ONTARIO POWER GENERATION INC.

ANNUAL INFORMATION FORM

FOR THE YEAR ENDED DECEMBER 31, 2018

March 8, 2019

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PRESENTATION OF INFORMATION

References in this Annual Information Form (AIF) to the "Company", the "Corporation" or "OPG" are made to Ontario Power Generation Inc. Unless otherwise noted, the information contained in this AIF is as at or for the year ended December 31, 2018. Amounts are expressed in Canadian dollars unless otherwise indicated. Financial information is presented in accordance with United States generally accepted accounting principles (US GAAP). This AIF is dated March 8, 2019.

ADDITIONAL INFORMATION

Additional information relating to the Company may be found on SEDAR at www.sedar.com. Additional financial information relating to the Company is provided in the Company's annual Management's Discussion and Analysis (MD&A) and audited consolidated financial statements as at and for the year ended December 31, 2018, which is available on SEDAR at www.sedar.com and on the Company's website at www.opg.com. ***The above information is not, unless otherwise specifically stated, incorporated by reference into this AIF.***

FORWARD-LOOKING INFORMATION

This AIF contains forward-looking statements that reflect OPG's current views regarding certain future events and circumstances. Any statement contained in this document that is not current or historical is a forward-looking statement. OPG generally uses words such as "anticipate", "believe", "foresee", "forecast", "estimate", "expect", "schedule", "intend", "plan", "project", "seek", "target", "goal", "strategy", "may", "will", "should", "could" and other similar words and expressions to indicate forward-looking statements. The absence of any such word or expression does not indicate that a statement is not forward-looking.

All forward-looking statements involve inherent assumptions, risks and uncertainties. All forward-looking statements could be inaccurate to a material degree. In particular, forward-looking statements may contain assumptions such as those relating to OPG's generating station performance and availability, fuel costs, surplus baseload generation (SBG), cost of fixed asset removal and nuclear waste management, performance and earnings of investment funds, refurbishment of existing facilities, development and construction of new facilities, pension and other post-employment benefit (OPEB) obligations and funds, income taxes, proposed new legislation, the ongoing evolution of electricity industries in Ontario and the United States (US), the continued application and renewal of power purchase agreements for non-regulated facilities, foreign currency exchange rates, environmental and other regulatory requirements, operating licence applications to the Canadian Nuclear Safety Commission (CNSC) and the Federal Energy Regulatory Commission (FERC), health, safety and environmental developments, business continuity events, the weather, financing and liquidity, applications to the Ontario Energy Board (OEB) for regulated prices, the impact of regulatory decisions by the OEB, the *Ontario Fair Hydro Plan Act,* 2017 (the Fair Hydro Act or the Act), forecasts of earnings, cash flows, Return on Equity Excluding Accumulated Other Comprehensive Income (ROE Excluding AOCI), Total Generating Cost (TGC), Operations, Maintenance and Administration (OM&A) expenditures and project expenditures, retention of critical talent, and supplier and third party performance. Accordingly, undue reliance should not be placed on any forward-looking statement. The forward-looking statements included in this AIF are made only as of the date of this AIF. Except as required by applicable securities laws, OPG does not undertake to publicly update these forward-looking statements to reflect new information, future events or otherwise.

OPG faces various risks that could have a material adverse effect on its business, strategy, generating stations, reputation, financial condition, operating results, generation development and other projects. There may be further risks and uncertainties that are not presently known, or that are not currently believed to be material, that may in the future adversely affect the Company's performance or financial condition. OPG may be exposed to a significant event that it is not fully insured or indemnified against. For details on risks faced by OPG, refer to the section, *Risk Management*, in the Company's 2018 year-end MD&A.

CORPORATE STRUCTURE

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity. OPG was formed in April 1999 through the restructuring of Ontario Hydro's integrated electricity business. OPG was established under the *Business Corporations Act* (Ontario) (OBCA) and is wholly-owned by the Province of Ontario (Province or Shareholder). OPG and the Province are parties to a Memorandum of Agreement (MOA) that sets out OPG's role and responsibilities. Further details on the MOA are discussed in the section, *Interest of Management and Others in Material Transactions* under the heading, *Relationship with the Province and the OEFC*.

On November 27, 2018, OPG acquired 100 percent ownership interest of Eagle Creek Renewable Energy, LLC (Eagle Creek), an owner and operator of hydroelectric generating facilities in the US. Eagle Creek operates as a wholly-owned subsidiary of OPG. The acquisition of Eagle Creek is discussed in the section, *General Development of the Business* under the heading, *General Development – Acquisition of Eagle Creek Renewable Energy*.

OPG's registered head office is located at 700 University Avenue, Toronto, Ontario, M5G 1X6, Canada.

OVERVIEW OF OPG

OPG is the largest clean energy generator in Ontario, Canada. As at December 31, 2018, OPG owned and operated two nuclear generating stations, 66 hydroelectric generating stations, two thermal generating stations and one wind power turbine in Ontario. The majority of OPG's generation is from its rate-regulated nuclear and rate-regulated hydroelectric stations in Ontario. In addition, OPG and TransCanada Energy Ltd. co-own the 550 megawatt (MW) Portlands Energy Centre (PEC) gas-fired combined cycle generating station (GS), and OPG and ATCO Power Canada Ltd. co-own the 560 MW Brighton Beach gas-fired combined cycle GS (Brighton Beach), both located in Ontario. Upon the acquisition of Eagle Creek on November 27, 2018, OPG owns and operates 63 hydroelectric generating stations and has minority shareholdings in 13 hydroelectric generating stations and two solar facilities in 13 states across the US.

Including its share of the co-owned and minority-held facilities, as at December 31, 2018, OPG's total in-service generating capacity was 16,295 MW, of which 16,069 MW is located in Ontario and the remainder in the US. OPG's in-service generating capacity in Ontario represents approximately 45 percent of installed generation capacity in Ontario's electricity grid as reported by the Independent Electricity System Operator (IESO). OPG's in-service generating capacity as at December 31, 2018 excludes Unit 2 of the Darlington Nuclear GS (Darlington GS). The unit, which has a generating capacity of 878 MW, was taken offline in mid-October 2016 and is currently undergoing refurbishment. OPG operates in Ontario under an electricity generation licence issued by the OEB, which is valid until October 30, 2023. OPG expects the licence to be renewed in the future.

OPG also owns two other nuclear generating stations in Ontario, the Bruce A GS and the Bruce B GS, which are leased on a long-term basis to Bruce Power L.P. (Bruce Power) and are not included in the generation and other operating statistics set out in this AIF.

OPG's business operations as at December 31, 2018 are organized into five business segments as follows:

- Regulated – Nuclear Generation;
- Regulated – Nuclear Waste Management;
- Regulated – Hydroelectric;
- Contracted and Other Generation; and
- Fair Hydro Trust

Set out below is a brief description of each of the business segments. Further information about each of the segments is included in the section, *Description of the Business*.

Pursuant to the *Ontario Energy Board Act, 1998* and *Ontario Regulation 53/05,* OPG receives OEB-authorized regulated prices for electricity generated from the Pickering and Darlington nuclear generating stations and the 54 hydroelectric facilities prescribed for rate regulation (collectively, prescribed facilities or regulated facilities). The operating results of the stations are reported under the Regulated – Nuclear Generation, Regulated – Nuclear Waste Management and Regulated – Hydroelectric segments. The OEB is an independent, quasi-judicial tribunal that regulates market participants in Ontario's natural gas and electricity industries, and reports to the Legislature of the Province through the Ontario Ministry of Energy, Northern Development and Mines. OPG is Ontario's only electricity generator subject to rate regulation by the OEB.

Of OPG's 54 regulated hydroelectric facilities, 48 facilities were prescribed for rate regulation effective July 1, 2014 pursuant to a November 2013 amendment to *Ontario Regulation 53/05* under the *Ontario Energy Board Act, 1998*. The remaining six regulated hydroelectric facilities and the Pickering and Darlington nuclear generating stations have been subject to rate regulation by the OEB since 2008.

In the fourth quarter of 2018, OPG renamed its Contracted Generation Portfolio segment to the Contracted and Other Generation segment to reflect the incorporation of the operating results of the newly acquired Eagle Creek business, which generates revenue through a combination of long-term energy and capacity contracts and the supply of energy and capacity into wholesale spot electricity markets. Eagle Creek's energy and capacity supply contracts have expiry dates ranging from 2019 to 2039.

Electricity generated from OPG's non-regulated assets located in Ontario is reflected within the Contracted and Other Generation segment. Virtually all of these assets are subject to Energy Supply Agreements (ESAs) or other long-term contracts with the IESO. The IESO is a non-profit corporate entity governed by an independent Board of Directors appointed by the Province and is responsible for operating the electricity market and directing the operation of the bulk electrical system in Ontario.

ESAs are in effect for the capacity and production from OPG's two operating thermal generating stations – the oil/gas dual-fuelled Lennox GS and the biomass powered Atikokan GS. In July 2018, OPG reached an agreement with the IESO to terminate the ESA for the advanced biomass-fuelled generating unit at the Thunder Bay GS, effective June 30, 2018, as further discussed in the section, *General Development of the Business* under the heading, *Thermal Business Development – Termination of Thunder Bay Generating Station Energy Supply Agreement*. In addition, 50-year ESAs are in place for certain hydroelectric facilities located in Ontario, with expiry dates ranging from 2059 to 2067.

The Nanticoke solar facility will operate under a 20-year Large Renewable Procurement I (LRP I) contract with the IESO upon confirmation of the commencement of commercial operation from the IESO, expected to be received by the end of the first quarter of 2019. The project is discussed further in the section, *General Development of the Business* under the heading, *Renewable Generation Business Development – Nanticoke Solar Facility*.

In the fourth quarter of 2017, OPG modified its reportable business segments to include the Fair Hydro Trust segment, following the establishment of the Fair Hydro Trust (the Trust) in December 2017 as the financing entity to implement Ontario's Fair Hydro Plan (Fair Hydro Plan) under the Fair Hydro Act. Through its control over the key activities of the Trust and its obligation to absorb losses through ownership of the Trust's subordinated debt, the Company consolidates the financial results of the Trust in accordance with US GAAP. The Fair Hydro Trust segment reports the income related to OPG's role as the Financial Services Manager under the Act and holder of the Trust's subordinated debt, and includes the financial results of the Trust. The Fair Hydro Plan and the Fair Hydro Trust are discussed in the section, *General Development of the Business* under the heading, *General Development – Ontario's Fair Hydro Plan* and in the section, *Description of the Business* under the heading, *Fair Hydro Trust Segment*.

OPG's revenue and electricity generation by business segment for the years ended December 31, 2018, 2017 and 2016 and OPG's in-service generating capacity as at December 31, 2018, 2017 and 2016 are summarized below. [1]

		Regulated – Nuclear Generation	Regulated – Nuclear Waste Management	Regulated – Hydroelectric	Contracted and Other Generation [2]
2018	Revenue *(millions of dollars)* [3]	**3,474**	**131**	**1,425**	**591**
	Electricity Generation *(TWh)*	**40.9**	**N/A**	**29.8**	**3.3**
	In-service Generating Capacity *(MW)* [4]	**5,728**	**N/A**	**6,426**	**4,141**
2017	Revenue *(millions of dollars)* [3]	3,095	121	1,436	579
	Electricity Generation *(TWh)*	40.7	N/A	30.7	2.7
	In-service Generating Capacity *(MW)* [4]	5,728	N/A	6,426	4,056
2016	Revenue *(millions of dollars)* [3]	3,481	138	1,527	573
	Electricity Generation *(TWh)*	45.6	N/A	29.5	3.1
	In-service Generating Capacity *(MW)* [4]	5,728	N/A	6,421	4,028

1 The Fair Hydro Trust is a non-generating business segment and therefore not presented in the table above. Net income from the Fair Hydro Trust is recognized as Earnings from Fair Hydro Trust within the consolidated financial statements.

2 The in-service generating capacity includes OPG's share of 275 MW for PEC and 280 MW for Brighton Beach, and the electricity generation includes OPG's share of its 50 percent ownership in these stations. The in-service generating capacity as at December 31, 2018 includes Eagle Creek, including approximately 10 MW from minority-held facilities. The revenue and electricity generation includes Eagle Creek since the acquisition date of November 27, 2018.

3 Revenue is shown for each reportable business segment before inter-segment eliminations.

4 Regulated – Nuclear Generation segment excludes the generating capacity of 878 MW from Unit 2 of the Darlington GS, which has been undergoing refurbishment since mid-October 2016.

For the year ended December 31, 2018, OPG's electricity generation in Ontario accounted for approximately 50 percent of the total energy generated on Ontario's electricity grid, as reported by the IESO.

OPG is subject to a number of legislative and regulatory requirements in the jurisdictions in which it operates, including those of administrative tribunals, electricity system operators and other regulatory bodies, and to Canada's international obligations under certain international treaties. Collectively, these sources dictate many of the constraints within which OPG is permitted to operate its facilities and manage its business.

Strategic Imperatives

OPG's mission is to provide low cost power in a safe, clean, reliable and sustainable manner for the benefit of its customers and its Shareholder. OPG also seeks to pursue, on a commercial basis, generation development projects and other business growth opportunities to the benefit of the Shareholder. The four strategic imperatives of OPG are briefly described below.

Operational Excellence

Operational excellence at OPG is accomplished by the safe and environmentally responsible generation of reliable and cost-effective electricity from the Company's generating assets through a highly trained and engaged workforce. Workplace safety and public safety are overriding priorities in all activities performed at OPG.

Project Excellence

OPG is pursuing a number of generation development and other projects in line with Ontario's electricity planning initiatives and expected to provide incremental value in the future. OPG's major generation development projects currently include the refurbishment of the Darlington GS and the redevelopment of the Ranney Falls hydroelectric GS. OPG aims to be an industry leader in project management capability and performance.

Financial Strength

As a commercial enterprise, OPG's financial priority is to ensure a consistent level of strong financial performance that delivers an appropriate level of return on the Shareholder's investment and supports expansion of the business. Inherent in this priority are the following objectives:

- Increasing revenue, reducing costs and achieving appropriate return;
- Ensuring availability of cost effective funding for operational needs, generation development projects and other business opportunities, and long-term obligations;
- Pursuing opportunities to expand the existing core business and capitalize on new growth paths including emerging renewable energy opportunities; and
- Managing risks. Refer to the section, *Risk Management*, in the Company's 2018 year-end MD&A for further details.

Social Licence

OPG holds itself accountable to the public and its employees, and continues to focus on maintaining public trust. OPG is committed to maintaining high standards of public safety and corporate citizenship, including environmental stewardship, transparency, community engagement and Indigenous relations.

OPG has in place a Code of Business Conduct that establishes the standards, expectations and accountabilities for ethical behaviour. Employees and parties with whom the Company does business are expected to abide by OPG's Code of Business Conduct. A copy of the Code of Business Conduct can be found on SEDAR at www.sedar.com and also is available on the Company's website at www.opg.com.

Further details on OPG's strategic imperatives can be found in the corresponding sections of the Company's 2018 year-end MD&A in the section, *Core Business, Strategy and Outlook.*

GENERAL DEVELOPMENT OF THE BUSINESS

The following is a summary of key developments in OPG's business since January 2016.

General Development

OPG's Regulated Prices and Other OEB-Related Developments

Energy revenue generated from the Company's regulated nuclear and regulated hydroelectric facilities is based on regulated prices determined by the OEB through public proceedings. To date, the regulated prices have included a volumetric base regulated price and volumetric rate riders for the recovery or repayment of approved balances in deferral and variance accounts (regulatory accounts). As the regulated operations account for the majority of the Company's electricity generation, the outcomes of OPG's applications for regulated prices to the OEB determine a large portion of the Company's revenues and can have a significant impact on the Company's financial performance. *Ontario Regulation 53/05* under the *Ontario Energy Board Act, 1998* sets out certain requirements the OEB must follow in setting regulated prices for OPG's prescribed facilities.

The following table presents the OEB-authorized regulated prices for electricity generated from the regulated facilities for the period from January 1, 2016 to December 31, 2021 in effect as of the date of this AIF:

($/MWh)	2016	2017 January 1 to May 31 [2]	2017 June 1 to December 31	2018	2019	2020	2021
Regulated – Nuclear Generation							
Base regulated price	59.29	59.29	77.96	**78.64**	77.00	85.00	89.70
Interim period shortfall rider [3]	-	-	-	**2.88**	7.71	5.64	-
Deferral and variance account rate riders [4]	10.84 [1]	-	-	**1.05**	4.99	4.32	6.13
	70.13	59.29	77.96	**82.57**	89.70	94.96	95.83
Regulated – Hydroelectric							
Base regulated price [5]	40.72	40.72	41.67	**42.05**	42.51	n/a	n/a
Interim period shortfall rider [3]	-	-	-	**0.13**	0.35	0.24	-
Deferral and variance account rate riders [4]	3.19 [1]	-	-	**0.52**	2.60	2.26	2.05
	43.91	40.72	41.67	**42.70**	45.46	n/a	n/a

[1] In addition to the rate riders shown in the table, the OEB authorized separate interim period rate riders for the period from October 1, 2015 to December 31, 2016 to allow for the recovery of these deferral and variance account riders, which became effective July 1, 2015, related to the period from July 1, 2015 to September 30, 2015. The nuclear interim period rate rider was $2.17/MWh and the regulated hydroelectric interim period rate rider was $0.64/MWh. These interim period rate riders have not been included in the above table.

[2] The base regulated prices in effect prior to June 1, 2017 were established by the OEB's November 2014 decision and December 2014 payment amounts order, effective November 1, 2014. The base regulated prices in effect as of June 1, 2017 were established by the OEB's December 2017 decision and March 2018 payment amounts order.

[3] In its payment amounts order issued on March 29, 2018, the OEB authorized separate rate riders to allow for the recovery of the revenue shortfall between the new base regulated prices approved with an effective date of June 1, 2017 and the previously approved base regulated prices that OPG continued to receive during the interim period between June 1, 2017 and February 28, 2018, over the March 1, 2018 to December 31, 2020 period.

[4] Beginning in 2018, deferral and variance account riders reflect the OEB's March 2018 payment amounts order that authorized recovery of the balances recorded in deferral and variance accounts as at December 31, 2015, and, beginning in 2019, also include the OEB's February 21, 2019 decision and order that authorized recovery of the balances recorded in deferral and variance accounts as at December 31, 2017.

[5] Base regulated prices for regulated hydroelectric facilities for 2020 and 2021 will be determined annually through a formulaic adjustment using the OEB-approved incentive regulation formula and OEB-published inflation indices.

Base Regulated Prices Effective June 1, 2017

The OEB's decision on OPG's May 2016 five-year application for new regulated prices for nuclear and regulated hydroelectric generation was issued on December 28, 2017 following a public hearing process. The OEB set an effective date for the new regulated prices of June 1, 2017. The decision reflected the terms of an OEB-approved partial settlement agreement reached by OPG and intervenors on a limited set of issues in the first quarter of 2017 (Settlement Agreement). The decision included the OEB's findings with respect to ratemaking methodologies for the prescribed facilities, the basis for inputs into the hydroelectric incentive ratemaking formula and the elements of the nuclear revenue requirement. Pursuant to the decision, for the first time since OPG's prescribed facilities became subject to rate regulation, the Company's regulated prices were determined using an incentive ratemaking methodology for the hydroelectric facilities and a custom incentive regulation framework for the nuclear facilities. On March 29, 2018, the OEB issued the final payment amounts order establishing the new regulated prices, with an implementation date of March 1, 2018, reflecting the December 2017 decision's findings.

Based on the OEB's December 2017 decision, new regulated prices for the hydroelectric facilities for each of the years 2017 to 2021 are determined by annually escalating the base regulated prices in effect prior to June 1, 2017, with some adjustments, using a formula equal to an industry-specific weighted inflation factor based on indices published annually by the OEB for use in incentive regulation formulas, less a stretch factor adjustment. In the December 2017 decision, the OEB accepted OPG's proposal to set the annual stretch factor adjustment at 0.3 percent. The March 2018 payment amounts approved the base regulated prices for the regulated hydroelectric facilities for the period June 1, 2017 to December 31, 2018. In December 2018, the OEB approved the 2019 base regulated price for the regulated hydroelectric facilities based on the approved formula. For 2020 to 2021, the base regulated price for the regulated hydroelectric facilities are to be determined annually before the beginning of each year using the approved formula and inflation indices published by the OEB.

For the nuclear operations, a revenue requirement was determined for each of the years 2017 to 2021 based on the OEB-allowed level of OPG's forecast operating costs and a return of and on invested capital, referred to as rate base, as reduced by a stretch factor amount. The return on rate base was determined using the OEB's generic prescribed return on equity rate of approximately 8.8 percent and an OPG-specific deemed capital structure of 45 percent equity and 55 percent debt approved by the OEB. The average OEB-approved cost of deemed debt for the 2017-2021 period is approximately 4.6 percent. Rate base for OPG represents the average net level of investment in regulated fixed and intangible assets in service and an allowance for working capital. The approved nuclear revenue requirements over the 2017-2021 period total $15.9 billion over the full five years.

