period are sustaining projects, which are
9 projects to sustain and/or improve plant reliability. They include expenditures on systems and
10 components approaching their end of life, or for which replacement parts are no longer
11 readily available.

12
13 Additionally, following the nuclear accidents in March of 2011 at the Fukushima Daiichi
14 nuclear plant, the Canadian Nuclear Safety Commission ("CNSC") formed a Task Force to
15 identify the actions needed to be taken by its licensees, and others, to address the lessons
16 learned from the accidents at Fukushima. The CNSC subsequently developed an Action
17 Plan, and OPG was assigned 101 Fukushima Action Items for its fleet of operating reactors.
18 Consequently, OPG initiated a series of projects to address these regulatory requirements.
19 Most of the fieldwork for projects arising from these Fukushima Action Items is forecast to be
20 completed by the end of 2017. Notable capital expenditures include the following:

- 21 • The installation of passive autocatalytic recombiners to mitigate hydrogen that is
22 formed following a severe accident.
- 23 • The procurement of portable diesel-driven pumps and generators to provide power
24 and water to critical safety systems in the event that engineered systems become
25 unavailable.
- 26 • The modification of station systems, structures and components to enable quick
27 connection of the portable equipment.
- 28 • Improvements to on-site and off-site emergency telecommunications in the event of
29 significant disruptions to infrastructure.

OPG's actions in response to Fukushima were among the first to be initiated worldwide, and were comparable in scope and cost. Forecast portfolio spending (capital and project OM&A) on Fukushima-related projects is \$277.7M of which \$121.4M was spent as of December 2015.

Period-over-period variances for 2013-2021 are presented in Ex. D2-1-2 Table 4 and are explained below. Ex. D2-1-3 provides details of specific capital projects.

4.0 PERIOD-OVER-PERIOD CHANGES – TEST YEARS

2017 Plan versus 2016 Budget

The decrease in planned spending from 2016 to 2017 (-\$74.0M) is due to reduced portfolio (-\$69.0M) and reduced Minor Fixed Asset (-\$5.0M) spending.

The decrease in portfolio spending is primarily due to the planned reduction in capital spending at Pickering (-\$66.7M) as prior regulatory projects and sustaining projects to ensure safe and reliable operations to 2020 near completion. Notable year-over-year reductions at Pickering include project #49158/49299 Pickering Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (-\$8.8M), project #41027 Pickering Fukushima Phase 2 Beyond Design Event Emergency Mitigation Equipment (-\$8.3M), project #80069 Pickering A Firewater Buried Ring Header Replacement (-\$8.1M), and project #41023/49247 Unit 1 & 4 Fuel Channel East Pressure Tube Shift/Reconfigure (-\$4.8M). It is expected that new, but not yet defined Pickering capital projects to ensure safe and reliable operations to 2022/2024 will be started in 2017 and use a portion of the unallocated funding.

Reductions in allocated spending in Darlington (-\$36.1M) are expected to be offset by new projects to support post-refurbishment operations, as reflected in the unallocated portion of portfolio (\$43.4M). Notable reductions include project #31508 Darlington Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (-\$9.2M), project #36002 Darlington Main Output Transformer Capital Spares (-\$7.6M), and project #32202 Darlington Fukushima Phase 2 Beyond Design Basis Event Emergency Mitigation Equipment (-\$5.6M).

1 These reductions are offset by project #31535 Darlington Water Treatment Plant
2 Replacement (+\$7.1M).

3
4 Reductions in allocated spending in the Nuclear Support Divisions (-\$9.6M) are due mainly to
5 the completion of project #80027 Security & Emergency Services Station Personnel
6 Emergency Accounting (-\$4.3M) and project # 66594 Inspection and Maintenance Services
7 Channel Inspection and Gauging Apparatus for Reactors ("CIGAR") Gap System and Drive
8 Reliability (-\$2.0M).

9
10 Reductions in Minor Fixed Assets (-\$5.0M) are due to reduced spending on Fukushima
11 response related equipment (-\$8.6M) offset by increased spending on tools and equipment
12 to support station operations.

13
14 **2018 Plan versus 2017 Plan**

15 The decrease in planned spending in 2018 compared to 2017 (-\$21.0M) is due to reduced
16 portfolio (-\$15.0M) and Minor Fixed Asset (-\$6.0M) spending.

17
18 Reductions in allocated spending at Darlington (-\$35.7M) are expected to be offset by new
19 projects to support operations before, during and post-refurbishment, as reflected in the
20 unallocated portion of portfolio (\$45.8M). Notable reductions include project #31412
21 Darlington Class II Uninterruptible Power Supply Replacement (-\$5.0M), project #80117
22 Darlington Condensate Extraction Pump Motor Spare (-\$4.5M), and, project #31710
23 Darlington Shutdown Cooling Heat Exchanger Replacement (-\$4.4M). These reductions are
24 offset by project #31535 Darlington Water Treatment Plant Replacement (+\$11.1M) and
25 project #31544 Darlington Radiation Detection Equipment Obsolescence (+\$6.2M).

26
27 Reductions in allocated spending at Pickering (-\$20.6M) are primarily due to the planned
28 reduction in capital spending as regulatory projects and sustaining projects to ensure safe
29 and reliable operations to 2020 are completed. It is expected that new, but not yet defined
30 Pickering capital projects to ensure safe and reliable operations to 2022/2024 will be started
31 in 2018 and use a portion of the unallocated funding, along with prior projects in execution

1 phase. Notable reductions include project #49158/49299 Pickering Fukushima Phase 1
2 Beyond Design Basis Event Emergency Mitigation Equipment (-\$4.0M), project #41027
3 Pickering Fukushima Phase 2 Beyond Design Event Emergency Mitigation Equipment (-
4 \$4.0M), project #40972 Pickering A Standby Generator Reliability (-\$2.0M), and project
5 #40976 Pickering B Fuel Handling Reliability Modifications (-\$2.0M).

6
7 Reductions in allocated spending in the Nuclear Support Divisions (-\$4.4M) is due mainly to
8 the completion of project #80131 Nuclear Waste Management ISO Transportation
9 Package/Trailer Replacement (-\$1.5M) and project #60168 Nuclear Waste Management
10 Tritium-Deuterium Oxide Transportation Package Replacement (-\$1.1M).

11 12 **2019 Plan versus 2018 Plan**

13 The increase in planned spending in 2019 compared to 2018 (+\$24.4M) is due to increased
14 portfolio spending (+\$10.0M), capitalization of half of the initial fuel load in Darlington Unit 2
15 post-refurbishment (+\$15.3) and a slight decrease in Minor Fixed Asset spending (-\$0.9M).

16
17 Reductions in allocated spending at Darlington (-\$52.2M) are expected to be offset by new
18 projects to support operations before, during and post-refurbishment, as reflected in the
19 increased unallocated portion of portfolio (\$64.8M). Notable reductions include project
20 #31535 Darlington Water Treatment Plant Replacement (-\$24.8M), project #31710
21 Darlington Shutdown Cooling Heat Exchanger Replacement (-\$10.7M), project #31552
22 Darlington Circulating Cooling Water and Low Pressure Service Water Travelling Screens
23 Replacement (-\$6.1M), and #31524 Darlington Station Roofs Replacement (-\$5.6M). These
24 reductions are offset by project #80111 Darlington Generator Stator Core Spare (+\$32.0M).

25
26 Reductions in allocated spending at Pickering (-\$2.4M) are primarily due to close-out of the
27 regulatory projects and sustaining projects to ensure safe and reliable operations to 2020. It
28 is expected that prior projects to ensure safe and reliable operations to 2022/2024 will be in
29 execution phase and use a portion of the unallocated funding.

30 31 **2020 Plan versus 2019 Plan**

The decrease in planned spending in 2020 compared to 2019 (-\$4.0M) is due to completion of the initial fuel load in Darlington Unit 2 post-refurbishment (-\$15.3M) offset by an increase to portfolio (+\$11.0M) and a slight increase in Minor Fixed Asset spending (+\$0.4M).