The OEB's findings with respect to the nuclear revenue requirement included approval for inclusion in rate base of in-service capital amounts related to the Darlington Refurbishment project of $5.5 billion by 2021, which comprised $4.8 billion forecast in the first quarter of 2020 upon return to service of Unit 2, $0.4 billion forecast for pre-requisite projects excluding the construction of the Heavy Water Storage and Drum Handling Facility (HWSF) over the 2016-2021 period, and $0.3 billion for pre-requisite projects placed in service prior to 2016. The OEB is expected to review the HWSF project as part of a future application. In the decision, the OEB concluded that it is appropriate to evaluate OPG's performance on the Darlington Refurbishment project at an overall level rather than by individual cost component, with recovery of any increases over the approved in-service amounts subject to a future prudence review. The approved in-service amount upon return to service of Unit 2 includes expenditures incurred during the definition and planning phase of the project. The revenue requirement impact of differences between the approved forecast in-service additions and the actual in-service additions related to the Darlington Refurbishment project is recorded in the Capacity Refurbishment Variance Account authorized by the OEB pursuant to *Ontario Regulation 53/05*.

In its decision, the OEB also approved recovery of OPG's requested forecast costs of approximately $292 million over the 2017-2021 period for activities to enable the commercial operation of the Pickering Nuclear GS (Pickering GS) beyond 2020 and agreed to the inclusion of operating cost and generation impacts associated with planned continued operation of the station in 2021 in setting the nuclear regulated prices. The differences between approved forecast enabling costs for continued operation of the Pickering GS and such actual amounts will be recorded in the Capacity Refurbishment Variance Account for future review and disposition by the OEB. The extension of commercial operation of the Pickering GS is discussed under the heading, *Nuclear Business Development – Extension of Pickering Commercial Operation to 2024*.

Excluding amounts that otherwise would have been recorded in OEB-authorized regulatory accounts for repayment to, or recovery from, customers in the future, the OEB's December 2017 decision reduced OPG's proposed five-year nuclear revenue requirement by approximately $0.6 billion. The main adjustments made by the OEB included a reduction of $100 million per year to requested OM&A costs, a reduction of 10 percent per year from forecast non-Darlington refurbishment in-service capital additions entering rate base over the 2017-2021 period, an increase and expansion of the scope of the stretch factor for nuclear costs that further reduced the revenue requirement and a rejection of OPG's request to increase the equity component of the existing deemed capital structure of 45 percent equity and 55 percent debt. The OEB also increased the annual nuclear stretch factor to 0.6 percent and expanded its scope to include most of OPG's OM&A expenses incurred directly for, or allocated to, the nuclear facilities, as well as non-Darlington refurbishment in-service capital additions. The stretch factor is applied starting in 2018 and compounds in each year to 2021.

In accordance with *Ontario Regulation 53/05*, the nuclear revenue requirement continues to be adjusted by the amount of OPG's revenues, net of costs, from leasing the Bruce nuclear generating stations to Bruce Power. As directed by the OEB, OPG's revenues and costs related to the Bruce nuclear generating stations continue to be determined in accordance with US GAAP for the purposes of establishing the nuclear revenue requirement and remain subject to the Bruce Lease Net Revenues Variance Account established by the OEB in accordance with *Ontario Regulation 53/05*. This includes costs related to the portion of OPG's liabilities for nuclear waste management and nuclear facilities decommissioning (Nuclear Liabilities) associated with the Bruce nuclear generating stations. The OEB's December 2017 decision maintained the previously approved cost recovery methodology for the Nuclear Liabilities for the prescribed facilities and for the Bruce facilities while directing OPG to file a future study examining such methodologies jurisdictionally and for OPG's assets specifically. The decision incorporated the impacts of the updated estimate of OPG's obligations for nuclear waste management and nuclear facilities decommissioning as at December 31, 2016, including through a new Ontario Nuclear Funds Agreement (ONFA) reference plan effective January 1, 2017 approved by the Province (2017 ONFA Reference Plan) and the change in the Nuclear Liabilities recorded in OPG's consolidated financial statements on December 31, 2016. OPG's obligations for nuclear waste management and nuclear facilities decommissioning are discussed in the section, *Description of the Business* under the heading, *Regulated – Nuclear Waste Management Segment*. The 2017 ONFA Reference Plan is discussed under the heading, *Nuclear Business Development – Ontario Nuclear Funds Agreement Reference Plan Update.* The lease of the Bruce nuclear generating stations is discussed further in the section, *Description of the Business* under the heading, *Generation Operations – Nuclear*.

As proposed by OPG, the OEB set recovery of pension and OPEB costs in the nuclear revenue requirement on the basis of OPG's forecast cash payments for pension and OPEB plans, with differences between pension and OPEB accrual costs and cash payments continuing to be recorded in the Pension & OPEB Cash Versus Accrual Differential Deferral Account. The regulatory treatment of pension and OPEB costs is discussed further under the heading, *Pension and OPEB Cost Recovery Methodology*.

In November 2015, the Province amended *Ontario Regulation 53/05* to establish a deferral account to record, for future recovery, a portion of the annual OEB-approved revenue requirements for OPG's regulated nuclear facilities during the period from January 1, 2017 to the end of the Darlington Refurbishment project. The amended regulation requires the OEB to determine the revenue requirements for OPG's nuclear facilities on a five-year basis for the ten-year period beginning on January 1, 2017. The portion of the approved revenue requirement deferred in the account each year also is to be determined by the OEB on a five-year basis during this ten-year period. The OEB's December 2017 decision authorized establishment of the Rate Smoothing Deferral Account as the deferral account required by the regulation.

As further amended in March 2017, *Ontario Regulation 53/05* requires rate smoothing through deferral of a portion of approved nuclear revenue requirements in the Rate Smoothing Deferral Account to be applied in a manner that makes changes in OPG's production-weighted average nuclear and hydroelectric regulated price more stable year over year. Per the regulation, the Rate Smoothing Deferral Account records interest at a long-term debt rate reflecting OPG's cost of long-term borrowing approved by the OEB, compounded annually. The regulation requires the OEB to authorize recovery of the balance in the Rate Smoothing Deferral Account on a straight line basis over a period not to exceed ten years following the end of the Darlington Refurbishment project. OPG recognizes positive amounts deferred under rate smoothing as an increase in net regulatory assets and an increase to revenue in the period to which the underlying approved revenue requirement relates, while negative amounts are recorded as a decrease in net regulatory assets and a decrease to revenue.

In the March 2018 payment amounts order, the OEB determined that no amounts are to be recorded in the Rate Smoothing Deferral Account for 2017, 2018 or 2021, with approximately $500 million to be deferred over the 2019-2020 period for future collection. The difference between the non-deferred portion of the annual nuclear revenue requirement, calculated by multiplying the nuclear regulated price determined under rate smoothing and the OEB-approved forecast of OPG's nuclear electricity production for the year, and the total approved nuclear revenue requirement for that year determines the portion of the revenue requirement deferred for future collection. The OEB's decision approved the nuclear production forecast as submitted by OPG.

Pending the approval and implementation of the final payment amounts order, OPG continued to receive previously approved regulated prices, during the interim period from June 1, 2017 to February 28, 2018. The March 2018 payment amounts order authorized interim period shortfall riders to collect the revenue shortfall for this period based on the newly approved regulated prices, over the March 1, 2018 to December 31, 2020 period.

In the fourth quarter of 2017, OPG recorded management's best estimate of the impact of the OEB's December 2017 decision in the Company's consolidated financial statements, related to the June 1, 2017 to December 31, 2017 period. Adjustments to that estimate recorded in the first quarter of 2018 following the issuance of the final payment amounts order did not have a material impact on the results of operations for 2018.

On January 17, 2018, OPG filed a motion asking the OEB to review and vary the December 2017 decision in relation to the approval of an effective date of June 1, 2017 for the new regulated prices rather than the January 1, 2017 effective date requested in OPG's application. On August 30, 2018, the OEB released its decision that denied OPG's motion. As OPG had recognized the impact of the OEB's December 2017 and March 2018 payment amounts order on the basis of the June 1, 2017 effective date, the motion decision did not impact OPG's financial results for the year ended December 31, 2018.

Base Regulated Prices Effective Prior to June 1, 2017

The base regulated prices in effect during January 1, 2016 through May 31, 2017 were established by the OEB's November 2014 decision and December 2014 order, effective November 1, 2014, using a forecast cost-of-service methodology based on the OEB-approved revenue requirements for the 2014 to 2015 period, taking into account the OEB-approved forecasts of production and operating costs for the regulated facilities and a return of and on invested capital. The regulated prices for the nuclear facilities and the hydroelectric facilities prescribed for rate regulation prior to 2014 were determined by the OEB based on approved 24-month revenue requirements for the 2014 to 2015 period totalling approximately $7.3 billion, a reduction of approximately $0.8 billion from OPG's request. The regulated price for the 48 hydroelectric facilities prescribed for rate regulation beginning in 2014 was established based on an approved 18-month revenue requirement for the period from July 1, 2014 to December 31, 2015 of approximately $750 million, a reduction of approximately $100 million from OPG's request.

The most significant adjustments made by the OEB to OPG's request in that proceeding included: limiting allowed pension and OPEB costs to cash expenditures over the higher accrual costs submitted by OPG; reducing requested OM&A costs by $100 million per year; increasing forecast nuclear production by 0.5 terawatt hour (TWh) annually; limiting the Niagara Tunnel project rate base addition which resulted in a write-off of $77 million of previously incurred capital expenditures in 2014; and reducing allowed income tax expense based on the amount of the regulatory tax loss calculated for 2013. In December 2014, OPG filed a motion with the OEB asking it to review and vary the parts of its November 2014 decision related to the disallowance of the Niagara Tunnel project expenditures and the application of the 2013 regulatory tax loss against the 2014/2015 revenue requirement. In its January 2016 decision on the motion, the OEB reversed a portion of the Niagara Tunnel project disallowance and upheld the original tax loss decision. OPG recorded the impact of the motion decision in its 2016 consolidated financial statements.

Deferral and Variance Accounts and Rate Riders

Deferral and variance accounts are typically established by the OEB to capture, for subsequent review and approval, differences between actual costs and revenues and the corresponding forecast amounts approved by the OEB in setting regulated prices, or to record the impact of items not reflected in the approved regulated prices. Such accounts generally help to mitigate risks and uncertainties to the regulated entity and its customers.

The OEB has authorized several deferral and variance accounts for OPG, including those required by *Ontario Regulation 53/05*. Among others, the authorized accounts include those related to the gross margin impact of variability in regulated hydroelectric electricity production due to differences between the forecast and actual water conditions and due to the effect of SBG conditions, changes in the Nuclear Liabilities, changes in depreciation and amortization expenses arising from changes in accounting end-of-life assumptions for the nuclear generating stations, changes in revenues and costs related to the lease and related agreements with Bruce Power for the Bruce nuclear generating stations (Bruce Lease Net Revenues Variance Account) and variances in the revenue requirement impact of capital and non-capital costs incurred to increase the output of, refurbish or add operating capacity to the regulated facilities, including the Darlington Refurbishment project (Capacity Refurbishment Variance Account). A number of these accounts are subject to an OEB prudence review. There is currently no regulatory account related to the impact of generation performance of OPG's nuclear stations on revenue from the base regulated prices.

Approved balances in the deferral and variance accounts authorized by OPG are recovered or refunded through volumetric rate riders. The additional revenue from these riders is largely offset by a corresponding increase in amortization expense related to the deferral and variance account balances, which are typically recognized as assets (amounts recoverable from customers) or liabilities (amounts payable to customers) on the Company's balance sheet. Differences in amounts recovered or repaid through rate riders for deferral and variance accounts due to differences between actual and forecast production volumes are recorded in separate variance accounts for future disposition.

The OEB's December 2017 decision accepted all deferral and variance account balances proposed for recovery that were not already accepted as part of the Settlement Agreement, resulting in the approval to recover $305 million recorded in these accounts as at December 31, 2015, without adjustments. The Settlement Agreement also provided for the continuation of all applicable existing deferral and variance accounts. In addition to the Rate Smoothing Deferral Account, the OEB established, as of the effective date of the new regulated prices, new deferral and variance accounts to record costs related to implementing the CNSC's new fitness for duty requirements and to record differences between forecast and actual amount of Scientific Research & Experimental Development investment tax credits attributable to the nuclear facilities. CNSC's new fitness for duty requirements are discussed in the section, *Description of the Business* under the heading, *Generation Operations – Nuclear.*

On August 9, 2018, consistent with the OEB's December 2017 decision, OPG filed an application with the OEB requesting disposition of the Pension & OPEB Cash to Accrual Differential Deferral Account balance as at December 31, 2017, as well as balances accumulated between January 1, 2016 and December 31, 2017 in other regulatory accounts. OPG requested the disposition of these balances through incremental rate riders commencing January 1, 2019. On February 21, 2019, the OEB issued a decision and order that approved the full settlement agreement reached by OPG and intervenors on OPG's requested disposition of regulatory accounts, which resulted in the approval to recover a total of $1.3 billion recorded in these accounts and associated income tax impacts, without adjustments. The OEB's decision and order authorized OPG to collect $535 million of the approved balances through incremental nuclear and regulated hydroelectric rate riders for the period from January 1, 2019 to December 31, 2021. The remaining approved balances will be collected after 2021. The total approved balances of $1.3 billion included $433 million in balances previously approved but not yet authorized for collection by the OEB's previous decisions and orders.

Pension and OPEB Cost Recovery Methodology

Using the methodology previously applied by the OEB in setting OPG's regulated prices, the revenue requirements submitted in OPG's 2014-2015 application for new regulated prices included a forecast of 2014 and 2015 pension and OPEB costs determined on an accrual basis in accordance with US GAAP. In its November 2014 decision and December 2014 order on the application, the OEB approved revenue requirements based on OPG's estimated minimum required contributions to its registered pension plan and a forecast of OPG's expenditures on the OPEB and supplementary pension plans for the regulated business. In directing this reduction in the revenue requirement, the OEB agreed with OPG and certain other parties that a generic proceeding on the regulatory treatment and recovery of pension and OPEB costs would be beneficial. The OEB also indicated that a change in the recovery methodology for OPG's pension and OPEB amounts from the accrual basis, if required, would be addressed in a future OPG rate proceeding, informed by the outcome of the generic proceeding.

Pending the generic proceeding, the OEB established the Pension & OPEB Cash Versus Accrual Differential Deferral Account. Effective November 1, 2014, this deferral account records the difference between OPG's actual pension and OPEB costs for the regulated business determined on an accrual basis and the corresponding actual cash expenditures for these plans. The OEB's November 2014 decision indicated that the future recovery, if any, of amounts recorded in the deferral account would be subject to the outcome of a future generic OEB proceeding on the regulatory treatment and recovery of pension and OPEB costs.

In May 2015, the OEB began a consultation process to develop standard principles to guide its future review of pension and OPEB costs for rate regulated utilities in the electricity and natural gas sectors, including establishing appropriate regulatory mechanisms for cost recovery. In September 2017, the OEB issued its final report on this consultation that established the accrual basis of accounting as the method of determining pension and OPEB amounts for rate-setting purposes, unless the OEB finds that this method does not result in just and reasonable rates in the circumstances of a particular utility. The report also provided for the establishment of a generic variance account to record asymmetric carrying charges in favour of ratepayers on the differences between the accrual costs recovered and the cash payments made by a utility in respect of pension and OPEB plans. Carrying charges on this differential are to be assessed prospectively, at a prescribed interest rate set quarterly by the OEB based on the quarterly return of a mid-term corporate bond index yield.

The OEB's September 2017 report and the December 2017 decision and March 2018 payment amounts order on OPG's application for new regulated prices require OPG to continue to record differences between pension and OPEB accrual costs and cash payments in the Pension & OPEB Cash Versus Accrual Differential Deferral Account.

The OEB's February 2019 decision and order on OPG's application to disposition deferral and variance accounts resulted in approval to recover the balance of $614 million recorded in the Pension & OPEB Cash Versus Accrual Differential Deferral Account as of December 31, 2017, without adjustments. In making that decision and order, the OEB approved that the accrual method is the appropriate regulatory accounting and cost recovery basis for the December 31, 2017 pension and OPEB balances in the Pension & OPEB Cash Versus Accrual Differential Deferral Account. Amounts recovered from the Pension & OPEB Cash Versus Accrual Differential Deferral Account will be subject to carrying charges in favour of ratepayers at the OEB's prescribed interest rate.

The Company recognizes the amount set aside in the Pension & OPEB Cash Versus Accrual Differential Deferral Account as a regulatory asset.

<u>Acquisition of Eagle Creek Renewable Energy</u>

On November 27, 2018, the Company completed the acquisition of Eagle Creek, a hydropower platform with interests in 76 hydroelectric generating stations and two solar facilities throughout the US, for US$298 million, subject to working capital and other customary adjustments. The acquisition represents the expansion of OPG's renewable generation portfolio to new geographies, with additional clean energy generation aligning to OPG's strategic imperatives.

As at December 31, 2018, Eagle Creek's portfolio had an in-service generating capacity of approximately 226 MW, including its proportionate share of minority shareholdings in certain facilities. The majority of the facilities within Eagle Creek's fleet operate in the New England, Midwest, and New York power market areas. Eagle Creek operates as a wholly-owned subsidiary of OPG.

New Business Ventures

OPG has a strategy to help position the Company as a leader in innovation of the electricity system. The strategy aims to leverage the Company's clean, reliable and cost-effective electricity to provide energy solutions to customers and capitalize on future commercial growth opportunities.

Energy Storage

In November 2018, OPG and Stem Inc. (Stem) launched a new partnership on advanced energy storage systems that will assist Ontario industrial manufacturers in managing electricity costs. In bringing together OPG's expertise as the largest energy provider in Ontario and Stem's advanced energy storage systems and controls platform, the partnership will seek to provide Ontario businesses with innovative, turnkey energy solutions to enhance their competitiveness.

Transport Electrification

OPG is pursuing initiatives to increase the use of electric vehicles within its operations and is assessing vehicle grid integration and hydrogen applications for the transportation sector. OPG is working with commercial fleets to provide fleet electrification solutions, helping them optimize electricity consumption and minimize costs, and is also developing strategies for efficient and cost-effective integration of electric vehicles into the electricity grid.

In December 2018, OPG became the first Canadian company to join the EV100 initiative by affirming its commitment to transition its fleet of over 400 vehicles to electric by 2030, where technically and economically feasible. OPG joins a growing number of leading global businesses who have all committed to large-scale electrification of their fleets by 2030.

Collaboration for Production of Medical Isotopes

In June 2018, Canadian Nuclear Partners (CNP), a wholly-owned subsidiary of OPG, and BWX Technologies, Inc. (BWXT) announced a collaboration that will make the Darlington GS the first commercial nuclear power station worldwide to produce large quantities of molybdenum-99 (Mo-99). Mo-99 is a parent isotope of technetium-99 (Tc-99m), which is used for skeletal, brain and organ imaging in order to detect and diagnose harmful diseases, including heart disease and cancer. The Canada Deuterium Uranium (CANDU) reactors at the Darlington GS allow for the insertion and removal of medical isotope targets while continuing to produce electricity, allowing for a continuous domestic supply of this critical medical isotope that is used in more than 30 million life-saving diagnostic and medical treatments worldwide each year. CNP will supply BWXT with Mo-99, which will be processed into Tc-99m generators for medical use. The plan to produce Mo-99 at the Darlington GS is subject to CNSC review and approval which is in progress.

Collaboration for Development of Nuclear Small Modular Reactors

OPG is pursuing new nuclear development as part of its strategy to expand the business and support the evolution of the energy industry. In November 2018, Natural Resources Canada published "A Call to Action: A Canadian Roadmap for Small Modular Reactors", a report prepared by a group of Canadian provincial governments, territorial governments and power utilities including OPG that was convened by Natural Resources Canada to gather feedback on the direction for possible development and deployment of nuclear small modular reactors (SMR) in Canada. The report found that Canada is well-positioned to lead the world in SMR development given its long history in nuclear power.

Ontario's Long-Term Energy Plan

On October 26, 2017, the previous Government of Ontario issued Ontario's 2017 Long-Term Energy Plan (LTEP) that outlined plans for the future development of Ontario's electricity system and replaced the previous LTEP issued in 2013.

As it relates to the supply of electricity, the 2017 LTEP recognized the refurbishment of Ontario's nuclear generating stations as the most cost-effective option for producing emission-free baseload generation to meet Ontario's needs and reaffirmed support for the refurbishment of the four units at the Darlington GS and the six units at the Bruce generating stations, subject to the principles established in the 2013 LTEP. The 2017 LTEP also recognized the value to customers of continuing to operate the Pickering GS until 2024, as planned. With respect to hydroelectric electricity generation, the 2017 LTEP highlighted the opportunity to continue to invest in optimizing existing hydroelectric facilities, noting that pumped hydroelectric storage could play an important role in the reliability of the electricity system.

Additionally, the 2017 LTEP discussed the potential impact of a number of innovative technologies on the future of the electricity system. Among others, these included the increased electrification of the transportation sector, the emergence of energy storage and the opportunity for Ontario to foster nuclear innovation technologies. The 2017 LTEP also recognized the importance of Indigenous peoples' continuing role in shaping Ontario's energy planning, projects and policies. Over the past several years, OPG has partnered with Indigenous communities on a number of generation-related developments and other joint projects and will continue to seek additional opportunities to dialogue with and seek involvement of Indigenous peoples in the electricity industry's future.

Ontario's Fair Hydro Plan

In 2017, the previous Government of Ontario introduced the Fair Hydro Plan aimed at reducing electricity bills for specified consumers in the province by deferring and refinancing a portion of the Global Adjustment costs over a longer period of time. The Global Adjustment includes the difference between Ontario's electricity market clearing price used to dispatch generation and the prices paid to contracted and regulated generators in the province, and the cost of conservation and demand management programs. On June 1, 2017, the Fair Hydro Act received Royal Assent and the associated general regulation came into force in June 2017. The Act established a framework for the Fair Hydro Plan, while the general regulation provided details on the structural, operational and financial elements required to implement the Fair Hydro Plan.

Pursuant to the Act, the IESO deferred a portion of the Global Adjustment costs in 2017 and 2018. The Act allows the IESO to transfer a portion of the deferred costs to a financing entity that would fund the deferral in exchange for an irrevocable right to recover the balance and associated financing and other costs from specified consumers in the future (Investment Interest). The legislation appointed OPG as the Financial Services Manager under the Act and conveyed upon the Financial Services Manager statutory obligations, including the creation of one or more financing entities that may acquire an Investment Interest from the IESO. The Fair Hydro Trust was established as the financing entity contemplated by the Act in December 2017. The majority unitholder and beneficiary of the Trust is a wholly-owned subsidiary of OPG. The Trust is structured to be bankruptcy remote and ring fenced from OPG in order to protect the Company's assets and operations.

In order for the Trust to finance the acquisition of Investment Interest from the IESO, it incurs senior debt from capital markets and subordinated debt from OPG. The Trust's investment attracts financing amounts and other related fees, which, under the general regulation, are payable by the IESO as carrying costs until July 2021 and by specified consumers to be invoiced by local distribution companies through the Clean Energy Adjustment, if any, commencing in May 2021. These funds are to be remitted to the Trust through the IESO. The carrying costs include all financing and third-party costs other than repayment of debt principal.

In December 2017, the Trust purchased its first tranche of Investment Interest from the IESO for approximately $1.18 billion. During 2018, the Trust's additional purchases of Investment Interest from the IESO totalled $609 million. The transactions were settled in cash using proceeds from the Trust's issuance of senior debt to third parties and subordinated debt to OPG. Through OPG's control over the key activities of the Trust and its obligation to absorb losses through ownership of the Trust's subordinated debt, the Company consolidates the financial results of the Trust in accordance with US GAAP. The Investment Interest purchases have been classified as a financing receivable on OPG's consolidated balance sheet.

The Province has provided a limited guarantee to specified creditors of the Trust. The limited guarantee would be triggered in the event that (1) the Trust's ability to receive amounts in respect of its Investment Interest to pay for certain funding obligations is adversely affected due to either of the following events: a) the Province changes the Fair Hydro Act or any other legislation or regulation; or b) the Province undertakes a significant change in Ontario's electricity market; or (2) a court declares that the Fair Hydro Act is invalid or unconstitutional. As of December 31, 2018, the Trust's senior debt outstanding was $912 million.

In September 2018, the Province announced its intention to make future proposed legislative changes to the Fair Hydro Act to cancel the Global Adjustment refinancing component of the Fair Hydro Plan. The Province also stated that it intends to fund all of the Trust's obligations issued and outstanding as of the date the limited guarantee is invoked. No further Investment Interest purchases or debt issuances are expected to be undertaken by the Trust.

OPG will continue to monitor any developments to the Fair Hydro Act and related regulations.

Renewal of Collective Agreements

Most of OPG's regular employees in Ontario are represented by one of two unions: the Power Workers' Union (PWU) and the Society of United Professionals (Society). As at December 31, 2018, the PWU represented approximately 52 percent of OPG's regular workforce in Ontario, while the Society represented approximately 36 percent.

The three-year governing collective agreement between OPG and the PWU expired on March 31, 2018. The parties reached a tentative renewal agreement in June 2018, which was not initially ratified by the PWU membership. A subsequent ratification voting process among the PWU membership also failed to ratify the tentative agreement. The Government of Ontario passed legislation on December 20, 2018 to prohibit and end any strikes or lockouts between OPG and the PWU for the current round of collective agreement renewal, and directing that the collective agreement be concluded through a mediation/arbitration process, which is in progress. It is expected that the renewal process will be concluded by the end of the first quarter of 2019.

In anticipation of the expiry of the three-year governing collective agreement between OPG and the Society on December 31, 2018, negotiations took place between the parties in mid-2018. The parties were unable to reach an agreement and proceeded to interest mediation/arbitration in October 2018. On December 30, 2018, the appointed arbitrator issued an arbitration award for a one-year term between the parties, covering the period January 1, 2019 to December 31, 2019. Under the current collective agreement, Society-represented employees do not have the right to strike or lock-out. If the parties are unable to reach a renewal collective agreement, the terms of the renewal collective agreement would be decided through interest mediation/arbitration.

Payment of Dividend to Shareholder

In April 2017, OPG completed the sale of its head office premises and associated parking facility located at 700 University Avenue and 40 Murray Street in Toronto, Ontario, a non-core asset of the business. The sale was undertaken pursuant to a Shareholder Declaration and a Shareholder Resolution received by OPG in December 2015. In March 2018, pursuant to the Shareholder Declaration and the Shareholder Resolution, and as prescribed in the *Trillium Trust Act, 2014* (Trillium Trust Act), OPG transferred the proceeds from this disposition, net of prescribed deductions under the Trillium Trust Act, into the Province's Consolidated Revenue Fund in the form of a special dividend of $283 million authorized by OPG's Board of Directors in March 2018.

Sale of Lakeview Site

In March 2018, OPG completed the sale of its former Lakeview GS site located in Mississauga, Ontario, with a gain on sale of $205 million, net of tax effects of $68 million, recognized in net income in the first quarter of 2018. The sale was undertaken pursuant to a Shareholder Declaration and a Shareholder

Resolution received by OPG in June 2016. In accordance with the Shareholder Resolution, approximately 67 acres of the site will be transferred to the City of Mississauga by the purchaser, for parkland, institutional and cultural uses. The property was a non-core asset to OPG's business.

For a complete list of Shareholder directives, refer to the section, *Interest of Management and Others in Material Transactions* under the heading, *Relationship with the Province and the OEFC – Shareholder Directives*.

Efficiency Improvement and Cost Reduction Initiatives

OPG is focused on reducing costs by pursuing sustainable efficiency and productivity improvements across operating business units and support functions, while ensuring that there is no adverse impact on the safety, reliability and environmental sustainability of the Company's operations. Building on significant efficiencies achieved to date under a scalable, centre-led organizational model, this includes upgrading technology, leveraging automation, updating service delivery models, optimizing workspace utilization, streamlining processes, and continuing to leverage attrition to achieve human resource targets aligned with business requirements. Strategies to improve cost performance and organizational capability are being implemented at the enterprise and business unit level. These strategies are supported by ongoing employee communication and engagement aimed at reinforcing high performance, innovation, efficiency and organizational agility.

OPG is proceeding with an enterprise-wide process to evaluate and where possible mitigate the impact of the shutdown of the Pickering GS on the Company's operating cost structure. This multi-year initiative, known as OPG25, involves identifying and implementing a coordinated set of plans and targets to ensure the optimization of the Company's longer-term operating model, business strategies and organizational design between now and the planned end of Pickering commercial operation in 2024. The overall aim of the initiative is to ensure ongoing cost effectiveness of the Company's operations after the shutdown of the Pickering GS, mitigate the cost impacts associated with the shutdown, and enhance organizational agility in support of new business opportunities. Through this work and a continued focus on productivity enhancements, OPG expects to deliver increased value to customers and achieve improvement in outcomes of future applications for regulated prices under the OEB's incentive regulation framework.

In 2017, OPG launched a strategy to accelerate the pace of digital transformation across the enterprise. The strategy continued into 2018 and is focused on making investments to modernize information technology infrastructure, enhance mobility and connectivity, embed robotic process automation and artificial intelligence technologies, and improve data management and data analytics capability. The goal of the strategy is to increase field and office productivity, improve equipment reliability and station performance, reduce operating costs and enable the OPG25 initiative.

Nuclear Business Development

Darlington Refurbishment

The Darlington generating units are approaching their originally designed end-of-life. Refurbishment of the four generating units is expected to extend the operating life of the station by at least 30 years. The total project budget of $12.8 billion and the project schedule were approved by OPG's Board of Directors in November 2015 and were endorsed by the Province. The first refurbished unit is scheduled to be returned to service in the first quarter of 2020 and the refurbishment of the last unit is scheduled to be completed by 2026. *Ontario Regulation 53/05* requires the OEB to ensure that OPG recovers capital and non-capital costs and firm financial commitments in respect of the Darlington Refurbishment project, if the OEB is satisfied that the costs were prudently incurred and that the firm financial commitments were prudently made.

The refurbishment project is a multi-phase program comprising several sub-projects. The major work streams include: de-fuelling of reactors and refurbishment of the fuel handling equipment; removal and replacement of feeder tubes and fuel channel assemblies in each reactor (Re-tube and Feeder

Replacement or RFR); inspections and repairs of turbine generator sets and replacement of associated control systems; mechanical cleaning, water lancing and inspection and maintenance work on steam generators; and replacement or repairs of certain other station components referred to as balance of plant. The RFR is the largest sub-project and represents a majority of the critical path schedule.

In 2016, the Darlington Refurbishment project transitioned from the planning phase to the execution phase, as OPG commenced the refurbishment of the first unit, Unit 2, in October 2016 as planned. The unit was taken offline on October 15, 2016. De-fuelling of the reactor was completed in January 2017, with a total of 480 fuel channels de-fuelled. Islanding of Unit 2, the physical separation of the unit under refurbishment from the three operating units, was completed in April 2017, signifying the completion of the first major segment of the Unit 2 refurbishment.

The second major segment included preparatory work to support the removal of feeder tubes and fuel channel assemblies, followed by the removal of reactor components. The preparatory work was completed in the second quarter of 2017. The Re-tube Tooling Platform for hosting the tooling for the removal, inspection and installation activities and the setup of specialized tooling and equipment needed for the removal and replacement of the reactor components were completed in the third quarter of 2017. The disassembly of reactor components commenced in August 2017 with the removal of all 960 feeder tubes completed safely in September 2017. The removal of fuel channel assemblies commenced in October 2017. The removal of pressure tubes as part of the fuel channel assemblies was completed in March 2018 and the removal of calandria tubes was completed in May 2018, signifying the completion of the second major segment of the Unit 2 refurbishment. Other key projects completed in the second major segment include the primary side steam generator layup and installation of steam generator access ports to support future inspections.

The Unit 2 refurbishment is currently in the third major segment, the installation and reassembly of reactor components, including new feeder tubes and fuel channel assemblies. In June 2018, OPG completed inspections and cleaning on the reactor vessel in preparation for the reassembly of the reactor components and in July 2018, commenced the reassembly of Unit 2. The third segment is progressing as planned, with the new calandria tube installation series completed in October 2018 and the new fuel channel installation series targeting completion in the first half of 2019. The new upper and middle feeder installation series is also underway. The last system required for the first Restart Control Hold Point was returned to service in December 2018. Other key project activities being executed include the continued overhaul of the major turbine generator.

Most of the pre-requisite projects, including construction of facilities, infrastructure upgrades and installation of safety enhancements, have been completed and placed in-service. Among others, this includes the completion of the RFR Island Support Annex in February 2016 and the Re-tube Waste Processing Building in November 2017. Completion of the HWSF was delayed due to challenges with construction activities. The HWSF is expected to be completed by the second quarter of 2019, and is not on the critical path for the Darlington Refurbishment project, which continues to track on schedule. The cost of the HWSF will be accommodated within the overall Darlington Refurbishment budget of $12.8 billion. Taking into account the execution performance of the Unit 2 refurbishment and the cost to complete the HWSF, the overall Darlington Refurbishment project continues to track to the $12.8 billion budget.

OPG has completed all of the work committed to as of the end of 2018 to support the requirements set out in the CNSC-approved Integrated Implementation Plan (IIP) for the station. The IIP contains actions previously identified as part of a series of assessments undertaken by OPG in line with CNSC's regulatory requirements related to life extensions of nuclear plants in effect at the time OPG began to undertake the Darlington Refurbishment project. These actions are designed to meet updated codes, standards and practices and to ensure that the operation of the station continues to pose minimal risk to health, safety, security and the environment. The CNSC approved the regulatory scope defined in the IIP as part of the Darlington operating licence renewal in December 2015. Among others, activities undertaken in support of the IIP include the commissioning of two safety enhancements at the station, the Third Emergency Power Generator and the Containment Filtered Venting System, which were placed in-service in April 2017 as part of the pre-requisite projects. In December 2015, the CNSC granted the Darlington GS a ten-year operating licence effective for the period from January 1, 2016 to November 30, 2025, which spans most of the planned duration of the Darlington Refurbishment project.

In March 2018, OPG's Board of Directors approved the funding to complete planning and prerequisite activities for the refurbishment of the second unit, Unit 3. These activities continue to progress in accordance with the overall project schedule, incorporating experience learned to date from the Unit 2 refurbishment. OPG is continuing to enter into commitments to procure major components that require long lead times. Receipt of long lead materials for the Re-tube and Feeder Replacement of Unit 3 has begun, as has construction on the Full Scale Maintenance Simulator for the turbine generator. The Unit 3 refurbishment execution is expected to commence upon the return to service of Unit 2.

In November 2017, the Financial Accountability Office of Ontario issued a report, "*An Assessment of the Financial Risks of the Nuclear Refurbishment Plan*". The report assessed the impact of OPG and Bruce Power's respective nuclear refurbishments on customers and the Province based on mechanisms in place for the recovery of the costs to refurbish and subsequently operate these nuclear stations. The report concluded that refurbishment of the four units at the Darlington GS and the six units at the Bruce nuclear generating stations provides the most cost effective, low emission generation source available to meet Ontario's baseload electricity requirements.

Extension of Pickering Commercial Operation to 2024

One of OPG's objectives is to maximize the safe and reliable operating life of the Pickering units. In connection with this objective, OPG is continuing to execute on a plan to extend safe and reliable operation of the Pickering GS to 2024. In August 2018, following an application process to the CNSC including a set of public hearings, OPG received a ten-year operating licence renewal for the Pickering GS from the CNSC, valid until August 31, 2028. The licence allows for commercial operation of the Pickering GS to December 31, 2024 and supports the plan to subsequently place the station in a safe storage state by 2028. A new application to the CNSC, with public hearings, would be required to support commercial operation past December 31, 2024. In support of the licence renewal process, OPG had undertaken a Periodic Safety Review (PSR), which confirmed that extending commercial operation of the Pickering units will continue to pose minimal risk to the health, safety and security of workers, the public and the environment. A PSR is a comprehensive assessment of the station's design and operation to confirm that there is a high level of safety throughout the operating life and to determine what reasonable and practical enhancements can be made to further improve safety, and includes a component condition assessment of the station to identify the work required to support the station's continued operation. The CNSC directed that OPG present a comprehensive update on its licensed activities at the Pickering GS at the mid-point of the ten-year licence period and no later than 2023.

The plan to extend Pickering operations includes undertaking the required technical work to confirm that the station's pressure tubes, a key life-limiting component of the station, will remain fit for service for operation to 2024. In the fourth quarter of 2017, OPG confirmed that technical assessments completed to date provided sufficient confidence in the programs and provisions in place to assure fitness-for-service of fuel channel components in line with the planned extended commercial operation period. OPG continues to execute the work required for the planned extended commercial operation of the station, including plant modifications and other work as identified through the PSR, station reliability initiatives and equipment component inspections.

Ontario Nuclear Funds Agreement Reference Plan Update

OPG is responsible for the management of radioactive used nuclear fuel and low and intermediate level radioactive waste material (L&ILW) and the decommissioning of its nuclear stations and waste management facilities. Pursuant to the ONFA between OPG and the Province, OPG is required to set aside monies into two segregated funds, the Used Fuel Segregated Fund and the Decommissioning Segregated Fund, to fund the future life cycle costs of long-term nuclear used fuel and L&ILW management and nuclear facilities decommissioning. OPG's required contributions to the Nuclear Segregated Funds are determined based on periodically updated reference plans approved by the Province under the ONFA, at least once every five years. As part of the reference plan update process, OPG estimates the total funding liabilities for future nuclear waste management and nuclear decommissioning based on life cycle cost estimates and a set of underpinning assumptions, including remaining useful lives of the nuclear stations, proposed methods and timing of nuclear waste disposal, and economic indicators. In accordance with US GAAP, OPG carries a present value asset retirement obligation on the balance sheet related to its nuclear waste management and nuclear decommissioning liabilities. In accordance with *Ontario Regulation 53/05*, the OEB is required to ensure that OPG recovers the revenue requirement impact of its nuclear waste management and nuclear decommissioning liabilities arising from the current approved ONFA reference plan.

In 2016, OPG completed a comprehensive update of the estimate for its obligations for nuclear waste management and nuclear facilities decommissioning, in line with the required ONFA reference plan update process. The results of the update were reflected in a new ONFA reference plan as well as a downward adjustment in the asset retirement obligation carried on OPG's balance sheet as at December 31, 2017. The 2017 ONFA Reference Plan was approved by the Province in December 2016, with an effective date of January 1, 2017. Reflecting the funded status of the Used Fuel Segregated Fund and the Decommissioning Segregated Fund based on the revised lower life cycle liability estimates per the 2017 ONFA Reference Plan, no overall contributions to either the Used Fuel Segregated Fund or the Decommissioning Segregated Fund are currently required starting in 2017. Contributions may be required in the future should either or both of the funds be in an underfunded position when a new reference plan is approved. Such may be the case as a result of future variability in asset performance due to volatility inherent in financial markets and economic conditions. Future contribution levels also are dependent on changes in baseline cost estimates and underpinning planning assumptions used to establish the funding obligations in subsequent ONFA reference plans. The next update of the ONFA reference plan is scheduled to be completed by the end of 2021.

The overall reduction in OPG's nuclear waste management and nuclear decommissioning liabilities resulting from the comprehensive update was mainly due to a decrease in cost estimates to reflect a proposed new, more cost effective container design and engineered barrier concept to house used nuclear fuel for disposal, updated cost escalation rates and a later expected in-service date for Nuclear Waste Management Organization's (NWMO) planned deep geologic repository (DGR) for the long-term permanent disposal of Canada's used nuclear fuel. These decreases were partly offset by higher cost estimates related to station decommissioning, primarily due to a better definition of work required during the preparation for safe storage after station shutdown and a higher volume of waste expected to be generated during the decommissioning.
Further details on OPG's nuclear waste management and nuclear decommissioning obligations, the ONFA and proposed methods for long-term used fuel and L&ILW disposal are discussed in the section, *Description of the Business* under the heading, *Regulated – Nuclear Waste Management Segment.*

Renewable Generation Business Development

Peter Sutherland Sr. Hydroelectric Generating Station

In March 2015, OPG's Board of Directors approved a project to construct the Peter Sutherland Sr. GS, a new 28 MW hydroelectric station on the New Post Creek near its outlet to the Abitibi River, with a budget of $300 million. The station was constructed through PSS Generating Station LP (PSS), a partnership between OPG and Coral Rapids Power Corporation (CRP), a wholly-owned subsidiary of the Taykwa Tagamou Nation.

In March 2017, final testing and commissioning of the turbine and generator units were successfully completed and both units were declared substantially complete. On March 31, 2017, the project received a permit from the Ontario Ministry of the Environment and Climate Change, now known as the Ministry of the Environment, Conservation and Parks (MECP), to take water for operations to allow the station to operate commercially. This in-service date was ahead of the originally planned schedule of the first half of 2018. The project's schedule had been accelerated to take advantage of favourable weather conditions. The Peter Sutherland Sr. GS is included in the Contracted and Other Generation segment.

OPG began to receive contracted revenue for the project following the IESO's confirmation of the station's commercial operations as of March 31, 2017, under a 50-year hydroelectric ESA.

In April 2017, CRP exercised its right under the partnership agreement to increase its interest in PSS to 33 percent.

Sir Adam Beck Pump Generating Station Reservoir Refurbishment

In August 2015, OPG's Board of Directors approved a project to refurbish the 300-hectare storage reservoir at the Sir Adam Beck Pump GS. The Sir Adam Beck Pump GS facility allows OPG to pump and store water diverted from the Sir Adam Beck generating complex during periods of low electricity demand to be used to generate up to 600 MW of electricity during subsequent periods of high electricity demand.

The refurbishment construction began in April 2016 and was completed in February 2017, ahead of the originally planned schedule date of April 2017 and below the approved budget of $58 million. The reservoir refurbishment work included the installation of a partial new reservoir liner and construction of a grout curtain in the bedrock foundation of the reservoir dyke. The refurbishment is expected to add approximately 50 more years to the reservoir's life. The Sir Adam Beck Pump GS is included in the Regulated – Hydroelectric segment.

Ranney Falls Hydroelectric Generating Station

In 2017, OPG began construction work on a 10 MW single-unit powerhouse on the existing Ranney Falls GS site. The new unit will replace an existing unit that reached its end of life in 2014. Primary concrete placement for the new powerhouse, spillway and forebay wall was completed during 2018, with construction continuing with the balance of plant activities. Gate installation also has been completed and gate hydraulic systems installation is in progress. Turbine and generator unit fabrication has been completed, and installation commenced in the first quarter of 2019. The project's expected in-service date is in the fourth quarter of 2019, with a budget of $77 million. The project is tracking on schedule and on budget. The Ranney Falls GS is included in the Regulated – Hydroelectric segment.