Reductions in allocated spending at Darlington (-\$51.2M) are expected to be offset by new projects to support operations before, during and post-refurbishment, as reflected in the increased Unallocated portion of portfolio (\$62.2M). Notable reductions include project #80111 Darlington Generator Stator Core Spare (-\$32.0M) and project #80022 Darlington OH180 Aging Management Hardware Installation (-\$5.5M). These reductions are offset by project #82816 Darlington Vault Cooling Coil Replacement (+\$3.0M) and project #73566/80144 Darlington Primary Heat Transport Pump Motor Overhaul (+\$1.7M).

It is expected that prior projects to ensure safe and reliable operations at Pickering to 2022/2024 will be in execution phase and use a portion of the unallocated funding.

2021 Plan versus 2020 Plan

The decrease in planned spending in 2021 compared to 2020 (-\$79.1M) is due to decreased portfolio (-\$79.0M) and a slight decrease in Minor Fixed Asset spending (-\$0.1M). The decrease in portfolio spending is due to the decrease in unallocated funding (-\$71.9M), reflecting the reduced portfolio capital spending expected due to a ramp-down in capital spending to replace life-expired and obsolete equipment. Other significant changes in Darlington projects include project #80144 Darlington Primary Heat Transport Pump Motor Overhaul (-\$11.7M), project #80078 Darlington Digital Control, Common Process and Sequence of Events Monitoring Computer Aging Management (+\$7.2M), and project #80148 Darlington Fuel Handling Computer I/O Subsystem and Interprocessor Communication Replacement (+\$2.3M).

It is expected that prior projects to ensure safe and reliable operations to 2022/2024 in Pickering will be nearing completion and use a portion of the unallocated funding.

5.0 PERIOD-OVER-PERIOD CHANGES – BRIDGE YEAR

2016 Budget versus 2015 Actual

The increase in 2016 budget compared to 2015 actual (+\$38.2M) is due mainly to an increase in portfolio spending (+\$29.5M) and increased expenditure on Minor Fixed Assets (+\$8.7M).

The increase in allocated spending at Darlington (+\$18.3M) is due to the ramp-up in capital spending to replace life-expired and obsolete equipment. Notable increases include project #31710 Darlington Shutdown Cooling Heat Exchanger Replacement (+\$13.6M), project #31524 Darlington Station Roofs Replacement (+\$10.0M), project #80144 Darlington Primary Heat Transport Pump Motor Overhaul (+\$9.3M), project #36002 Darlington Main Output Transformer Capital Spares (\$7.6M), and project #31535 Darlington Water Treatment Plant Replacement (+\$6.5M). These increases are offset by the completion of two major F&IP projects reclassified from the Darlington Refurbishment Program – project #25619 Darlington Operations Support Building (-\$30.2M) and project #34000 Darlington Auxiliary Heating Systems (-\$29.1M).

Decreases in allocated spending at Pickering (-\$3.7M) are due primarily to reduced spending in project #41023 Unit 1 & 4 Fuel Channel East Pressure Tube Shift Tooling (-\$8.3M) and project #40976 Pickering B Fuel Handling Reliability Modifications (-\$5.4M) as they approach completion in 2016, completion of project #49146 PN Fire Code Compliance for Re-locatable Structures in Un-Zoned Area for Pickering Station (-\$4.4M), as well as reduced spending on project #66600 Machine Delivered Scrape (-\$4.3M) and the cancellation of project #41013 Pickering A Turbine Governor System Upgrade (-\$6.0M) in 2015. These decreases are offset by projects to replace life-expired and obsolete equipment to ensure safe and reliable operation. Notable increases include project #41043 Pickering Emergency Power Generator Engine Replacement (+\$9.7M), project #80069 Pickering A Firewater Buried Ring Header Replacement (+\$8.1M), and project #40985 Pickering Replacement of Obsolete Online Chemistry Analysers (+\$4.8M).