Nanticoke Solar Facility

In March 2016, Nanticoke Solar LP (NSLP), then a partnership between OPG, SunEdison Canadian Construction LP (SECCLP) and a subsidiary of Six Nations of the Grand River Development Corporation, was selected through the IESO's LRP I program to develop a 44 MW solar facility at OPG's Nanticoke GS site and adjacent lands in Haldimand County, Ontario. The LRP I program was a competitive bidding process for procuring large renewable energy projects in Ontario. In March 2016, NSLP and the IESO executed a 20-year LRP I contract, which formalized the terms and conditions for the development and operation of the new solar facility. During 2017, OPG purchased SECCLP's interests in NSLP. Construction commenced during the second quarter of 2018 and continued throughout the year. The installation of piles and the solar modules onto the racking has been completed. Confirmation of the commencement of commercial operation from the IESO is expected to be received by the end of the first quarter of 2019. The project is expected to close below the approved budget of $107 million.

Thermal Business Development

Termination of Thunder Bay Generating Station Energy Supply Agreement

In July 2018, OPG reached an agreement with the IESO to terminate the ESA for the advanced biomass-fuelled generating unit at the Thunder Bay GS, effective June 30, 2018. The termination of the ESA and subsequent closure of the station was determined to be the most cost effective alternative for electricity consumers and allowed OPG to avoid additional repair costs that would have been necessary to continue to operate the Thunder Bay GS for the remainder of the ESA term to January 2020. The termination agreement with the IESO provided for payments to OPG for the remainder of 2018 to allow for the orderly cessation of activities as part of the station's closure, including disposition of fuel inventories and fuel contracts. In October 2018, OPG received notice from the IESO approving de-registration of the station. The main output transformers were physically disconnected from the grid in November 2018. Following the disconnection of the transformers, the Thunder Bay GS is unable to provide generation to the grid.

Decommissioning of Thermal Generating Stations

OPG ceased coal-fired generation at the Lambton and Nanticoke generating stations in 2013. Over 2015 and 2016, OPG announced that it would decommission the Lambton and Nanticoke generating stations as it could not commercially support continued preservation of these sites in light of the outlook for long-term electricity demand in the province that did not support the need for their future conversion. OPG is in the process of executing decommissioning plans for these two stations, which will ensure that they are closed safely, securely, and in an environmentally responsible manner. The decommissioning of the Nanticoke GS accommodates the construction and operation of the Nanticoke solar facility. The costs of the decommissioning activities are charged against the associated asset retirement obligation carried on the balance sheet.

During 2017, OPG substantially completed the demolition of the Nanticoke coal yard equipment and structures. In the fourth quarter of 2017, the demolition contractor for the Nanticoke powerhouse and associated structures had been mobilized. The demolition of the station's stacks took place safely in February 2018. Demolition activities continue for the station's powerhouse and associated structures.

As part of the process to decommission the Lambton GS, a contract for the removal of the powerhouse and associated structures was issued in July 2018. The demolition contractor was mobilized to site and the removal of saleable equipment, asbestos abatement and demolition activities are in progress.

DESCRIPTION OF THE BUSINESS

Electricity Industry and Electricity Markets

The electricity industry is principally comprised of four components: generation, transmission, distribution and marketing of energy and other services in wholesale and retail markets.

Generation is the production of electricity. Transmission is the transfer of electricity across high-voltage power lines from generating facilities to local areas. Distribution is the delivery of electricity within local areas to homes and businesses using relatively low-voltage power lines. Energy marketing relates to the purchase of large amounts of electricity or equivalent financial products and the subsequent re-selling in smaller quantities to third parties in either the wholesale or retail markets.

Electricity has traditionally been generated in large, multi-unit, centralized facilities. These facilities are usually classified by: (i) the type of fuel used; (ii) capacity, typically expressed in MW; and (iii) dispatch mode (being whether or not the electricity generated by a particular facility is dispatched to meet peak, intermediate or baseload demand). The energy produced by a facility is generally expressed as its output over the time the facility operates, typically in terms of MWh. New supply from smaller scale, largely intermittent, renewable sources such as wind, solar and bio-energy is being integrated into the power system, connected either directly to the transmission system or embedded in distribution networks. Distributed generation involves production of electricity closer to end users and away from large scale production facilities that require more transmission. Electricity systems typically require new capital expenditures and processes in order to accommodate intermittent generators.

Electricity is an essential commodity that cannot be stored without converting to other forms, a process that is more difficult in large volumes. Therefore, electricity supply must instantaneously match demand to maintain the stability and reliability of the electrical power system. This is accomplished by coordinating the supply of and demand for electricity, a responsibility typically assigned to regulated regional system operators or local balancing authorities. To ensure the balancing of electricity supply with demand, some generators are needed to produce a constant supply of energy to meet fixed energy needs (baseload generation), while others are needed to adjust energy output to match changes in demand (peaking and intermediate generation).

Electricity systems have evolved on a regional basis and are connected to neighbouring regional power grids. Electricity markets in neighbouring regions whose transmission systems are connected to each other, either directly or through other contiguous connected markets, are referred to as interconnected markets. Such connections enhance system reliability and permit the purchase and sale of electricity between electricity markets. Interconnection transmission capabilities between interconnected markets are subject to physical and weather dependent limitations. These limitations include planned or forced outages to transmission lines and other equipment that reduce transmission capacity, as well as wind and temperature conditions that affect the transfer capability of all transmission lines on the electrical system.

Ontario's Electricity Industry

OPG's predecessor, Ontario Hydro, served as a vertically integrated electric utility in Ontario. Following the adoption of a restructuring plan for Ontario's electricity industry pursuant to the *Energy Competition Act, 1998,* five principal successors to Ontario Hydro's integrated electricity business began operating as separate entities on April 1, 1999:

- OPG, which purchased and assumed the electricity generation, wholesale energy and ancillary services businesses of Ontario Hydro;
- Hydro One, which purchased and assumed the transmission, distribution and retail energy services businesses of Ontario Hydro;
- the Independent Electricity Market Operator (later renamed the IESO), which was formed to act as both the independent electricity system operator and the market operator. The IESO is responsible for the dispatch of generation to meet demand, the control of the Ontario transmission grid and the operation of energy and ancillary markets;
- the Electrical Safety Authority, which was established to carry out electrical equipment and electrical wiring safety and inspection functions; and
- the Ontario Electricity Financial Corporation (OEFC), which is the legal continuation of the former Ontario Hydro and is responsible for managing the debt and certain other obligations not transferred to other successor companies of Ontario Hydro.

OPG purchased and assumed all of the interest of Ontario Hydro in and to all officers, employees, assets, liabilities, rights and obligations of Ontario Hydro directly or indirectly relating in any manner to the applicable activities carried on by Ontario Hydro as of April 1, 1999, pursuant to the transfer orders made by Order-in-Council under the *Electricity Act, 1998*. The transfer orders provide that if they fail for any reason to fully and effectively in law transfer any such asset, right, liability or obligation or that if such transfer would constitute a breach of the terms of the asset, right, liability or obligation or of any applicable law, such assets, rights, liabilities or obligations are not transferred, but are held by the OEFC for the benefit of OPG.

Ontario's competitive electricity market was opened by the IESO in 2002. The market is used to manage the purchase and sale of wholesale electricity in the province.

Since the opening of the competitive market, Ontario's power supply mix has experienced significant change. A significant amount of new capacity has been added, while coal-fired generation, which at its peak accounted for approximately 6,500 MW of capacity, has been eliminated. New natural gas powered capacity of over 5,000 MW as of the end of 2018 has largely replaced the peaking capacity previously provided by coal-fired generation, while the return to service of Units 1 and 2 at the Bruce A GS in 2012 added approximately 1,500 MW of baseload nuclear generation. New wind and solar capacity of approximately 7,500 MW has also been added as of the end of 2018.

While electricity supply in Ontario has increased, the province's electricity demand as reported by the IESO has fallen by approximately 10 percent compared to pre-2008 recession levels, largely due to changes in economic conditions and conservation measures and also partially due to the addition of small scale solar generation embedded in the distribution system. Embedded generation reduces the demand supplied by grid-connected generation. Shorter-term fluctuations in electricity demand are impacted by variations in seasonal weather conditions. Ontario's electricity demand as reported by the IESO was 137.4 TWh in 2018, which excludes electricity exports out of the province.

Ontario's Electricity Market

Ontario's real-time energy supply needs are met through the wholesale electricity market administered by the IESO, with the market clearing price, the Hourly Ontario Energy Price, set by offers or bids into the market. OPG offers its generation into this real-time energy market, or spot market, to be dispatched by the IESO. The IESO receives hourly offers from electricity generators and importers to provide energy, along with bids to withdraw energy from a few flexible loads and exporters and then schedules the lowest-cost offers needed to meet demand every five minutes.

Virtually all non-OPG generators in Ontario have energy supply contracts with the IESO that provide for payments that are different from the market price of electricity. The prices for all of OPG's nuclear and most of its hydroelectric stations in Ontario are set by the OEB. The difference between the market price and the prices paid for regulated and contracted generation, as well the cost of conservation and demand management programs, are charged to Ontario electricity consumers through the Global Adjustment portion of the total price of electricity.

SBG occurs when electricity production from the baseload facilities is greater than the market demand for electricity. Baseload generation supply surplus in Ontario is managed by the IESO, mainly through generation reductions at hydroelectric and certain nuclear stations and other grid-connected renewable resources. The prevalence of SBG conditions is impacted by weather conditions which affect electricity demand, wind and solar generation quantities and through the impact on water flows, the availability of hydroelectric power. In 2018, OPG lost 3.5 TWh of hydroelectric generation due to SBG conditions in Ontario. In each of 2017 and 2016, OPG lost 5.9 TWh and 4.7 TWh of hydroelectric generation due to SBG conditions in Ontario, respectively. The gross margin impact of production forgone at OPG's regulated hydroelectric stations due to SBG conditions has been offset by a regulatory variance account authorized by the OEB. During 2018, 2017 and 2016, production forgone at OPG's regulated hydroelectric stations due to SBG conditions was 3.2 TWh, 5.2 TWh and 4.3 TWh, respectively. OPG did not forgo any electricity production at the Pickering and Darlington nuclear generating stations due to SBG conditions.

The OEB has authorized an additional pricing mechanism for OPG's regulated hydroelectric generation that provides a financial incentive to OPG to shift hydroelectric generation from lower market price periods to higher market price periods. This is intended to benefit customers through the displacement of generation from the relatively higher cost sources such as natural gas. The time-shifting is made possible by the ability to store water in reservoirs located at a number of OPG's hydroelectric facilities, including the Sir Adam Beck Pump GS.

The IESO also administers the operating reserve market and is responsible for procurement of other ancillary services. The objective of the operating reserve market is to ensure that additional supplies of energy are available to maintain power system reliability following an unforeseen event. Other ancillary services include regulation service, reactive support, black start capacity and other services required to maintain the reliability of the Ontario electricity system. OPG participates in the operating reserve market and provides other ancillary services to the IESO.

The IESO is in the high-level design stages of a Market Renewal program, which is a series of coordinated initiatives expected to result in a fundamental redesign of Ontario's electricity markets and may impact OPG depending on the market design that is implemented. The IESO's stated goal for the Market Renewal program is to improve how electricity is priced, scheduled and procured in order to meet electricity system and participant needs reliably, transparently, efficiently and at lowest cost. OPG is actively participating in the Market Renewal program and continues to collaborate with the IESO.

OPG and other electricity market participants in Ontario are required to comply with Market Rules issued by the IESO. As an owner and operator of generating stations, OPG is also subject to reliability standards as set out by the IESO, the North American Electric Reliability Corporation (NERC), and the Northeast Power Coordinating Council (NPCC). Such standards are binding on OPG pursuant to the OEB-issued electricity generating licence and the IESO Market Rules. The IESO monitors compliance with and enforces the Market Rules and coordinates with system operators and reliability agencies in other jurisdictions to ensure energy adequacy and security across the interconnected bulk electricity system in North America.

Ontario's market is interconnected with New York, Michigan, Minnesota, Manitoba and Québec. Market intermediaries wishing to import or export electricity between Ontario and the interconnected markets are required to schedule these transactions through the Ontario spot market. As part of its trading activities, OPG transacts with counterparties in Ontario and interconnected markets in using predominantly short-term physical and financial instruments, including over-the-counter energy-related derivatives, of typically one year or less in duration.

US Electricity Markets

The structure of the US electricity industry varies by region, ranging from traditional models with vertically integrated utilities subject to rate regulation to market-based models aimed at promoting competitive power generation. Market-based models were adopted by a number of states through a restructuring of their respective vertically integrated utilities beginning in the 1990s, facilitated by legislative and regulatory changes.

Power generators in the restructured markets typically can sell electricity directly under bilateral contracts to retail customers or load serving entities or into wholesale markets administered by an independent regional system operator. There are seven regional system operators in the US covering the majority of national electricity consumption. OPG's Eagle Creek facilities operate primarily in restructured markets, namely the Independent System Operator New England, Midcontinent Independent System Operator, New York Independent System Operator, PJM Interconnection LLC and California Independent System Operator. Eagle Creek's facilities sell electricity through a combination of bilateral contracts with load serving entities and energy and capacity offers into the wholesale spot markets.

In addition to administering the wholesale electricity markets and dispatching electricity to balance supply and demand, the regional system operators are responsible for ensuring reliable electricity system operation and resource adequacy. This includes ensuring the supply of ancillary services necessary for ongoing power system reliability, making system planning decisions and developing appropriate financial mechanisms to support availability of sufficient capacity to meet customers' needs. Eagle Creek participates in the ancillary services and capacity markets in the jurisdictions in which it operates.

In order to participate in the wholesale spot energy, capacity or ancillary services markets, non-exempt electricity sellers are required to obtain market-based rate authorization from the FERC, the federal agency responsible for the regulation of sale and transmission of wholesale electricity, natural gas and oil in interstate commerce. The FERC's regulation includes oversight of the regional system operators and the NERC. The NERC is certified by the FERC as the national energy reliability organization for the development and enforcement of reliability standards for the supply of electricity. The NERC oversees eight regional reliability organizations, including the NPCC, which have delegated authorities and responsibilities to enforce the NERC and regional reliability standards.

The *Public Utility Regulatory Policies Act of 1978* (PURPA) confers on qualifying generation projects (qualifying facilities) the right to sell power to an electric utility at the cost the utility would avoid by purchasing power from the qualifying generation project rather than generating it themselves or purchasing it from another source. Qualifying facilities also have the right to interconnect with an electric utility and receive relief from certain federal and state-level regulatory requirements. Qualifying projects include certain cogeneration facilities and certain small power production facilities, including those whose primary fuel source is renewable. Qualifying facilities that meet certain criteria are exempt from the requirement to obtain FERC market-based rate authorization. All of Eagle Creek's facilities are qualifying facilities and do not require FERC market-based rate authorization. A number of Eagle Creek's bilateral contracts are constituted by virtue of the facilities being qualifying facilities under the PURPA. The qualifying facility program is implemented at the state level and overseen by the FERC.

As part of policies aimed at increasing renewable energy development, a number of states have adopted renewable portfolio standards, which require electricity suppliers to supply a certain minimum share of their customer's electricity use from designated renewable sources, including certain types of hydroelectric facilities. Electricity utilities that are subject to these mandates must obtain renewable energy credits or certificates (RECs), which are uniquely created for each reported megawatt-hour of eligible electricity generation injected into the grid. Electric utilities can meet their obligations under the renewable portfolio standards by purchasing RECs through compliance markets administered by regional system operators. In addition, RECs are traded in voluntary markets, which are driven by consumer preferences and are largely administered through third parties. Most of Eagle Creek's facilities qualify as designated renewable sources and offer their RECs into the respective markets.

OPG Energy Trading (OPGET), a wholly-owned subsidiary of OPG, engages in US-based wholesale energy trading activities in the northeast US, including over-the-counter energy-related derivatives. OPGET retains FERC market-based rate authorization. Eagle Creek engages in over-the-counter energy-related derivative markets as part of its hedging activities.

Water Rights

OPG's management of available water resources directly affects the generation output, efficiency and ultimately return on investment for the Company's hydroelectric assets. The watersheds on which OPG's hydroelectric generating facilities are located are shared by many users and are subject to various legislative, contractual and regulatory requirements. Accordingly, OPG must balance the economic, environmental, social and legal requirements associated with the watersheds when utilizing water to optimize electricity generation.

<u>International Rivers</u>

The six OPG hydroelectric generating stations subject to OEB rate regulation since 2008 are directly or indirectly supplied by two major international waterways, the Niagara River and the St. Lawrence River, and are subject to treaties with the US relating to water use. These stations represent approximately 44 percent of OPG's total in-service hydroelectric capacity in Ontario.

Through a series of agreements between the Government of Canada and the Province, and certain federal and provincial laws, OPG has been granted the right to exercise Canada's rights with respect to the construction, maintenance and operation of generating facilities under the *Boundary Waters Treaty of 1909* and the *Niagara Diversion Treaty of 1950* between Canada and the US. Both of these treaties continue in perpetuity but are terminable by either party with 12 months prior written notice. Given the significance of these treaties, OPG does not expect either party to exercise their respective termination rights in the foreseeable future.

The *Boundary Waters Treaty of 1909* established the International Joint Commission with the mandate of regulating shared water uses and preventing and resolving disputes between the US and Canada. In December 2016, the International Joint Commission issued an order implementing a new plan to manage water levels and flows in Lake Ontario and the St. Lawrence River, effective January 7, 2017. The new plan, which replaced the existing plan in use since 1963, is intended to allow for more natural water levels, while minimizing impacts to other users, including hydroelectric power production. No significant changes to OPG's operations are expected as a result of the new plan.

The *Niagara Parks Act* (Ontario) gives the Niagara Parks Commission the authority to grant certain rights for the use of the waters of the Niagara River for purposes of power generation. By agreement with OPG, the Niagara Parks Commission has agreed not to grant any rights to third parties until after 2056.

Under an agreement between OPG and the St. Lawrence Seaway Management Corporation, a Canadian federal agency, the DeCew Falls generating stations in Ontario use water that is transported along the Welland Canal from Lake Erie. The agreement has been renewed through June 30, 2038.

The Province has granted OPG the right to use water from the International Rapids section of the St. Lawrence River for power generation at the R.H. Saunders GS, subject to an agreement between the Government of Canada and the Province. The Government of Canada has the right, upon notice and after unsuccessful arbitration, to take over the operation of and title to the R.H. Saunders GS in the unlikely event of a breach of the agreement by the Province.

<u>Canadian Interprovincial Rivers</u>

Four of OPG's hydroelectric stations are located on the Ottawa River, which forms part of the Ontario-Québec border. These stations represent approximately 13 percent of OPG's total Ontario in-service hydroelectric capacity. Three of these stations are subject to 999-year leases with each of the Provinces of Ontario and Québec. The fourth station is subject to a water power lease with the Province of Ontario, which is renewable to 2031, subject to certain conditions. OPG's use of water from the Ottawa River basin is subject to guidelines established by the Ottawa River Regulation Planning Board, comprised of government and industry representatives.

<u>Ontario Interior Rivers</u>

Fifty-six of OPG's hydroelectric stations, representing approximately 43 percent of OPG's total in-service hydroelectric capacity, are located on 20 other Ontario river systems. OPG holds water power leases, Crown leases and licences with the Province on the river systems that supply 37 of these stations. These leases and licences have expiry dates, including renewal periods, ranging between 2023 and 2075. Certain of these leases provide that the leased property and any fixed improvements, including generating stations and dams, will revert to the Province on the expiry of the lease. OPG intends to secure new leases and licences for these stations and has been working with the Ontario Ministry of Natural Resources and Forestry (MNRF) and the Ontario Waterpower Association to define the associated process and appropriate timelines. OPG's use of Ontario's interior watersheds is constrained by restrictions contained in certain of the water power leases and licences.

Eight of the 56 stations are located on the Trent and Rideau Waterways and are operated pursuant to licences from the Government of Canada. These licences expire in February 2020. The process to renew the licences is currently underway with Parks Canada, and OPG expects that it is well positioned to secure the renewal. Ten of the 56 stations are not subject to leases or licences. A land use permit issued for the Peter Sutherland Sr. GS remains in effect while a water power lease for the site is prepared by the MNRF.

The current provincial regulatory framework requires the development of Operational Plans for new storage dams and generating stations in Ontario, except for those on international rivers, interprovincial rivers or rivers under federal jurisdiction. These plans include any limitations on water flows and elevations and historically have been a component of formal Water Management Plans (WMPs). WMPs were established under the *Lakes and Rivers Improvement Act* (Ontario) and *Water Management Planning Guidelines for Waterpower (2002)*, on a watershed basis, in consultation with the MNRF, federal fisheries authorities, stakeholders, such as recreational and commercial users, local communities, environmental groups, and partners, such as Indigenous groups. In October 2016, the MNRF published a Technical Bulletin, *Maintaining Water Management Plans (2016),* eliminating the need for WMPs where they are not already in place, removing the expiry date from existing WMPs and outlining the requirements for Operational Plans for new waterpower works going forward. Existing WMPs continue to be in effect. WMPs and Operational Plans may be amended as certain conditions change or new data becomes available. OPG operates in compliance with WMPs and Operational Plans.

The operations of certain OPG stations in northwestern Ontario can impact users in Manitoba and are subject to guidelines and directions provided by the Lake of the Woods Control Board, which is comprised of Ontario, Manitoba and federal government representatives.

Ontario Dams

In Canada, dams fall under provincial jurisdiction, with the exception of dams situated in interprovincial and international boundary waters and canals, and those owned by the Government of Canada. The majority of OPG's dams located in Ontario fall within the jurisdiction of the Province, with approximately 20 dams falling within the jurisdiction of the Province of Québec and 13 dams associated with the Trent-Severn and Rideau Waterways falling under federal jurisdiction. The International Joint Commission has an oversight role for dams and associated works on international boundary waters, including the St. Lawrence River and the Niagara River.

The Province regulates dams under the *Lakes and Rivers Improvement Act* (Ontario) administered by the MNRF. The legislation requires MNRF approval for activities such as the construction, alteration, improvement or repair of dams.

In 2011, the MNRF published a revised set of Technical Guidelines for dams, following a period of public consultation. The Technical Guidelines represent the current government standards for dam safety. OPG was an active participant in developing the Technical Guidelines through the MNRF's advisory panel. In general, OPG practices in the area of dam safety and public safety around dams exceed the minimum requirements outlined in the Technical Guidelines. In cooperation with the MNRF, OPG is developing a new risk-informed approach to prioritize the outcomes of dam safety assessments.

Currently, there is no federal or provincial regulation with respect to public safety around dams that addresses dam public safety issues relating to changes in operating water levels, discharges from the hydroelectric or dam facilities and other waterways-based hazards posed by such facilities. The *Navigation Protection Act* (Canada) does, however, require OPG to obtain approvals for the installation of all in-water works, such as safety booms and buoys associated with the OPG Waterways Public Safety Program. Additional details on OPG's Dam Safety and Waterways Public Safety Programs are found under the heading, *Workplace Safety and Public Safety – Dam Safety and Waterways Public Safety*.

United States Rivers and Dams

Any hydroelectric power plant that is located on navigable waters or federal lands, uses surplus waters from a federal dam, or affects interstate commerce in the US operates under the FERC's jurisdiction. The FERC authorizes hydropower projects either by issuing a license or, in the case of some smaller projects, by determining that the project is exempt from licensing but authorized to operate. Licences typically are issued for terms ranging from 30 to 50 years. At the end of each term, the licensee must apply for a new license term. The relicensing process typically requires approximately five to six years to complete. All but one of the facilities operated by Eagle Creek fall under FERC's jurisdiction. The FERC has issued licenses to 46 of these facilities and has exempted 16 others from licensing. Ten out of the 46 licensed facilities are currently in various stages of the relicensing process, with one more expected to initiate a relicensing process in 2019.

A hydropower license sets out terms and conditions including environmental measures to protect, mitigate effects on, or enhance environmental resources and recreational facilities, engineering measures to ensure safe construction and operation of the project, and other requirements. The licensing process provides for the participation of government agencies, stakeholders and members of the public. Mandatory terms and conditions prescribed by certain state and federal agencies form part of the license and are also applicable to exempt facilities.

The FERC oversees dam and public safety associated with hydropower facilities within its jurisdiction. The FERC's requirements for ensuring dam safety include site specific requirements for dam surveillance and inspection, requirements for periodic independent third party engineering evaluations of the safety of individual facilities, requirements for development of emergency action plans, and reporting requirements to the FERC. The FERC also has guidelines in place to assist owners in managing public safety around dams that include both physical controls in the form of fencing, safety booms, operational controls, and materials to educate the public and raise awareness of the hazards associated with the operation of the hydroelectric facilities. All but one of the facilities operated by Eagle Creek are subject to the FERC's dam safety regulations, with one facility subject to regulation and oversight by the state of Wisconsin.

Generation Operations

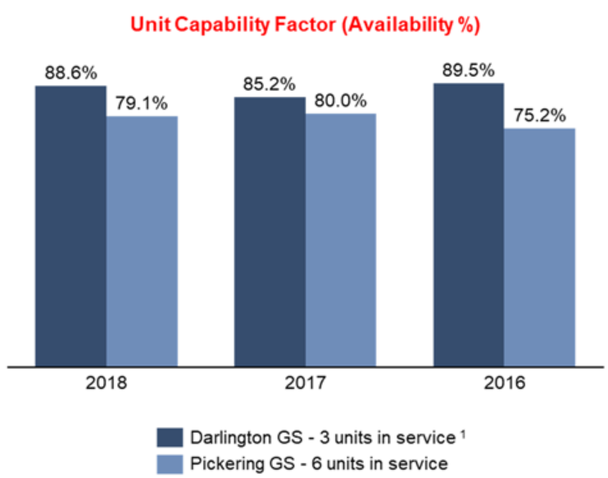
Nuclear

Overview of Generating Facilities

OPG owns and operates two nuclear generating stations, the results of which are reported in the Regulated – Nuclear Generation business segment. The Pickering GS, comprised of six operating units and two units in a permanent safe shutdown state, is located on the shore of Lake Ontario in Pickering, Ontario. As at December 31, 2018, the station's total in-service capacity was 3,094 MW. Four of the eight Pickering units originally went into service in the 1970s. A decision was made by Ontario Hydro in the late 1990s to place these four units in voluntary lay-up. In 2003 and 2005, respectively, two of the four laid-up units were returned to commercial operation, with the two remaining units placed in a permanent safe shutdown state. The other four operating units have been in service since the mid-1980s.

The Darlington GS, comprised of three operating units and one unit, Unit 2, undergoing refurbishment since mid-October 2016, is located on the shore of Lake Ontario in the Municipality of Clarington, Ontario. As at December 31, 2018, the total in-service capacity of the three operating units was 2,634 MW. Unit 2 has a generating capacity of 878 MW. All four Darlington units have been in service since the early 1990s.

Both the Pickering GS and the Darlington GS have been designed to operate at full power as baseload facilities. The generating performance of OPG's nuclear generating stations is expressed using the Unit Capability Factor.



[1] The nuclear Unit Capability Factor excludes unit(s) during the period in which they are undergoing refurbishment. Accordingly, Unit 2 of the Darlington GS had been excluded from this measure since October 15, 2016, when the unit was taken offline for refurbishment.

Unit Capability Factor is the amount of energy a generating unit is capable of producing as a percentage of its maximum output assuming no external constraints such as transmission limitations. The nuclear unit capability factor excludes unit(s) during the period in which they are undergoing refurbishment.

The Unit Capability Factor is impacted by the number of outage days at each station. For example, the lower Unit Capability Factor at the Darlington GS in 2017 reflected the higher number of planned outage days in 2017, largely driven by constraints related to the transition of the station's operating units to refurbishment, while the lower Unit Capability Factor at the Pickering GS in 2016 was primarily due to a higher number of outage days.

OPG maintains a site preparation licence granted by the CNSC in 2012 in relation to the potential construction of four new nuclear units at the Darlington site. The licence expires in 2022 and OPG has informed the CNSC of the Company's intent to renew the licence.

For additional information on OPG's nuclear operations, refer to the section, *Core Business, Strategy and Outlook* under the heading, *Operational Excellence – Electricity Generation Production and Reliability* in the Company's 2018 year-end MD&A.

Nuclear Generation Technology

Nuclear generation harnesses the energy released during controlled nuclear fission reactions to produce steam that is used to drive turbines to generate electricity. Nuclear generation has two main advantages. It is a relatively low marginal-cost generation technology, and it produces virtually no greenhouse gas (GHG), sulphur dioxide nitrogen oxide or mercury emissions. The latter advantage has become more significant as governments implement climate change action plans and stricter air emission standards.

In contrast to other types of generating facilities, notwithstanding the lower fuel costs, nuclear generating stations incur nuclear waste management and decommissioning costs and greater operating and maintenance expenses. In addition, the construction of nuclear generating stations entails greater initial capital costs than other generation technologies. The higher initial costs reflect the complexity of the technical processes fundamental to nuclear electricity generation, and the additional design and safety precautions taken to protect the public from potential risks associated with nuclear operations.

All of OPG's nuclear generating stations use CANDU technology reactors. CANDU is a pressurized-heavy-water, natural-uranium power reactor, originally designed in the 1960s by a consortium of Canadian government agencies and private industry. CANDU reactors are unique in their use of natural-uranium fuel and deuterium oxide, or heavy water, as both a moderator to slow down the fission process and a coolant within the reactor. The refuelling system is also unique in that CANDU reactors can be refuelled at full power. This is due to the subdivision of the reactor core into hundreds of separate fuel channels, each holding a single string of natural uranium fuel bundles, allowing for greater fuel efficiency. In contrast, US reactors, which use enriched uranium fuel, must be shut down during refuelling. All nuclear power reactors in Canada use CANDU technology. CANDU reactors are currently operating in Ontario, New Brunswick, Argentina, Romania, South Korea, India, Pakistan and China.

Nuclear Fuel Procurement

OPG's nuclear fuel supply chain involves the purchase of uranium concentrate, services for the conversion of uranium concentrate into uranium dioxide and services for the manufacture of nuclear fuel bundles containing uranium dioxide pellets. OPG currently establishes contractual arrangements with each of these distinct components separately and, as appropriate, maintains ownership of the uranium throughout the supply chain. OPG maintains a portfolio of multi-year supply contracts for uranium concentrate with domestic and foreign suppliers as well as uranium commodity traders. Occasionally, short-term spot market purchases are made to support a portion of OPG's uranium concentrate needs. OPG's nuclear fuel bundles are supplied by a Canadian-based manufacturer.

Nuclear Regulation

The *Nuclear Safety and Control Act* (NSCA) establishes the mandate and authority of the CNSC to make regulations governing all aspects of the development and application of nuclear energy in Canada. The NSCA grants the CNSC the power to act as a court of record, the right to make regulations, the power to require financial guarantees for nuclear waste management and nuclear facilities decommissioning as a condition of granting a licence, order-making powers and the power to impose monetary penalties for licence infractions. The NSCA also grants the CNSC the power to require periodic re-certification of nuclear operators and to set requirements for various nuclear facility security measures. It also provides for regulatory authority over environmental matters, including a requirement that licence applicants make adequate provision for the protection of the environment. The NSCA grants the CNSC licensing authority for all nuclear activities in Canada, including but not limited to the issuance of new licences to operators, the renewal of existing licences, protection of the environment arising from nuclear activities and making regulations related to nuclear activities.

A fundamental principle in nuclear regulation is that the licensee bears the responsibility for safe operation, with the CNSC setting safety objectives in areas such as radiation protection and physical security for nuclear generating stations and the transport of radioactive materials. The CNSC verifies compliance with the licence and performs audits and inspections of the licensee's performance against these objectives.

The CNSC issues guidance documents to assist licensees in complying with regulatory requirements. Requirements specified in these guidance documents have been incorporated into the design and operating documents for OPG's nuclear generating stations.

Since the operation and regulation of nuclear energy has transboundary impacts, Canada has become a signatory to various international conventions relating to nuclear energy and emergency responses and is bound by conventions that it has ratified. In addition, the CNSC has a bilateral information exchange and co-operation agreement with the US Nuclear Regulatory Commission, which provides, among other things, for the prompt, reciprocal notification of reactor safety problems that could affect both US and Canadian nuclear generation facilities.

The CNSC publishes an annual report on the regulatory oversight and safety performance for nuclear power generating sites. The report assesses how well licensees are meeting regulatory requirements and program expectations in areas such as human performance, radiation and environmental protection and emergency management and fire protection. On September 6, 2018, the CNSC issued its 2017 annual report, giving both the Darlington GS and the Pickering GS the highest possible safety rating of "Fully Satisfactory", and the Darlington, Pickering, and Western waste management facilities the safety rating of "Satisfactory". The Darlington GS achieved this rating for the ninth consecutive year, while the Pickering GS achieved this rating for the third consecutive year. The report assessed the safety performance of the waste management facilities for the first time.

In 2017, the CNSC approved regulatory document *REGDOC 2.2.4 – Fitness for Duty – Managing Alcohol and Drug Use* for use at Canadian nuclear power plants. This document sets out requirements for managing fitness for duty of workers in relation to alcohol and drug use at high-security sites, including for-cause alcohol and drug testing for workers in positions identified as safety-sensitive or safety-critical, and random alcohol and drug testing for workers holding safety-critical positions. OPG continues to work with its partners in the Canadian nuclear industry to develop a program suitable for Canada and its workers that complies with these new requirements. OPG expects that all aspects of the new requirements will be implemented by July 1, 2019 with the exception of random testing, which is expected to commence on December 1, 2019.

Pursuant to the *Emergency Management and Civil Protection Act*, a provincial agency, Office of the Fire Marshal and Emergency Management (OFMEM), is required to periodically update the Provincial Nuclear Emergency Response Plan (PNERP) for cabinet approval. Based on the approved PNERP Master Plan, the OFMEM prepares Implementing plans for each major nuclear site in the province, including the Pickering GS and the Darlington GS, in order to provide detailed guidance and direction. In 2016, the CNSC advised the OFMEM to consider more severe accidents in the update to the PNERP. In December 2017, the Province approved the updated PNERP Master Plan. The changes include a new 20 kilometre Contingency Planning Zone around the Pickering and Darlington nuclear generating stations, which will improve protective actions for the public. In March 2018, the Province published the Implementing Plan for the Pickering GS based on the updated PNERP Master Plan. OPG has updated its nuclear emergency preparedness plans to conform with the updated PNERP Master Plan and the Implementing Plan for the Pickering GS. The updated Implementing Plan for the Darlington GS was approved by the Province on January 31, 2019 and is expected to be published in the first quarter of 2019.

All of OPG's nuclear power reactor operating licences and waste facility licences are current and up to date. In May 2017, following an application by OPG and a set of public hearings, the CNSC announced that the licence for the Western Waste Management Facility (WWMF) located at the Bruce nuclear generating station site was renewed for a ten-year period and will be valid until May 31, 2027. In February 2018, following an application by OPG and a set of public hearings, the CNSC announced that the licence for the Pickering Waste Management Facility was renewed for a ten-year period and will be valid until August 31, 2028. Further details on the operating licence for the Darlington GS are found in the section, *General Development of the Business* under the heading, *Nuclear Business Development – Darlington Refurbishment* and for the Pickering GS in the section, *General Development of the Business* under the heading, *Nuclear Business Development – Extension of Pickering Commercial Operation to 2024*.

Details on Canada's nuclear liability regime and related insurance coverage can be found under the heading, *Insurance*.

Nuclear Generating Station Life

Service life predictions for OPG-operated nuclear stations are developed by assessing the impacts of a number of operating, technical and regulatory considerations on both unit and station economics. A decision by OPG to remove a unit from service would be primarily an economic decision that becomes more likely as the number of components requiring replacement and the frequency and duration of inspections required to ensure a unit's fitness for service increases. The key life-limiting components at OPG's nuclear stations include fuel channels, feeder tubes, steam generators and other reactor components. End-of-service life predictions are reviewed as new information on possible degradation mechanisms becomes available and as future generation expectations are revised.

In December 2017, OPG reassessed the accounting end-of-life assumptions for the Pickering GS, extending the estimated service life from December 31, 2020 for all six operating units to December 31, 2022 for Units 1 and 4 and December 31, 2024 for Units 5 to 8. The reassessment of the Pickering GS end-of-life assumptions took into account the technical assessments completed to date that provided sufficient confidence in programs and provisions in place to assure fitness-for-service of fuel channel components in line with the planned extended commercial operation period. Further information on extension of Pickering commercial operation can be found in the section, *General Development of the Business* under the heading, *Nuclear Business Development – Extension of Pickering Commercial Operation to 2024*.

Nuclear Facility Planning

OPG uses a structured approach to identify and prioritize projects to optimize returns from nuclear station reinvestment within the constraints imposed by technical and financial requirements, while ensuring that safety, environmental and other regulatory programs are of the highest priority. Input from predictive maintenance programs, life cycle management plans and system health monitoring is used to determine the activities necessary to sustain and improve nuclear unit performance.

A structured framework modeled on the best practices identified by the Electric Power Research Institute, the Institute for Nuclear Power Operations and the World Association of Nuclear Operators (WANO) is used to optimize the maintenance of the nuclear generating stations and assess the health of the facilities. The structured framework includes predictive maintenance programs, which combine technologies and human expertise to analyze equipment performance, maintenance and design data in order to make timely decisions about the scope and timing of inspections and maintenance for major or critical equipment. The predictive maintenance program for each station is prioritized on the basis of the importance of the equipment for reactor safety. Life cycle management plans are maintained for critical station components and are updated annually to incorporate operating experience and new information. The life cycle plans define the inspection and maintenance programs required to ensure that these components perform in accordance with their design basis. In addition, system engineers conduct performance monitoring of station systems according to system performance monitoring plans that are based on a comparison of performance indicators against established targets to improve system performance. System performance is assessed by collecting, trending and analyzing station data. This information is reported in system health reports which are updated annually, at a minimum.

OPG's practices impacting the performance of the nuclear stations are audited regularly by WANO, with identified areas for improvement acted upon with priority. In May 2016, OPG hosted a WANO peer evaluation that compared the Darlington GS against standards of excellence through an in-depth and objective review by an international panel of industry experts. The review maintained Darlington's excellent standing as one of the top performing nuclear plants in the world. In December 2017, OPG hosted a WANO peer evaluation for the Pickering GS, which focused on the safe and reliable operation of the station while evaluating the plant material condition and functional and cross-functional areas of the station. The results of the evaluation showed that the Pickering GS sustained its strong rating while demonstrating significant improvement since the last review, resulting in its best ever WANO peer review. In the fourth quarter of 2018, OPG hosted a WANO peer evaluation for the Darlington GS, which focused on the station's plans for nuclear safety and plant reliability, day-to-day operations and overall behaviours. The results of the evaluation maintained Darlington's excellent standing for the fourth consecutive review period as one of the top performing nuclear plants in the world.

In September 2016, OPG hosted a team of experts from the International Atomic Energy Agency (IAEA) at the Pickering GS to conduct a standard Operational Safety Review Team mission. The team conducted an in-depth review of performance and adherence to international safety standards and released the final report in the second quarter of 2017 which confirmed that the Pickering GS demonstrates a strong commitment to safety. In September 2018, the IAEA's Operational Safety Review Team conducted a follow-up operational safety review of the Pickering GS and confirmed in a press release that the review team noted a strong commitment from OPG in implementing the recommendations from the September 2016 review. The team noted that several recommendations were fully implemented and significant progress had been made on several other recommendations.

Nuclear planned outages are necessary to execute inspection and maintenance work related to asset management and regulatory requirements for systems and equipment where access is not possible under normal operating conditions. Planned outages also give OPG an opportunity to perform system and equipment upgrades, project work, configuration changes and other improvements and modifications. The nuclear generation plan, by reference to the station's life cycle management plans, establishes the number, frequency and duration of the outages for each year required to ensure the continued safe and reliable long-term operation of the plant and its compliance with CNSC regulatory requirements.

The outage cycle determines the number of planned outages at each station in a particular year. The Darlington GS is on a 36-month outage cycle, where each of the four units undergoes an outage every three years, resulting in one or two outages per year for the station. Supported by technical assessments undertaken as part of the plan to extend Pickering commercial operation to 2024, the Pickering GS outage cycle has been optimized and extended from 24 to 30 months. In addition, on a periodic basis all units at each station are required to be shut down to allow for inspection and maintenance on the station vacuum building, containment systems and other safety systems. The CNSC currently requires these outages every 12 years at the Darlington GS and every 10 years at the Pickering GS. The most recent vacuum building outage took place at the Darlington GS in 2015 and at the Pickering GS in 2010.

Nuclear Ancillary Operations

OPG's nuclear generating units contain approximately 7,400 tonnes of deuterium oxide, or heavy water, not including heavy water contained at the leased Bruce stations. The heavy water is required to operate CANDU reactors. There are currently no heavy water plants in Canada. OPG believes that its existing inventory of heavy water will be sufficient to replenish supplies as a result of normal operating losses at its nuclear stations, including the refurbishment of the Darlington GS. OPG also believes that sufficient quantities of heavy water are available for possible changes in operating conditions or for new nuclear generating facilities. OPG seeks opportunities to sell available surplus quantities of heavy water from its inventory.

Tritium is a radioactive substance produced as a by-product of operating CANDU reactors, through the use of heavy water in the reactor moderator and heat transport systems. OPG operates a specialized facility at its Darlington site, the Darlington Tritium Removal Facility (TRF), which removes tritium from the tritiated heavy water (detritiation) used at the nuclear generating stations, in order to control the occupational dose exposure to employees and limit the amount of tritium released to the environment. The extracted tritium is chemically immobilized, placed in special containers and safely stored in a vault. The Darlington TRF is also expected to be used to detritiate heavy water during the eventual decommissioning of OPG's nuclear generating stations. Some tritium is sold to government-approved organizations for authorized commercial and health industry uses. OPG also provides detritiation services to Bruce Power. Opportunities for providing detritiation services to other third parties are limited because of storage and capacity restrictions at the Darlington TRF.