Increases in allocated spending for the Nuclear Support Divisions (+\$9.5M) are due mainly to increases in project #80027 Security & Emergency Services Station Personnel Emergency

Accounting (+\$3.6M), project #60168 Nuclear Waste Management Tritium Deuterium Oxide Transportation Package Replacement (+\$1.4M), and project #80131 Nuclear Waste Management ISO Transportation Package/Trailer Replacement (+\$0.4M).

Increased expenditure on Minor Fixed Assets is due mainly to delivery of Fukushima-related emergency response equipment.

6.0 PERIOD-OVER-PERIOD CHANGES – HISTORICAL YEARS

2015 Actual versus 2015 OEB Approved

The increase in 2015 actual capital expenditures compared to the 2015 OEB approved (+\$170.9M) is due to the following:

- F&IP projects and other projects reclassified from Darlington Refurbishment, notably project #25619 Darlington Operations Support Building Refurbishment (+\$30.2M), project #34000 Darlington Auxiliary Heating System (+\$28.9M), project #73706 Holt Road Interchange Upgrade (+\$15.7M), project #73566 Darlington Primary Heat Transport Pump Motor Replacement (+\$7.1M), and project #73397 Darlington Emergency Service Water Pipe and Component Replacement (+\$6.0M).
- Increased spending on replacement of life-expired and obsolete equipment at Darlington, notably project #31552 Darlington Condenser Circulating Water and Low Pressure Service Water Travelling Screens Replacement (+\$8.4M), project #31522 Darlington Tritium Removal Facility Deuterium Make-up System Electrolyzer Replacement (+\$7.2M), project #33973 Darlington Standby Generator Controls Replacement (+\$5.3M), project #82816 Darlington Vault Cooling Coil Replacement (+\$4.5M), and project #31412 Darlington Class II Uninterruptible Power Supply Replacement (+\$3.9M).
- Increased spending on projects to replace life-expired and obsolete equipment to ensure safe and reliable operation at Pickering, notably project #41023 Unit 1 & 4 Fuel Channel East Pressure Tube Shift Tooling (+\$13.1M), project #40976 Pickering B Fuel Handling Reliability Modifications (+\$10.2M), project #41044 Pickering A Standby Generator Protective Relay Upgrade (+\$2.4M), and, project #46634

Pickering A Fuel Handling Single Point of Vulnerability Equipment Reliability Improvement (+\$2.0M).

- Increased spending on Fukushima-related projects, notably project #49158/49299 Pickering Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (+\$9.7M), project #41027 Pickering Fukushima Phase 2 Beyond Design Basis Event Emergency Mitigation Equipment (+\$8.2M), project #31508 Darlington Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (+\$3.1M), and project #32202 Darlington Fukushima Phase 2 Beyond Design Basis Event Emergency Mitigation Equipment (+\$2.5M).

2015 Actual versus 2014 Actual

The increase in 2015 actual compared to 2014 actual (+\$22.1M) is due to the following:

- Increased spending on F&IP projects and other projects reclassified from Darlington Refurbishment, notably project #73706 Holt Road Interchange Upgrade (+\$12.0M), project #25619 Darlington Operations Support Building Refurbishment (+\$9.0M), project #73566 Darlington Primary Heat Transport Pump Motor Replacement (+\$5.3M), and project #73397 Darlington Emergency Service Water Pipe and Component Replacement (+\$5.6M). This was offset by reduced spending on project #34000 Darlington Auxiliary Heating System (-\$9.2M).
- Increased spending on replacement of life-expired and obsolete equipment at Darlington, notably project #31552 Darlington Condenser Circulating Water and Low Pressure Service Water Travelling Screens Replacement (+\$5.8M) and project #31522 Darlington Tritium Removal Facility Deuterium Make-up System Electrolyzer Replacement (+\$4.4M), offset by project #36001 Darlington Primary Heat Transport Pump Motor Capital Spares (-\$7.8M), project #31518 Darlington Restore Emergency Service Water and Firewater Margins (-\$2.8M) and project #33973 Darlington Standby Generator Controls Replacement (-\$2.5M).
- Increased spending on projects to ensure safe and reliable operation to 2020 at Pickering, notably project #41023 Unit 1 & 4 Fuel Channel East Pressure Tube Shift Tooling (+\$9.0M) and project #40976 Pickering B Fuel Handling Reliability Modifications (+\$3.9M), offset by reductions in project #40680 Pickering B Main