Cobalt-60 produced and sold by OPG is used mainly in the health industry to sterilize surgical and medical supplies. Cobalt-60 is currently produced in Units 6, 7 and 8 at the Pickering GS. Cobalt-60 can be produced in reactors which, like the CANDU reactors, use adjuster rods to regulate power. The production process involves replacing the stainless steel rod by a rod containing Cobalt-59, which is isotopically converted into Cobalt-60 after lengthy exposure to the atomic reaction in the reactor core. During planned maintenance outages, the rods are removed, cut and packaged for sale as Cobalt-60, and new rods are inserted in the reactor to continue the production cycle.

Bruce Power Refurbishment and Bruce Lease Agreement

OPG leases the four-unit Bruce A (Units 1 to 4) and the four-unit Bruce B (Units 5 to 8) nuclear generating stations and associated lands and facilities to Bruce Power on a long-term basis. The stations are located in the Municipality of Kincardine, Ontario on the shore of Lake Huron. Bruce Units 1 and 2 were refurbished by Bruce Power under a refurbishment agreement with the IESO and returned to service in 2012. Under an updated refurbishment agreement between the IESO and Bruce Power announced in December 2015, Bruce Power is proceeding with the refurbishment of the six un-refurbished units of the Bruce nuclear generating stations. The output from the Bruce nuclear generating stations is not subject to rate regulation by the OEB.

While Bruce Power is responsible for operating all of the leased units, OPG is primarily responsible for the management of the nuclear used fuel and other nuclear waste associated with the Bruce nuclear generating facilities, as well as the decommissioning of the facilities at the Bruce site. Under the lease agreement between Bruce Power and OPG (Bruce Lease) and related agreements, OPG receives base rent and supplemental rent payments from Bruce Power, fees for nuclear waste management other than used fuel and fees for certain other services.

In order to facilitate Bruce Power's refurbishment plans, the Bruce Lease and related agreements were amended in December 2015 to extend Bruce Power's future options to renew the lease up to the end of 2064. To better align with OPG's costs, beginning in 2016 the agreements were also amended to revise the approach for calculating supplemental rent payments and fees for nuclear waste management other than used fuel and starting in 2017 amended to modify the fee structure for OPG's heavy water detritiation services. Beginning in 2016 supplemental rent payments wholly represent fees for nuclear used fuel management. Amendments were also made to enable certain adjustments to future base rent, supplemental rent and other fees for potential future changes in OPG's decommissioning and nuclear waste management cost estimates related to the Bruce facilities and to remove a conditional supplemental rent rebate provision. Certain of the above amendments were executed by OPG pursuant to a Shareholder Declaration and Shareholder Resolutions issued in November 2015. For a complete list of Shareholder directives, refer to the section, *Interest of Management and Others in Material Transactions* under the heading, *Relationship with the Province and the OEFC – Shareholder Directives*.

The refurbishment of the first of the six un-refurbished Bruce units, Unit 6, is scheduled to commence on January 1, 2020. Any nuclear waste resulting from this refurbishment that is determined to be non-routine per the existing waste management contract between Bruce Power and OPG requires an additional agreement to compensate OPG for managing this waste. In June 2018, OPG and Bruce Power executed a supplemental agreement to enable OPG to recover costs associated with the receipt, storage and disposal of non-routine steam generator and re-tube waste relating to Bruce Power's Unit 6 refurbishment.

Pursuant to a Memorandum of Understanding dated November 12, 2015, OPG and Bruce Power have committed to ongoing collaboration to improve their respective nuclear refurbishment programs. Focus areas for collaboration include asset management and inspection programs, procurement, tooling, waste management and labour arrangements.

Renewable Generation

Hydroelectric generating stations use the energy of falling water to drive hydraulic turbines that generate electricity. OPG's hydroelectric stations provide one of the Company's competitive advantages – a reliable, relatively low-cost source of renewable energy free of air emissions. Electricity generation from OPG's hydroelectric facilities depends primarily upon the availability of water, which is affected largely by natural factors such as precipitation and evaporation. It is also impacted by the prevalence of SBG conditions. OPG's hydroelectric stations operate as baseload, intermediate or peaking stations, depending on their physical characteristics and hydrological conditions.

Overview of Generating Facilities

OPG currently owns and operates 66 hydroelectric generating stations and 241 associated dams located on 24 river systems across Ontario. The results of 54 of these stations that are rate regulated by the OEB are reported in the Regulated – Hydroelectric segment. The results of the remaining 12 stations are subject to long-term ESAs with the IESO and are included in the Contracted and Other Generation segment.

Through Eagle Creek, a wholly-owned subsidiary, OPG also currently owns and operates 63 hydroelectric generating stations and 67 dams located on 36 river systems throughout the US. The results of these stations are reported in the Contracted and Other Generation segment.

As at December 31, 2018, OPG's regulated hydroelectric facilities had a total in-service capacity of 6,426 MW and the non-regulated hydroelectric facilities in Ontario had a total in-service capacity of 1,054 MW. OPG's Ontario hydroelectric generating stations range in age from the Peter Sutherland Sr. GS which commenced commercial operations in 2017 to the DeCew Falls I GS, which is over 120 years old. Eagle Creek's hydroelectric facilities had a total in-service generating capacity of approximately 216 MW, excluding minority-held facilities, as at December 31, 2018.

Hydroelectric ESAs with 50-year terms are in place for the following hydroelectric facilities in Ontario:

- Lac Seul and Ear Falls generating stations, with an expiry date of February 2059;
- Healey Falls GS, with an expiry date of April 2060;
- Sandy Falls, Wawaitin, Lower Sturgeon and Hound Chute generating stations, with an expiry date of December 2060;
- Little Long, Harmon, Smoky Falls and Kipling generating stations, with an expiry date of January 2064; and
- Peter Sutherland Sr. GS, with an expiry date of March 2067.

Eagle Creek's energy and capacity supply contracts have expiry dates ranging from 2019 to 2039. Eagle Creek continues to pursue new energy and capacity supply agreements where appropriate.

OPG operates and maintains Ontario-based hydroelectric facilities in regional operations groups. In 2017, the number of regional groups was reduced from five to four, by integrating the Central Operations work centers into three of the other existing groups. The following are the four regional operations groups that currently operate and maintain OPG's 66 Ontario-based hydroelectric facilities:

- Niagara Operations – includes the three Sir Adam Beck stations located on the Niagara River and the two DeCew Falls hydroelectric facilities located on the Welland River, all of which have been rate regulated by the OEB since 2008, as well as seven regulated generating stations on the Muskoka, Severn and Beaver Rivers.
- Eastern Operations – includes 21 regulated and one non-regulated hydroelectric generating station. The regulated stations are: the R.H. Saunders GS on the St. Lawrence River; the Otto Holden, Des Joachims, Chenaux and Chats Falls generating stations on the Ottawa River; the Mountain Chute, Barrett Chute, Calabogie, Stewartville and Arnprior generating stations on the Madawaska River; and eleven stations on the Trent, Mississippi and Rideau Rivers. The R.H.

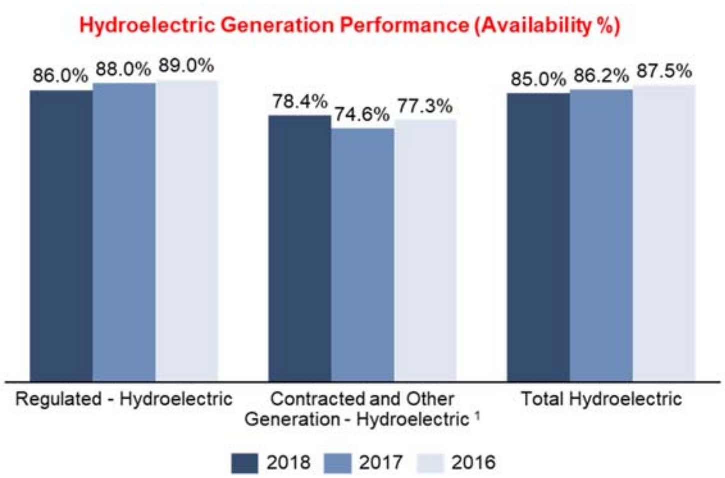
Saunders GS has been rate regulated by the OEB since 2008. The non-regulated station is the Healey Falls GS on the Trent River.

- Northeast Operations – includes 12 regulated and nine non-regulated hydroelectric generating stations in northeastern Ontario. The regulated stations are: the Chute and Lower Notch generating stations on the Montreal River; the Abitibi Canyon and Otter Rapids generating stations on the Abitibi River; the Matabitchuan GS on the Matabitchuan River; and seven stations on the Wanapitei and French Rivers. The non-regulated stations are: the Little Long, Harmon, Smoky Falls and Kipling generating stations on the Lower Mattagami River; the Wawaitin, Sandy Falls and Lower Sturgeon generating stations on the Upper Mattagami River; the Hound Chute GS on the Montreal River and Peter Sutherland Sr. GS on the New Post Creek.
- Northwest Operations – includes nine regulated and two non-regulated hydroelectric generating stations in northwestern Ontario. The regulated stations are: the Pine Portage, Cameron Falls and Alexander generating stations on the Nipigon River; the Silver Falls and Kakabeka Falls generating stations on the Kamanistikwia River; the Manitou Falls and Caribou Falls generating stations on the English River; the Aguasabon GS on the Aguasabon River; and the Whitedog Falls GS on the Winnipeg River. The non-regulated stations are the Lac Seul and Ear Falls generating stations on the English River.

These operations groups are also responsible for the operation and maintenance of OPG's thermal facilities discussed under the heading, *Generation Operations – Thermal*.

Eagle Creek operates and maintains its 63 hydroelectric generating stations across 13 US states using three regional divisions:

- Northeast Division – 18 hydroelectric generating stations located in Maine and New Hampshire;
- East Division – 18 hydroelectric generating stations located in Massachusetts, New Jersey, New York, Vermont and Virginia;
- Midwest Division – 27 hydroelectric generating stations located in Michigan, Wisconsin, Minnesota, Illinois, Colorado and California.



[1] The Hydroelectric Availability reflects hydroelectric generating stations in Ontario. Eagle Creek operated generating stations which were acquired on November 27, 2018 are not reflected in these results.

The generating performance of OPG's hydroelectric generating stations in Ontario is expressed using plant availability.

Availability is represented by the percentage of time the generating unit is capable of providing service, whether or not it is actually generating electricity, compared to the total time for the respective period, weighted by unit capacity.

OPG's objectives for the hydroelectric operations include operating and maintaining the generating facilities in a safe, efficient and cost-effective manner, while increasing the output from the facilities and pursuing opportunities to increase the fleet's capacity. OPG aims to increase the output of the hydroelectric facilities by improving operational flexibility, enhancing reliability, optimizing outage planning and, subject to water conditions, increasing availability to meet electricity system demand. Where economical and practical, OPG also pursues opportunities to refurbish, expand or redevelop its existing hydroelectric stations. OPG is continuing to pursue opportunities to expand its renewable generation portfolio through strategic acquisitions in key North American markets.

The Company continues to evaluate and implement plans to increase capacity, maintain and improve operational performance and extend the operating life of its hydroelectric generating assets. These plans are accomplished through multi-year capital investment and other programs, including replacements and upgrades of turbine runners, and refurbishment or replacement of existing generators, transformers and control systems. In addition to the runner replacement and upgrade program, OPG plans to increase the total capacity of its existing hydroelectric generating fleet through the Ranney Falls GS project and a planned project to rehabilitate two previously decommissioned units at the Sir Adam Beck I GS. OPG is also planning to repair, rehabilitate or replace a number of aging civil structures. The Ranney Falls GS project is discussed in the section, *General Development of the Business* under the heading, *Renewable Generation Business Development – Ranney Falls Hydroelectric Generating Station.*

For additional information on OPG's hydroelectric operations, refer to the section, *Core Business, Strategy and Outlook* under the heading, *Operational Excellence – Electricity Generation Production and Reliability* in the Company's 2018 year-end MD&A.

Hydroelectric Facility Planning

Major components of hydroelectric facilities typically include: generating equipment such as turbines, generators and transformers; civil works such as powerhouses, dams, headworks, spillways and water conveyance canals and tunnels; and facilities required to operate and maintain the stations such as control rooms and work centres. Although there is a link between the age of a facility and the capital investment required to maintain it, age does not generally establish an upper limit on the expected useful life of a hydroelectric station. Regular maintenance and the replacement of specific components typically allow stations to operate for very long periods.

OPG currently operates five staffed control rooms across Ontario that provide remote control and monitoring for all of OPG's Ontario-based hydroelectric generating facilities. These control rooms are designed to minimize the number of staffed control rooms, reduce control system failures and increase the amount of information available for production planning. Over 2017 and 2018, OPG amalgamated several control rooms, reducing the total number of control rooms to the current five.

OPG uses a structured portfolio approach to identify and prioritize projects for its hydroelectric asset investment programs. Engineering reviews and station condition assessments are performed as appropriate to determine short-term and long-term expenditure requirements to sustain or improve station performance. These may be followed by the preparation of a facility life cycle plan on an as-needed basis for marginal assets or assets potentially requiring significant expenditures relative to the value of the facility. This approach is designed to identify necessary capital, operating and maintenance expenditures for specific facilities and to direct resources towards those facilities that can best maintain or enhance their value.

OPG's maintenance programs include a preventive maintenance program to identify, schedule and execute maintenance activities at the hydroelectric facilities. The preventative maintenance program is based on the concept of streamlined reliability-centred maintenance, whereby the type and frequency of maintenance applied to an individual component is determined based on the nature and consequences of failure, balancing cost and risk.

The cornerstone of OPG's project prioritization and maintenance approaches for the hydroelectric assets is that safety, environmental and other regulatory programs are of the highest priority.

Water Management

OPG's water management strategy for its hydroelectric facilities is to safely utilize available water for generation of electricity in conformance with applicable legal, environmental, operational and regulatory requirements. OPG uses hydrological and meteorological data to manage water levels, water flows and water storage, and strives to schedule water use for optimum utilization and to minimize controllable water spills due to SBG conditions.

Gross Revenue Charge and Water Rental Payments

Hydroelectric generating stations in Ontario are subject to taxes and charges as prescribed by *Ontario Regulation 124/02* under the *Electricity Act, 1998*. These taxes and charges, referred to as Gross Revenue Charge (GRC), are based on station gross revenue, which, for this purpose, is determined as the product of annual station energy generation and the prescribed revenue rate of $40/MWh (Gross Revenue). All OPG hydroelectric generating stations in Ontario are subject to GRC Property Tax, which is determined by applying graduated tax rates, ranging from 2.5 percent to 26.5 percent through four tiers of production, to a station's annual Gross Revenue. GRC Property Tax payments are made to the OEFC. Hydroelectric generating stations that are subject to water power lease agreements with the MNRF are also subject to GRC Water Rental charges in addition to GRC Property Tax payments. The GRC Water Rental charge is determined as 9.5 percent of a station's annual Gross Revenue. GRC Water Rental payments are made to the Ontario Ministry of Finance.

Annual land rental fees are paid to the MNRF as prescribed by Crown leases and licences of occupation which authorize OPG's tenure (including flooding rights), typically at storage dam sites.

The eight OPG hydroelectric generating stations located on the Trent River and Rideau Canal are subject to rental charges prescribed by licences with Parks Canada. These licences authorize OPG to occupy the lands, maintain and operate the powerhouses and dams and utilize water that is surplus to navigation needs for the generation of electricity.

Water conveyance charges are paid to the St. Lawrence Seaway Management Corporation as prescribed by a lease agreement providing for the withdrawal of water surplus to navigation needs from the Welland Canal for utilization at the DeCew Falls generating stations. The water conveyance charges apply to the transport of water from Lake Erie through the Welland Canal to OPG's intakes at Allanburg.

Water rental payments are made to the Government of Québec, as prescribed by an agreement dated January 2, 1943. These agreements pertain to the sharing of the water powers of the Ottawa River and were ratified by the Governments of Ontario and Québec. Water rental charges payable to the Province of Québec and the GRC payments are each based on one-half of the energy produced at the three regulated OPG hydroelectric generating stations located on the Ottawa River. A rate amending agreement is currently being negotiated between the Governments of Ontario and Québec. No significant changes are expected as a result of the rate negotiation.

Under the aforementioned 1943 agreement, OPG also provides compensation to Hydro Québec for the generating value at OPG's stations on the Ottawa River attributed to the water diverted into the Ottawa River through the Dozois Reservoir in Québec. OPG shares in the operation and maintenance costs pertaining to the dam enabling the Dozois diversion.

The GRC and water rental payments for the regulated hydroelectric stations are recoverable through OEB-approved regulated prices applicable to these stations.

For the applicable Eagle Creek hydroelectric stations, OPG pays annual charges for headwater benefits as determined by the FERC. Headwater benefits represent the additional electric generation that occurs at a downstream hydroelectric facility resulting from regulation of river flow by upstream facilities, usually by increasing or decreasing the release of water from upstream reservoirs.

Further details on water rights can be found in the section, *Description of the Business* under the heading, *Water Rights*.

Thermal

Overview of Generating Facilities

Thermal generating stations use heat energy to drive steam turbines that generate electricity. OPG's wholly-owned operating thermal facilities are comprised of the biomass-fuelled Atikokan GS and the dual-fuelled generating Lennox GS, which is capable of burning either oil or natural gas. The combined in-service capacity of these stations was 2,305 MW as at December 31, 2018. The Lennox GS is located in Greater Napanee, Ontario and accounts for 2,100 MW of this in-service capacity. The Atikokan GS is located in Atikokan, Ontario and has an in-service capacity of 205 MW.

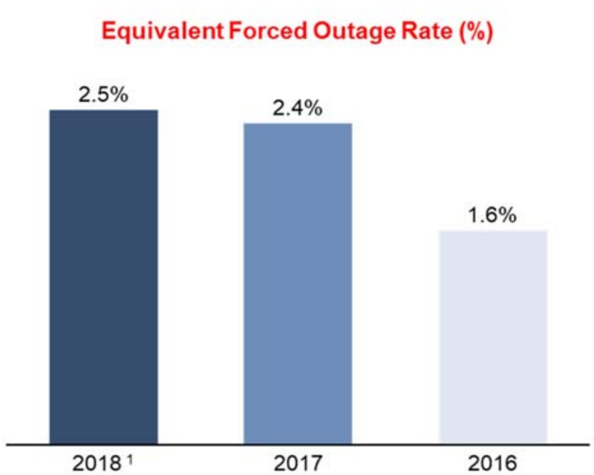
Station capacity and electricity production from the Lennox GS are subject to an ESA with the IESO for the period from January 2013 to September 2022. Station capacity and electricity production from the Atikokan GS are subject to a ten-year ESA expiring in July 2024. In July 2018, OPG reached an agreement with the IESO to terminate the ESA for the advanced biomass-fuelled generating unit at the Thunder Bay GS, effective June 30, 2018, as part of the station's closure.

The results of the Lennox, Atikokan and Thunder Bay generating stations are reported in the Contracted and Other Generation segment.

OPG's thermal generating stations operate as peaking facilities, depending on electricity demand. This provides Ontario's electricity system with the flexibility to meet changing daily system demand and capacity requirements and has enabled the system to accommodate the expansion of Ontario's renewable generation portfolio. The continued operation of these stations will continue to provide Ontario with capacity and peaking generation.

The wholly-owned thermal generating stations are operated and maintained by OPG as part of the regional operations groups used to operate and maintain the Company's Ontario-based hydroelectric facilities. The Lennox GS is operated under Eastern Operations and Atikokan GS is part of Northwest Operations.

Former thermal stations that are no longer available to generate electricity are excluded from the Contracted and Other Generation business segment once they are removed from service. This includes the Lambton GS and Nanticoke GS sites, which ceased coal-fired generation in 2013.



[1] The thermal EFOR in 2018 includes unplanned outage days at the Thunder Bay GS prior to the cessation of operations in July 2018.

The generation performance of OPG's wholly-owned thermal generating stations is measured using the Thermal Equivalent Forced Outage Rate (EFOR). EFOR is measured by the ratio of time a generating unit is forced out of service by unplanned events, including any forced deratings, compared to the amount of time the generating unit was available to operate.

Additional information on OPG's thermal operations can be found in the section, *Core Business, Strategy and Outlook* under the heading, *Operational Excellence – Electricity Generation Production and Reliability* in the Company's 2018 year-end MD&A.

Thermal Fuel Procurement

Due to the relatively low capacity factor of the Lennox GS, natural gas is purchased on the spot market, other than a small volume of fixed term natural gas required for non-generation operational services. Oil for the Lennox GS is contracted for and purchased on an as needed basis. Fuel switching at the station is based on market and fuel economics. Annual procurement of biomass fuel quantities for Atikokan GS is pre-determined by the corresponding ESA. Agreements are in place with suppliers for the purchase of all biomass fuel pellets needed to provide fuel for the Atikokan GS for the duration of its ESA.

Thermal Facility Planning

OPG's facility planning approach is designed to identify necessary capital and operating and maintenance expenditures for each thermal facility. This planning approach aims to sustain facility availability for the remaining service life through station reinvestment within constraints imposed by technical, financial, safety and system requirements, as well as regulatory and contractual limits. Periodic engineering reviews of major systems are conducted to identify performance issues, provide reinvestment recommendations where appropriate and ensure that regulatory, safety and operating standards continue to meet expectations. OPG undertakes projects at thermal stations that are expected to achieve an appropriate return within the service life of the stations.

Thermal Station Decommissioning

OPG has recognized and carries on its balance sheet a liability to cover future expenditures to decommission and dismantle each of its wholly-owned thermal generating stations at the end of their estimated service lives. This provision is not funded and is estimated on the basis of station closure. The estimates for these liabilities are based on a review of required decommissioning, clean-up and restoration activities, underlying economic assumptions and anticipated timing of these activities in line with current accounting end-of-life assumptions for the operating sites. For the former Nanticoke and Lambton generating stations, the liability reflects the estimated cost of executing current decommissioning plans.

Portlands Energy Centre Partnership

OPG has a 49.95 percent partnership interest in Portlands Energy Centre L.P., a limited partnership formed with TransCanada Energy Ltd. (49.95 percent) and the general partner of the partnership, Portlands Energy Centre Inc. (0.1 percent). The shareholders of Portlands Energy Centre Inc. are OPG (50 percent) and TransCanada Energy Ltd. (50 percent). PEC is a 550 MW combined cycle generation natural gas turbine electricity generating facility located in the port area of downtown Toronto, Ontario. The station was declared in-service in a combined cycle mode in 2009. PEC operates under a 20-year Accelerated Clean Energy Supply contract with the IESO expiring in 2029 and trades electricity in the Ontario electricity market.

The Contracted and Other Generation segment includes OPG's share of equity income from its 50 percent ownership interest in the station. OPG's share of the in-service generating capacity and generation volume from its interest in the station are included in the operating statistics for the segment.

Brighton Beach Power Partnership

OPG has a 49.95 percent partnership interest in Brighton Beach Power L.P., a limited partnership formed with ATCO Power Canada Ltd. (49.95 percent) and the general partner of the partnership, Brighton Beach Power Ltd. (0.1 percent). The shareholders of Brighton Beach Power Ltd. are OPG (50 percent) and ATCO Power Canada Ltd. (50 percent). Brighton Beach is a 560 MW combined cycle gas turbine electricity generating facility located in Windsor, Ontario. The station began commercial operation in 2004. Brighton Beach operates under a 20-year energy conversion agreement with Shell Energy North America (Canada) Inc. (Shell Energy) expiring in July 2024, pursuant to which Shell Energy owns and trades the electricity produced by the facility in return for the supply of gas and the fees payable under the energy conversion agreement. Shell Energy's financial obligations are guaranteed by Shell Energy North America (US) L.P. (Shell L.P.), and Shell L.P.'s obligations are in turn guaranteed by Shell Oil Company.

The Contracted and Other Generation segment includes OPG's share of equity income from its 50 percent ownership interest in the station. OPG's share of the in-service generating capacity and generation volume from its interest in the station are included in the operating statistics for the segment.

Regulated – Nuclear Waste Management Segment

Overview

OPG is responsible for the ongoing management of radioactive wastes generated by its nuclear operations. In addition, OPG has the obligation for decommissioning its nuclear generating stations and nuclear waste facilities after the end of their useful lives and for managing radioactive wastes that arise in connection with the decommissioning. The handling and disposal of radioactive waste in Canada is subject to federal legislation.

The radioactive wastes generated by OPG's nuclear operations include the following:

- Used nuclear fuel bundles;
- Intermediate-level waste – material that has come in close contact with the reactors, but is less radioactive than used fuel, such as ion exchange resins and reactor equipment and components; and
- Low-level waste – material used in connection with station operation that is not highly radioactive, such as tools and protective clothing.

The Company's Regulated – Nuclear Waste Management segment reports the results of the Company's operations associated with the following:

- management of used nuclear fuel and L&ILW;
- decommissioning of OPG's nuclear generating stations including the stations on lease to Bruce Power and other nuclear facilities;
- management of the Nuclear Segregated Funds established under the ONFA to fund OPG's obligation for nuclear facilities decommissioning and the long-term management of nuclear waste; and
- Other related activities including the inspection and maintenance of the waste storage facilities.

The nuclear accretion expense, which is the increase in the carrying amount of the present value liabilities for nuclear fixed asset removal and nuclear waste management liabilities reported on the balance sheet due to the passage of time, and the earnings from the Nuclear Segregated Funds are reported under this segment. The Regulated – Nuclear Waste Management segment is considered rate regulated because OPG's costs associated with nuclear waste management and nuclear facilities decommissioning liabilities are included by the OEB in the determination of regulated prices for production from the Pickering and Darlington nuclear generating stations.

Federal Government Policy

In accordance with the requirements of the *Nuclear Fuel Waste Act* (Canada) (NFWA), in 2002, OPG and the other owners of nuclear fuel waste in Canada established a separately incorporated NWMO, with a mandate to manage and coordinate the full range of activities relating to the long-term management of nuclear fuel waste in Canada. This includes the design and implementation of Canada's plan for the long-term management of used nuclear fuel. In 2007, the federal government approved NWMO's submitted option, the Adaptive Phased Management (APM) plan, as the long-term solution for nuclear fuel waste. The APM plan contemplates the eventual long-term permanent disposal of radioactive nuclear fuel waste in a DGR after a collaborative process of communication and engagement with Canadians aimed at selecting a suitable geological site with an informed and willing host community. The NWMO is in the process of undertaking a multi-year site selection process for the used fuel DGR.

The NFWA requires the nuclear fuel waste owners in Canada to establish and make payments into trust funds for the purpose of funding the implementation of the long-term management plan for used fuel. Accordingly, OPG has established the Ontario NFWA Trust (the NFWA Trust), which forms part of the Nuclear Segregated Funds under the ONFA. Additional details can be found under the heading, *Funding Mechanisms.*

Current Practices

Used Nuclear Fuel

Used nuclear fuel bundles from OPG's reactors and leased reactors at the Bruce site are temporarily stored at each nuclear generating station in water-filled pools, known as wet bays, for a cooling-off period of at least ten years, during which time their radioactivity is substantially reduced. Each nuclear generating station has sufficient capacity to store used nuclear fuel bundles in the wet bays for approximately 15 to 20 years of operation.

After the used nuclear fuel bundles have been stored for the cooling-off period, the bundles are transferred from the wet bays to above-ground dry storage containers at the corresponding nuclear station site. Currently, there is used nuclear fuel bundles in dry storage at the Pickering, Darlington and Bruce sites.

OPG's planning assumption for the long-term management of used nuclear fuel bundles is consistent with the NWMO's APM concept of disposal in a DGR. The NWMO has indicated that it currently expects an in-service date of 2043 at the earliest for the used fuel DGR.

Low and Intermediate Level Waste

The majority of OPG's L&ILW is stored at the radioactive waste management facility at WWMF located on the Bruce site. This facility, which continues to be owned and operated by OPG following the lease of the Bruce generating stations, operates under a separate licence issued by the CNSC. A smaller volume of ILW is stored at each of the radioactive waste management facilities at the Pickering and Darlington sites. OPG's planning assumption for the long-term management of L&ILW is the placement of this nuclear waste in a separate L&ILW DGR.

Additional details can be found under the heading, *Deep Geologic Repository for Low and Intermediate Level Waste.*

Station Decommissioning

OPG's planning assumption for the decommissioning of its nuclear generating stations is a deferred dismantlement strategy. Under this strategy, each station will be de-watered and de-fuelled immediately after it has ceased operations and prepared for safe storage and monitoring. Thereafter, OPG intends to monitor the station for approximately 30 years while in safe storage, after which time the station will be dismantled and the site restored over a period of approximately ten years. This strategy has been communicated to the CNSC through regular updates of OPG's preliminary decommissioning plans and liability estimates for the nuclear generating stations. OPG's nuclear operating licences have been issued based on, amongst other considerations, CNSC's understanding of this strategy. The operating licence renewal for the Pickering GS received in August 2018 and valid until August 31, 2028 supports the plan to place the station in a safe storage state by 2028 following the end of commercial operation.

Deep Geologic Repository for Low and Intermediate Level Waste

OPG has proposed a DGR as the preferred solution for the safe long-term management of the L&ILW produced from the continued operation of OPG-owned nuclear generating stations. Agreement has been reached with local municipalities for OPG to develop the L&ILW DGR on lands adjacent to the WWMF in Kincardine, Ontario. Under the NSCA, OPG requires licences from the CNSC for activities to be undertaken with respect to the L&ILW DGR project. Before the CNSC can make licensing decisions for the proposal, an Environmental Assessment (EA) must be conducted.

The environmental effects of the proposed L&ILW DGR were examined by the CNSC and Canadian Environmental Assessment Agency (CEAA)-appointed Joint Review Panel (JRP) to meet the requirements of the *Canadian Environmental Assessment Act* as well as the project specific Environmental Impact Statement Guidelines. The JRP submitted its report and recommendations on the EA to the federal Minister of Environment in May 2015, concluding that, given mitigation, there is unlikely to be significant environmental impact from the project and recommending that the Minister approve the EA.

In February 2016, the federal Minister of Environment and Climate Change requested additional information on certain aspects of the EA, including information related to alternate locations for the project. OPG submitted the requested information in December 2016. Following its review of OPG's submission and a period of public comment, the CEAA requested further information that OPG subsequently provided in May 2017. In June 2017, the CEAA notified OPG that it had sufficient and adequate information to proceed with the next step of the environmental assessment process and advised that a draft report and updated terms and conditions would be prepared for public review.

In August 2017, the federal Minister of Environment and Climate Change requested OPG to update its analysis of potential cumulative effects of the project on the Saugeen Ojibway Nation's (SON) physical and cultural heritage, including a description of the potential effects of the project on the Nation's spiritual and cultural connection to the land, taking into account the results of the SON Community Process. OPG continues its engagement with the SON towards securing support for the project and to formulate a response to the information request.

The L&ILW DGR at the WWMF site remains OPG's preferred solution for the safe long-term management of the L&ILW. The in-service date of the L&ILW DGR is expected to be approximately six to seven years from the start of construction.

Funding Mechanisms

On April 1, 1999, Ontario Hydro's obligation for nuclear facilities decommissioning and nuclear waste management was transferred to OPG. The responsibility for funding the obligations for nuclear facilities decommissioning and the long-term nuclear waste management between the Province and OPG is described in the ONFA. The key provisions of the ONFA are: (i) for OPG to establish two segregated funds, the Used Fuel Segregated Fund to fund the future costs of long-term nuclear used fuel waste management and certain costs of used fuel storage incurred after the stations are shut down, and the Decommissioning Segregated Fund to fund the future costs of nuclear decommissioning and long-term L&ILW management, and certain costs of used fuel storage incurred after the stations are shut down; (ii) for the OEFC to be responsible for funding approximately $2.4 billion present value as at April 1, 1999 that had been an accumulated liability of Ontario Hydro, which the OEFC has since then fully funded through an initial contribution to the Decommissioning Segregated Fund; (iii) for the Province to limit OPG's financial exposure in relation to the cost of used fuel management for the first 2.23 million bundles of used fuel; and (iv) for the Province to provide financial guarantees to the CNSC for OPG's nuclear decommissioning and nuclear waste management obligations, as required by the CNSC.

The Used Fuel Segregated Fund and the Decommissioning Segregated Fund are administered by a third party custodian and held in accounts segregated from OPG's other assets. OPG has granted a security interest in both funds to the Province. As a result, these funds are not available to satisfy the claims of OPG's creditors.

OPG's required contributions to the Used Fuel Segregated Fund and the Decommissioning Segregated Fund are determined based on reference plans and associated life cycle cost estimates periodically approved by the Province under the ONFA. These reference plans are prepared by OPG with the assistance of external consultants and based on external practices and international benchmarks. Under the ONFA reference plans, the total present value of OPG's future nuclear facilities decommissioning and nuclear waste management costs is determined based on baseline cost estimates and a set of underpinning major planning assumptions, including remaining useful lives of the nuclear stations, proposed methods and timing of nuclear waste disposal and economic indicators. Given the long-term duration of these life cycle programs, the multiple assumptions involved and the evolving technology to handle nuclear waste, there is a significant degree of inherent uncertainty surrounding the measurement of the underlying costs, which may increase or decrease over time.

The limits to OPG's financial exposure under the ONFA with respect to the life cycle cost of long-term management of the first 2.23 million bundles of used fuel are as follows (all amounts are expressed in January 1, 1999 present value dollars): (i) OPG will bear all costs up to $4.6 billion; (ii) OPG and the Province will share, on an equal basis, costs incurred between $4.6 billion and $6.6 billion; (iii) OPG will be responsible for 10 percent of the costs incurred between $6.6 and $10 billion, and the Province will be responsible for the remaining 90 percent; (iv) the Province will be wholly responsible for any costs above $10 billion. As a result, OPG's funding liability for these used fuel costs under the ONFA is capped at $5.9 billion in January 1, 1999 present value dollars, which is equivalent to approximately $16.6 billion in December 31, 2018 present value dollars. OPG is responsible for all incremental costs relating to the management of used fuel bundles in excess of the 2.23 million threshold. As at December 31, 2018, approximately 2.68 million bundles of used fuel waste had been produced. The 2.23 million fuel bundles threshold represents the estimated total life cycle bundles based on the initial estimated useful lives of the nuclear stations assumed in the ONFA.

Under the ONFA, the Province guarantees OPG's annual return earned in the Used Fuel Segregated Fund at 3.25 percent plus the rate of change in the Ontario Consumer Price Index, as defined in the ONFA, for funding related to the first 2.23 million used fuel bundles. Upon approval of a new or amended ONFA reference plan, the Province is obligated to make an additional contribution to the Used Fuel Segregated Fund in relation to the first 2.23 million bundles if the fund's assets earned a rate of return that is less than the guaranteed rate of return. If the return on the fund's assets exceeds the Province's guaranteed rate of return, the Province is entitled to withdraw any portion of the excess related to the first 2.23 million bundles, upon approval of a new or amended ONFA reference plan. OPG is responsible for cost increases and investment returns for the portion of the fund attributable to the used fuel bundles in excess of the 2.23 million threshold. OPG also is responsible for cost increases and investment returns for the Decommissioning Segregated Fund.

The investments in the Nuclear Segregated Funds include a diversified portfolio of equities and fixed income securities that are invested across geographic markets, as well as investments in real assets including infrastructure, real estate and agriculture. As the Nuclear Segregated Funds are invested to fund long-term liability requirements, the portfolio asset mix is structured to achieve the required return over a long-term horizon. While the funds are managed to achieve, in the long term, the target return rate based on the discount rate specified in the ONFA, the rates of return earned in a given period may be subject to various external factors including financial market conditions, including changes in the Ontario Consumer Price Index, which, in the short term, can be volatile and cause fluctuations in the Company's financial results. OPG jointly oversees the investment management of the Nuclear Segregated Funds with the Province.

Under the OEB-approved cost recovery methodology for OPG's nuclear waste management and nuclear facilities decommissioning liabilities, OPG's net income is exposed to the rate of return risk for the portion of the Nuclear Segregated Funds related to the Pickering and Darlington nuclear generating stations.

<u>Contributions to the Nuclear Segregated Funds</u>

OPG's contribution requirements under the ONFA are recalculated each time there is an approved new or amended reference plan and under certain other events. Reference plans are required to be prepared at least every five years, or more frequently if there is an underlying change in the assumptions of the reference plan that both OPG and the Province agree are significant enough to trigger a recalculation of the contribution levels during the five-year period.

Prior to 2017, OPG made contributions to the Used Fuel Segregated Fund every quarter, including a one-time special payment in earlier years, as required by the ONFA. These contributions reflected ONFA requirements to fund the majority of the underlying used fuel liability by the end of the initial estimated useful lives of the nuclear stations assumed in the ONFA, resulting in significantly higher contributions to the Used Fuel Segregated Fund in the earlier years of OPG's existence. To date, OPG has not been required to make contributions to the Decommissioning Segregated Fund, which was fully funded at its inception through the initial contribution made by the OEFC and, taking into account asset performance and changes in underlying funding obligations over time, at the time of every subsequent approved ONFA reference plan.

Based on the funded status of the Used Fuel Segregated Fund and the Decommissioning Segregated Fund reflecting the lower life cycle liability estimates per the 2017 ONFA Reference Plan, no overall contributions to either fund are currently required starting in 2017. Contributions to either or both funds may be required in the future should the funds be in an underfunded position when a new reference plan is approved. Such may be the case as a result of future variability in asset performance due to volatility inherent in financial markets and economic conditions. Future contribution levels also are dependent on changes in baseline cost estimates and underpinning planning assumptions used to establish the funding obligations in subsequent ONFA reference plans, as well as any changes in the tax treatment of fund earnings. OPG's required contributions could increase, for example, if cost estimates increased, if the operating lives of the nuclear stations were revised, if fund assets earned less than the target rate of return, or if the income earned in the funds became subject to tax.

OPG is required to make annual contributions to the NFWA Trust based on a funding formula approved by the federal Minister of Natural Resources for OPG and the other nuclear fuel waste owners in Canada. The NFWA Trust forms part of the Used Fuel Segregated Fund. Any OPG contributions to the Used Fuel Segregated Fund as well as any portion of the Used Fuel Segregated Fund currently not in the NFWA Trust can be applied to satisfy the trust's annual contribution requirements. The funds in the NFWA Trust will be used for the purposes of long-term management of nuclear used fuel waste, in accordance with the NFWA. OPG and the Province are beneficiaries of the NFWA Trust.

If there is a surplus in the Decommissioning Segregated Fund such that the funding liabilities, as defined by the most recently approved ONFA Reference Plan, are at least 120 percent funded, OPG may direct, at the time a new or amended reference plan is approved, up to 50 percent of the surplus over 120 percent to the Used Fuel Segregated Fund, with the OEFC entitled to a distribution of an equal amount.

If there is a surplus in the Used Fuel Segregated Fund such that the funding liabilities, as defined by the most recently approved ONFA Reference Plan, are at least 110 percent funded, after taking into account the guaranteed return on the funding related to the first 2.23 million used fuel bundles, the Province has the right, at any time, to access the excess amount greater than 110 percent. Neither OPG nor the Province have a right to direct any amounts from the Used Fuel Segregated Fund to the Decommissioning Segregated Fund.

Upon termination of the ONFA, the Province has the sole right to any excess funds in the Decommissioning Segregated Fund and the Used Fuel Segregated Fund.

OPG has the responsibility for the management and disposal of the used nuclear fuel and L&ILW generated by the Bruce generating stations and for the eventual decommissioning of these stations. These obligations on the part of OPG are recovered from Bruce Power through annual rent payments and volume based fees per the Bruce Lease and related agreements. Pursuant to the lease agreement, Bruce Power must return the two Bruce stations to OPG together, in a de-fuelled and de-watered state. As such, these de-watering and de-fuelling costs will not be funded by OPG. Further details on these agreements are found in the section, *Description of the Business* under the heading, *Generation Operations – Nuclear*.

Provincial Guarantee

In accordance with the NSCA, the CNSC requires OPG to have sufficient funds available to discharge its existing nuclear waste management and nuclear decommissioning obligations. The CNSC process requires the CNSC financial guarantee requirement to be updated once every five years and for OPG to provide an annual report to the CNSC on the assumptions, asset values and resulting financial guarantee requirements. The CNSC financial guarantee requirement calculation takes into account nuclear waste expected to be generated to the end of each year.

The most recent five-year update of the CNSC financial guarantee requirement spans the 2018-2022 period and was accepted by the CNSC in November 2017. Based on the most recent annual report, the CNSC financial guarantee requirement to the end of 2022 continues to be satisfied by the forecast fair market value of the Nuclear Segregated Funds without the requirement of a Provincial Guarantee. As provided for by the terms of the ONFA, the Province is committed to provide a Provincial Guarantee to the CNSC as required, on behalf of OPG, should there be a shortfall between the CNSC financial guarantee requirement and the fair market value of the Nuclear Segregated Funds during the 2019-2022 period, as it has done in the past. OPG pays the Province an annual guarantee fee equal to 0.5 percent of the outstanding amount, if any, of the Provincial Guarantee.

Fair Hydro Trust Segment

The Fair Hydro Trust segment is a non-generation segment that is not subject to rate regulation. It reports OPG's income related to its role as the Financial Services Manager under the Fair Hydro Act and holder of the Trust's subordinated debt, and includes the financial results of the Trust. Segment earnings include interest income from the Trust, recovery of third-party costs and fees for financial management and ongoing administration services, partially offset by interest costs on debt issued by OPG to fund its purchase of the Trust's subordinated debt, incurred third-party costs, and other costs incurred related to the management and administration of the Trust. OPG's fees for its services to the Trust, as the Financial Services Manager, are subject to an annual review by the OEB. For further details, refer to the section, *General Development of the Business* under the heading, *General Development – Ontario's Fair Hydro Plan*.

Indigenous Relations

The Aboriginal and treaty rights of Indigenous communities are recognized and affirmed in the *Constitution Act, 1982*. OPG's corporate governance includes an Indigenous Relations policy to help build and develop mutually beneficial working relationships with Indigenous communities proximate to the Company's present and future operations. The policy focuses on building respectful relationships with Indigenous communities, businesses and organizations through partnership, collaboration and support for procurement, employment and educational opportunities. The Company seeks to establish and maintain these relationships based on a foundation of respect, transparently and mutual responsibility.