Generator Automatic Voltage Regulator and Protective Relay Upgrade (-\$4.3M) and project #49150 Pickering B Low Pressure Spindles Refurbishment Capital Spares (-\$4.3M).

- Increased spending on Fukushima-related projects, notably project #49158/49299 Pickering Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (+\$1.9M) and project #41027 Pickering Fukushima Phase 2 Beyond Design Basis Event Emergency Mitigation Equipment (+\$5.5M) offset by reduced spending on project #31508 Darlington Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (-\$7.3M), and project #32202 Darlington Fukushima Phase 2 Beyond Design Basis Event Emergency Mitigation Equipment (-\$0.4M).

2014 Actual versus 2014 OEB Approved

Actual spending was higher (+\$96.4M) than the OEB Approved amount. This was mainly due to higher project spending at Darlington and Pickering on regulatory and sustaining projects. The most significant changes at Darlington were project #34000 Darlington Auxiliary Heating System (+\$28.0M) which was reclassified as an Operations project in 2014 (see section 3.1 above), project #36001 Darlington Primary Heat Transport Pump Motor Capital Spares (+\$14.5M) due to delayed delivery of one motor included in the OEB Approved amounts and delivery of the first of two additional motors approved subsequent to EB-2013-0321, and project #31508, Darlington Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (+\$11.2M).

In addition to continuing projects, new Pickering capital projects were approved to address equipment and system reliability concerns and ensure regulatory compliance leading up to the end of commercial operations. Notable changes from the OEB Approved amounts are project #49158/49299 Pickering Fukushima Phase 1 Beyond Design Basis Event Emergency Mitigation Equipment (+\$7.8M), project #40976 Pickering B Fuel Handling Reliability Modifications (+\$6.3M), project #49150 Pickering Low Pressure Spindles Refurbishment Capital Spares (+\$4.3M) and project #41013 Pickering A Turbine Governor System Upgrade (+\$3.2M).

2014 Actual versus 2013 Actual

Spending in 2014 was higher (+\$91.5M) than in 2013, primarily due to expenditures at Darlington driven by project #34000 Darlington Auxiliary Heating System (+\$27.6M) and project #25619 Darlington Operations Support Building Refurbishment (+\$20.0M), which were reclassified as Operations projects in 2014 (see section 3.1 above). This was offset by substantial completion of project #31717 Darlington Improve Maintenance Facilities (-\$18.8M) in 2013.

Expenditures on the Fukushima projects ramped up in 2014 (+\$17.1M) as the scope evolved with the lessons learned at the Fukushima Daiichi plant.

2013 Actual versus 2013 Budget

Spending in 2013 was higher than budget (+\$31.0M) due primarily to sustaining and regulatory project spending at Pickering and Security projects in the Nuclear Support Divisions. Expenditures at Pickering were driven mainly by project #40976 Pickering B Fuel Handling Reliability Modifications (+\$9.4M), which was a new project in 2013 intended to improve fuel handling reliability and reduce the Forced Loss Rate, project #46605 Pickering Passive Auto-Catalytic Recombiners (+\$3.2M), which had a scope increase following the incident at the Fukushima Daiichi plant, and project #40985 Pickering Replacement of Obsolete Online Chemistry Analysers (+\$3.0M), which was a new project in 2013 to replace the obsolete online instrumentation used to maintain chemical parameters within their design ranges.

Expenditures on project #25609 Security Physical Barrier System were higher than planned (+\$9.0M) due to delays in completing work in 2012. Higher than planned spending on project #31717 Darlington Improve Maintenance Facilities (+\$7.5M) was due to work deferred from 2012. Expenditures on new project #31542 Darlington Transformer Multi-Gas Analyzer Installation were higher (+\$6.3M). These increases at Darlington were offset by delayed delivery of the first motor in project #36001 Darlington Primary Heat Transport Pump Motor

- 1 Capital Spares (-\$7.2M) and delayed delivery of the transformer spares in project #36002
- 2 Darlington Main Output Transformer Capital Spares (-\$3.8M).

Numbers may not add due to rounding.

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 Exhibit D2
 Tab 1
 Schedule 2
 Table 1

Table 1
Capital Expenditures Summary - Nuclear (\$M)

Line No.	Category	2013 Actual	2014 Actual	2015 Actual	2016 Budget	2017 Plan	2018 Plan	2019 Plan	2020 Plan	2021 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1	Operations Capital	201.2	292.7	314.8	353.0	279.0	258.0	282.4	278.5	199.3
2	Darlington Refurbishment Capital	430.3	694.3	705.8	1,230.9	1,094.6	1,121.4	979.2	858.3	1,194.8
3	Total Nuclear Capital	631.5	986.9	1,020.6	1,583.9	1,373.6	1,379.4	1,261.7	1,136.7	1,394.1

Numbers may not add due to rounding.

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Exhibit D2

Tab 1

Schedule 2

Table 2

Table 2
Capital Expenditures Summary - Nuclear Operations (\$M)

Line No.	Category	2013 Actual	2014 Actual	2015 Actual	2016 Budget	2017 Plan	2018 Plan	2019 Plan	2020 Plan	2021 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Portfolio Projects (Allocated)									
1	Darlington NGS	76.4	164.2	194.4	212.7	176.6	140.9	88.6	37.4	30.2
2	Pickering NGS	90.6	96.1	93.4	89.7	23.0	2.4	0.0	0.0	0.0
3	Nuclear Support Divisions	24.0	9.5	4.6	14.2	4.6	0.2	0.0	0.0	0.0
4	Subtotal Portfolio Projects (Allocated)	191.0	269.8	292.5	316.5	204.2	143.4	88.6	37.4	30.2
5	Portfolio Projects (Unallocated)	0.0	0.0	0.0	5.5	48.8	94.6	159.4	221.6	149.8
6	Subtotal Project Capital (Portfolio)	191.0	269.8	292.5	322.0	253.0	238.0	248.0	259.0	180.0
7	Darlington New Fuel	0.0	0.0	0.0	0.0	0.0	0.0	15.3	0.0	0.0
8	Minor Fixed Assets	10.2	22.9	22.3	31.0	26.0	20.0	19.1	19.5	19.3
9	Total Nuclear Operations Capital	201.2	292.7	314.8	353.0	279.0	258.0	282.4	278.5	199.3

Numbers may not add due to rounding.

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 Exhibit D2
 Tab 1
 Schedule 2
 Table 3

Table 3
 Capital Expenditures Summary - Nuclear Operations Portfolio Projects (Allocated) (\$M)
By Project Category

Line No.	Project Category	2013 Actual	2014 Actual	2015 Actual	2016 Budget	2017 Plan	2018 Plan	2019 Plan	2020 Plan	2021 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Portfolio Projects (Allocated)									
1	Regulatory	53.0	93.9	70.6	72.5	37.2	16.8	4.3	3.6	0.0
2	Sustaining	129.1	165.4	192.6	231.5	151.5	109.7	80.4	33.8	30.2
3	Value Enhancing / Strategic	8.9	9.5	29.2	12.5	15.4	16.9	3.9	0.0	0.0
4	Total	191.0	268.8	292.5	316.5	204.2	143.4	88.6	37.4	30.2

Numbers may not add due to rounding.

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Exhibit D2
Tab 1
Schedule 2
Table 4

Table 4
Comparison of Capital Expenditures - Nuclear Operations (\$M)

Line No.	Business Unit	2013 Budget	(c)-(a) Change	2013 Actual	(q)-(c) Change	2014 OEB Approved	(q)-(e) Change	2014 Actual	(k)-(q) Change	2015 OEB Approved	(k)-(i) Change	2015 Actual
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Portfolio Projects (Allocated)											
1	Darlington NGS	68.8	7.6	76.4	87.8	20.6	143.6	164.2	30.2	9.5	184.9	194.4
2	Pickering NGS	67.2	23.4	90.6	5.5	22.2	73.9	96.1	(2.7)	2.2	91.3	93.4
3	Nuclear Support Divisions	13.0	11.1	24.0	(14.5)	4.2	5.3	9.5	(4.9)	1.3	3.3	4.6
4	Subtotal Portfolio Projects (Allocated)	148.9	42.1	191.0	78.8	47.0	222.8	269.8	22.6	13.0	279.5	292.5
5	Portfolio Projects (Unallocated)	1.4	(1.4)	0.0	0.0	128.0	(128.0)	0.0	0.0	109.2	(109.2)	0.0
6	Subtotal Project Capital (Portfolio)	150.3	40.7	191.0	78.8	175.0	94.8	269.8	22.6	122.2	170.3	292.5
7	Minor Fixed Assets	19.9	(9.7)	10.2	12.6	21.3	1.6	22.9	(0.5)	21.7	0.6	22.3
8	Total Nuclear Operations Capital	170.2	31.0	201.2	91.5	196.3	96.4	292.7	22.1	143.9	170.9	314.8

Line No.	Business Unit	2015 Actual	(c)-(a) Change	2016 Budget	(e)-(c) Change	2017 Plan	(q)-(e) Change	2018 Plan	(i)-(q) Change	2019 Plan	(k)-(i) Change	2020 Plan
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	Portfolio Projects (Allocated)											
9	Darlington NGS	194.4	18.3	212.7	(36.1)	176.6	(35.7)	140.9	(52.2)	88.6	(51.2)	37.4
10	Pickering NGS	93.4	(3.7)	89.7	(66.7)	23.0	(20.6)	2.4	(2.4)	0.0	0.0	0.0
11	Nuclear Support Divisions	4.6	9.5	14.2	(9.6)	4.6	(4.4)	0.2	(0.2)	0.0	0.0	0.0
12	Subtotal Portfolio Projects (Allocated)	292.5	24.1	316.5	(112.4)	204.2	(60.8)	143.4	(54.8)	88.6	(51.2)	37.4
13	Portfolio Projects (Unallocated)	0.0	5.5	5.5	43.4	48.8	45.8	94.6	64.8	159.4	62.2	221.6
14	Subtotal Project Capital (Portfolio)	292.5	29.5	322.0	(69.0)	253.0	(15.0)	238.0	10.0	248.0	11.0	259.0
15	Darlington New Fuel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	15.3	(15.3)	0.0
16	Minor Fixed Assets	22.3	8.7	31.0	(5.0)	26.0	(6.0)	20.0	(0.9)	19.1	0.4	19.5
17	Total Nuclear Operations Capital	314.8	38.2	353.0	(74.0)	279.0	(21.0)	258.0	24.4	282.4	(4.0)	278.5

Line No.	Business Unit	2020 Plan	(c)-(a) Change	2021 Plan
		(a)	(b)	(c)
	Portfolio Projects (Allocated)			
18	Darlington NGS	37.4	(7.2)	30.2
19	Pickering NGS	0.0	0.0	0.0
20	Nuclear Support Divisions	0.0	0.0	0.0
21	Subtotal Portfolio Projects (Allocated)	37.4	(7.2)	30.2
22	Portfolio Projects (Unallocated)	221.6	(71.9)	149.8
23	Subtotal Project Capital (Portfolio)	259.0	(79.0)	180.0
24	Darlington New Fuel	0.0	0.0	0.0
25	Minor Fixed Assets	19.5	(0.1)	19.3
26	Total Nuclear Operations Capital	278.5	(79.1)	199.3