OPG may be subject to claims by Indigenous communities or other Indigenous groups and individuals. These claims may stem from generation development activities, historic operations of Hydro Electric Power Commission of Ontario and Ontario Hydro that may have impacted Aboriginal and treaty rights, or the absence of legal permits, rights-of-way or easements. Legal precedents created by court rulings may impact negotiations and resolution of past grievances. To date, OPG has resolved past grievance claims that resulted in Full Settlement Agreements with 21 First Nation communities.

Where appropriate, OPG seeks to pursue generation-related developments and other joint projects with Indigenous communities. OPG currently has four commercial partnerships with Indigenous communities related to new generation developments. OPG's first such partnership became operational in early 2009 as part of the Obishikokaang Waasiganikewigamig/Lac Seul hydroelectric GS project. The signing of the "*Amisk-oo-Skow*" Agreement with the Moose Cree First Nation in early 2010 marked the second such partnership. Through a wholly-owned corporation, Moose Cree First Nation owns a 25 percent interest in the Lower Mattagami River project.

In early 2015, OPG and CRP, a wholly-owned corporation of the Taykwa Tagamou Nation, partnered to develop the Peter Sutherland Sr. GS. Following the placement of the station in service, CRP increased its partnership interest in PSS to 33 percent in April 2017.

Following selection by the IESO through the LRP I program in March 2016, OPG and a subsidiary of the Six Nations of Grand River Development Corporation partnered to develop the Nanticoke solar facility, through NSLP. Through its subsidiary, the Six Nations of Grand River Development Corporation owns a 10 percent ownership interest in the partnership.

OPG has also been working with the Kiashke Zaaging Anishinaabek (KZA), also known as the Gull Bay First Nation, to construct a new renewable micro grid that will utilize solar generation, battery storage and micro grid control technology to reduce the community's reliance on diesel generation. As the lead developer of the project, OPG is working with several collaborators to construct the micro grid on KZA reserve land. In collaboration with the KZA, construction commenced in the third quarter of 2018 and continued through the year. Following testing and commissioning, the micro grid will be transferred to KZA for ownership and operation in 2019. The project will offset KZA's reliance on diesel generation in the off-grid community by approximately 25 percent, equating to a reduction of approximately 300 tons of carbon dioxide.

Other joint projects with Indigenous partners include two shoreline remediation projects completed in 2016. The Whitesand First Nation, working closely with OPG, completed a project to remediate nearly two kilometers of shoreline, while the Long Lake #58 First Nation undertook the management of a five-year shoreline remediation project.

OPG also has been engaging proactively with Indigenous communities regarding the Company's nuclear operations. This has included regularly scheduled meetings and an ongoing dialogue in connection with OPG's proposed L&ILW DGR, as well as engagement with the William Treaties First Nations and the Mohawks of the Bay of Quinte ahead of the re-licensing of the Pickering GS, which was subsequently completed in August 2018. First Nations in southwestern Ontario were engaged regarding the demolition of the Lambton and Nanticoke generating stations, and the Mississaugas of the Credit First Nation were engaged regarding the sale of the former Lakeview GS site. OPG is committed to continuing to undertake proactive engagement and consultation with Indigenous communities on its new projects, and is currently undertaking early community information sessions with the Moose Cree First Nation and the Taykwa Tagamou Nation on a plan to strengthen dam safety on the Lower Mattagami River, primarily through the Little Long Dam Safety Project.

In 2017, OPG launched the Indigenous Business Engagement (IBE) initiative to increase access to procurement opportunities for Indigenous businesses interested in supplying materials and services to OPG. The IBE initiative is based on a strategy to identify opportunities in contracts, scopes of work and business plans for potential Indigenous business engagement; include criteria related to suppliers' ability to engage or partner with Indigenous people or businesses in assessing procurement proposals; and invest in relationships with Indigenous communities by increasing outreach efforts to enhance understanding of how to do business with OPG.

OPG has been engaging with Indigenous businesses and communities as well as its suppliers to promote the IBE. In October 2018, OPG convened an event that brought together a number of its vendors across the organization with Indigenous businesses in order to facilitate sub-contracting and joint venture opportunities. The event was produced by the Canadian Council for Aboriginal Business (CCAB), who will track results stemming from the event. OPG is member of CCAB's "Supply Change Champions" circle, a national membership of organizations committed to increasing Indigenous businesses' participation in corporate supply chains.

OPG continues to identify ways to increase the Indigenous representation in OPG's workforce. In 2018, OPG launched the Indigenous Opportunities in Nuclear (ION) program using the Darlington Refurbishment project as a catalyst and placed skilled candidates from Indigenous communities in OPG's nuclear operations with the assistance of Kagita Mikam, an Aboriginal Employment and Training agency based at Tyendinaga within Mohawks of the Bay of Quinte territory, as a strategic partner.

Awards and Recognitions

In November 2016, OPG was recognized for its ongoing commitment to engaging local Indigenous communities with the Canadian Electricity Association's (CEA) 2016 Sustainable Electricity award for Leadership in External Collaboration and Partnerships.

In September 2018, OPG was designated a Silver level standing under the CCAB's Progressive Aboriginal Relations program. The certification recognizes OPG as a national best-practices organization with a demonstrated commitment in the area of Indigenous relations.

In November 2018, the Canadian Hydropower Association announced OPG as the recipient of the Path Forwards Award for the completion of the Peter Sutherland Sr. GS project in partnership with the Taykwa Tagamou Nation.

Workplace Safety and Public Safety

Workplace Health and Safety

In the area of workplace safety, OPG is committed to achieving excellent performance through continuous improvement and a strong safety culture, with the ultimate goal of zero injuries. OPG utilizes integrated health and safety management systems and a set of operational risk control procedures to ensure continued monitoring of health and safety performance and to support continuous learning and improvement in this area. Over the past six years, OPG has repeatedly stood in the top quartile of its comparator Canadian electrical utilities in various safety performance metrics. In November 2018, OPG received the CEA President's Award of Excellence for Employee Safety, recognizing OPG's top safety performance within the comparator group in the previous year.

OPG's employee workplace safety performance as measured by the Total Recordable Injury Frequency (TRIF) and Accident Severity Rate (ASR) indicators was as follows:

	2018	2017	2016
TRIF *(injuries per 200,000 hours)*	**0.51**	0.48	0.56
ASR *(days lost per 200,000 hours)*	**3.02**	3.57	2.59

OPG continues to implement a number of initiatives to target the injury trends based on the analysis of the safety events, with a focus on slips and trips, hand safety and the use of human performance tools including increased field supervisory oversight, situational awareness, communication and procedural use and adherence.

In order to strengthen its safety performance, OPG continues to advance its "iCare Enough to Act" initiative launched in 2016 to renew employees' commitment to their own and each other's safety and well-being. Approaches to training, supervisory oversight, communication and safe work planning are being modified and updated to further strengthen safety as a foundational element of the Company's values-based culture.

Contractors are required to conduct work safely at OPG sites. In support of this requirement, OPG utilizes an independent contractor pre-qualification process, provides on-site safety support for many of its major projects and works with contract partners to improve their health and safety programs to meet OPG's requirements. As of December 31, 2018, over 12.9 million hours had been worked by employees and contractors in the Darlington Refurbishment project without a lost time injury.

OPG continues to promote a Total Health program aimed at embedding a health culture that supports employees and their families in their efforts to achieve an optimal level of health and functioning, through health education, health promotion, disease and injury prevention and crisis intervention. In 2018, the Company completed the Mental Health First Aid training course for employees that was launched in 2016, with a total of approximately 2,300 managers, supervisors and union leaders participating in the training.

The course is an accredited training program facilitated by the Mental Health Commission of Canada aimed at increasing awareness and empathy for mental illness, reduce stigma, support affected employees and improve return to work outcomes.

In March 2018, the Employee Assistance Society of North America awarded OPG the annual Corporate Award of Excellence. These awards are given to organizations that showcase the excellence, innovation and impact of employee assistance programs in the workplace with a view to enhance employee well-being and support a healthy and productive working environment. OPG was recognized for its commitment to an organizational culture that values safety and good mental health as critical components of the organization's success.

Nuclear Radiation Safety

OPG manages a radiation protection program designed to minimize detrimental health effects to employees and members of the public. OPG follows developments in the field of radiation protection as documented by the International Commission on Radiological Protection (ICRP), the United Nations Scientific Committee on the Effects of Atomic Radiation and the US National Council on Radiation Protection and Measurements. Widely recognized as the main source of expert advice regarding protection from the harmful effects of ionizing radiation, the ICRP periodically issues recommendations concerning principles of radiation protection. These recommendations are usually adopted by most countries without significant modification and are incorporated into the applicable laws. The Canadian Radiation Protection Regulations are based on the recommendations of the ICRP, and OPG's nuclear facilities conform to these regulations. The CNSC is the federal agency that regulates radiation protection in Canada.

Radiation exposures to station personnel and the public are limited by station design and adherence to approved operating procedures. Over the years, OPG has been a leader in applying the principles of keeping radiation doses as low as reasonably achievable. OPG's internal operating limits for occupational exposure are set well below the regulatory limits to ensure that the regulatory limits are not exceeded. OPG's operating targets for radiological emissions are set at even more restrictive levels and typically represent small fractions of the regulatory limits.

To ensure continued public safety, radiation exposure to members of the public resulting from the operation of OPG's nuclear generating stations is estimated on an annual basis for individuals living or working near the stations. The annual dose to the public resulting from operations of each nuclear facility is expressed in microsieverts (μSv), which is an international unit of radiation dose measurement. For 2017, the annual public doses resulting from the Darlington GS operations and the Pickering GS operations were 0.7 μSv and 1.8 μSv, respectively, which is approximately 0.1 percent and 0.2 percent of the annual legal limit of 1,000 μSv, respectively. While the public doses from OPG's nuclear operations for the 2018 operating year will not be finalized until the second quarter of 2019, they are not expected to differ significantly from the 2017 levels.

As a condition of receiving operating licences for its nuclear facilities, OPG has developed comprehensive emergency plans that detail the Company's planned response to reactor accidents, as well as accidents involving the transportation of radioactive materials. These plans dictate how OPG will work with municipal, regional, provincial and federal agencies to safeguard station personnel and members of the public in the unlikely event of a radiation emergency at one of OPG's facilities. Station staff are required to regularly participate in emergency exercises to maintain and continuously improve response capability for such events.

Dam Safety and Waterways Public Safety

OPG manages dam safety and other risks associated with the production of hydroelectric power through OPG's dam safety programs in line with the Safe Operations Policy. The Safe Operations Policy directs OPG to ensure that dams are designed, constructed, operated and maintained in a manner that meets all applicable dam safety legislation and regulatory requirements, and takes into consideration industry best practices. OPG is one of the first dam owners in Canada to have developed and implemented a dam safety program and is considered an industry leader in many aspects of the program.

Consistent with the FERC regulations, Eagle Creek has in place an Owners Dam Safety Program (ODSP) documenting the assignment of roles and accountabilities, as well as how the various elements of the dam safety program are managed. The ODSP is subject to independent audit to ensure the managed system is effective in addressing risks posed by the facilities.

In addition to effectively managing the safety of dams against catastrophic failure, OPG has developed a number of technical standards and procedures concerning public safety around dams, and materials to educate the public and raise awareness of the hazards associated with the operation of the hydroelectric facilities. This includes the implementation of control measures in the form of signage, safety booms, buoys, fencing and audible alerts at the appropriate facilities. These measures are actively managed to maintain their effectiveness. OPG also strives to entrench a "Stay Clear – Stay Safe" message as part of its public education program in Ontario, through strategically placed advertisements and engagement of other agencies, such as the MNRF, Ontario Provincial Police, Life Saving Society, Ontario Waterpower Association and other stakeholders.

Since 2007, OPG has engaged an independent advisory panel consisting of internationally recognized experts to conduct an annual review of the Company's dam safety program. The Chair of the independent panel establishes areas of in-depth review and presents the observations to OPG's Board of Directors. The panel has consistently found that the risks associated with the dams owned and operated by OPG are being managed in alignment with industry best practices and guidelines. OPG remains committed to high standards of public safety on waterways around hydroelectric generating stations and dams, and continues to make investments in waterway and dam safety upgrades.

In January 2019, the Company announced a plan to improve dam safety along the Lower Mattagami River in Ontario, primarily through the Little Long Dam Safety Project which will increase the dam's discharge capacity to comply with updated requirements of the Province. The plan includes adding four new sluice gates, which control water levels and flow rates at rivers, at the Adam Creek spillway and other reliability improvements to existing sluice gates along the Lower Mattagami River.

Additional details on the regulatory regime related to dams and waterways can be found in the section, *Description of the Business* under the heading, *Water Rights.*

Environment

Overview

OPG remains committed to minimizing the Company's environmental footprint, fostering biodiversity and supporting climate change mitigation, while meeting and as necessary exceeding the Company's environmental obligations and commitments. Specifically, OPG's Environmental Policy commits the Company to:

- establish an environmental management system (EMS) and maintain registration for this system to the ISO 14001 Environmental Management System standard;
- work to prevent or mitigate adverse impacts on the environment with a long-term objective of continual improvement;
- strive to be a leader in climate change mitigation by implementing operational and growth strategies that support reductions in GHG emissions in the Province of Ontario; and
- manage sites in a manner that strives to maintain, or enhance where it makes business sense, significant natural areas and associated species of concern.

The policy is implemented through OPG's province-wide EMS. Within the EMS, OPG sets environmental objectives and maintains planning, operational control and monitoring programs to manage its negative and positive impacts on the environment. The most significant environmental aspects of OPG's operations include: spills, chemical and thermal emissions to water, water flow and level changes, radiological emissions, L&ILW, displacement of fossil fuels, enhancement and disruption of wildlife habitat and fish impingement and entrainment. The policy is reviewed annually as part of the EMS to ensure that it remains appropriate to the purpose and context of the Company's operations. Environmental performance targets are set as part of the annual business planning process. These targets are based on past performance and external benchmarking to promote continuous improvement.

OPG communicates its environmental performance to external and internal stakeholders through a range of engagement methods such as reports and correspondence to regulators, meetings, newsletters, open houses, consultations, news releases, advertising campaigns, social media and participation in community events.

Details of OPG's environmental performance and initiatives to fulfill the Company's Environmental Policy can be found in OPG's annual *Sustainability Report*, which is available on the Company's website at www.opg.com. ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website nor any of the contents of the Sustainability Report are incorporated by reference herein.***

Environmental Compliance

OPG must comply with a large number of environmental requirements contained in statutes, regulations, by-laws, licences, permits and approvals. Failure to comply with applicable environmental laws may result in enforcement actions, remediation actions or restrictions to operations. OPG reports any incidents of non-compliance to the appropriate government or regulatory authorities as required, with corrective action plans developed and implemented accordingly. Changes in compliance obligations can result in new requirements and increased costs.

Protection of Fish

As part of its ongoing operations, OPG employs a number of measures to protect fish and fish habitat that may be impacted by its activities. The typical threats to fish are impingement and entrainment, migration barriers and station thermal emissions. A variety of compensatory measures may be used, including: water flow alterations, trap and transport programs, a fish ladder, stocking programs, a fish diversion system, station effluent temperature limits and habitat creation.

Biodiversity and Habitat Stewardship

The generation of electricity can have an impact on biodiversity, either directly through habitat loss and fragmentation or indirectly through emissions to the environment. OPG is committed to managing its sites in a manner that strives to maintain significant natural areas and associated species of concern. OPG also works with its community partners to support regional ecosystems and biodiversity through science-based habitat stewardship. OPG's regional biodiversity program strategically funds and promotes efforts to protect and restore biodiversity in areas of Ontario where genetic, species or ecosystem diversity has been most impacted, and substantive threats remain. In November 2017, OPG's biodiversity program was recognized by the CEA with the 2017 Sustainable Electricity award for Commitment to Continuous Performance Improvement. In November 2018, OPG received the Wetlands Project Award from the Wildlife Habitat Council in recognition of efforts to promote habitat conservation and management at the Chats Falls wetland.

Climate Change Mitigation and Air Quality

OPG's operational and growth strategies support reductions in GHG emissions and improved air quality. OPG's transition to a low-carbon generation portfolio began in 2003 with an ambitious smog reduction and climate change initiative to eliminate coal-fired electricity generation in the province. The phase-out of coal at OPG's generating stations was completed in 2014. OPG is now Ontario's largest clean energy provider, producing electricity that is 99 percent free of GHG and smog-causing emissions.

OPG monitors and reports GHG emissions from its facilities in accordance with the regulatory requirements set out by Environment and Climate Change Canada and the MECP. Effective July 3, 2018, the Government of Ontario revoked the *Cap and Trade Program Regulation* which had been in effect since July 1, 2016. The cap and trade program was a market mechanism introduced by the previous Government of Ontario to put a price on carbon in the province. The revocation of the cap and trade program did not have a material financial impact on the Company. In February 2019, the MECP proposed industrial emission performance standards (EPS) which are intended to substitute the federal output-based pricing system. in February 2019, the Government of Ontario announced plans to have the EPS program in place by the summer of 2019, applicable to emissions as of January 1, 2019.

OPG monitors actions being undertaken by various levels of government with respect to GHG emission levels and support for a low-carbon economy. In support of efforts to mitigate climate change, the Company continues to evaluate and implement plans to increase the generation capacity of its hydroelectric fleet where economical, invest in other low-carbon technologies including nuclear innovation and energy storage and take a leadership role in the electrification of Ontario's transportation sector. OPG is also proactively taking steps to ensure resiliency of its assets and minimize risks related to climate change and severe weather events.

In June 2018, Corporate Knights released the annual Best 50 Corporate Citizens in Canada list of which OPG placed 11th on the list, an improvement over the Company's ranking in the previous year. The annual corporate rankings were based on energy efficiency and reducing GHG emissions, with an emphasis on transparency and continuity in order to recognize companies leading in sustainability.

Radiological Emissions

Small amounts of radioactivity are released to the environment as a result of nuclear reactor operation. OPG maintains an effluent monitoring and control program to ensure radiological emissions are kept well below the release limits specified in the station operating licences. OPG also has environmental monitoring programs in the vicinity of the nuclear stations to ensure operations have no adverse impacts on human health and the environment. These programs are designed to assess impacts, demonstrate compliance with regulatory limits, validate the effectiveness of containment and effluent controls and verify predictions made by environmental risk assessments. Results from the monitoring programs confirm OPG's radiological emissions are a small fraction of the regulatory release limits.

In June 2016 and August 2016, the CNSC released sampling results from its independent environmental monitoring program that took place from 2014 to 2015, which confirmed that the public and the environment around the Pickering GS and the Darlington GS continued to be safe. In February 2018 and June 2018, the CNSC released sampling results from its 2017 independent environmental monitoring program, which confirmed that the public and environment around the Pickering GS and the Darlington GS are protected and that there are no expected health impacts.

Further details are discussed under the heading, *Workplace Safety and Public Safety – Nuclear Radiation Safety.*

People and Culture

Workforce Resourcing Strategies

Electricity generation involves complex technologies that require highly skilled and trained workers, and a well-trained and engaged workforce is fundamental to the achievement of OPG's strategic imperatives. The Company is focused on building a diverse, healthy, engaged workforce and fostering a culture of collaboration, accountability and innovation. OPG also continues to communicate and implement the values and behaviours expected from its employees in order to maintain a strong focus on safety, performance excellence, continuous improvement and corporate citizenship.

Ability to secure the right talent mix in order to effectively meet the Company's immediate and longer term business needs on a timely basis is supported through workforce planning, resourcing and on-boarding strategies, both to acquire external talent into the organization and to develop existing employees. The goal of resourcing strategies and workforce planning is to ensure that the Company's workforce is diverse and has the right skill set and capability for the safe and effective operation of the generating facilities and successful delivery of major projects, including the Darlington Refurbishment. These strategies are being designed to take into account anticipated staffing requirements to the end of planned commercial operation of the Pickering GS, through to the end of the planned period to de-fuel, de-water and place the station in a safe storage state. The end of commercial operation at the Pickering GS is expected to lead to a significant reduction in OPG's workforce.

In October 2018, OPG was recognized for the best absence management program at Benefits Canada's 2018 Workplace Benefits Awards. The award recognizes an organization that has developed best practices in absence management processes for the benefit of its employees, including innovation, ease of use and impact on productivity.

As part of the strategy to develop and engage employees and to build leadership talent in support of the Company's long-term success, OPG has an active succession planning program with a focus on accelerating development. This includes a leadership development program for qualified internal candidates. OPG also has a talent management monitoring process to proactively assess staffing risks, challenges and opportunities.

Many positions at OPG have significant educational prerequisites and rigorous requirements for continuous training and periodic requalification. In addition to maintaining its internal training infrastructure, OPG relies on partnerships with government agencies, other electrical industry partners and educational institutions to meet the required level of qualification.

<u>Employees</u>

OPG's average number of regular employees and average number of seasonal, casual construction and non-regular employees (Other Employees) in 2018 were as follows:

Business Segment	**Regular Employees**	**Other Employees**
Regulated – Nuclear Generation [1]	7,097	1,694
Regulated – Hydroelectric	1,192	63
Contracted and Other Generation [2]	655	78
Other [3]	87	10
Total	**9,031**	**1,846**

[1] Includes employees associated with the Regulated – Nuclear Waste Management segment.
[2] Includes average number of employees employed by Eagle Creek from the date of acquisition on November 27, 2018.
[3] Includes an average number of four regular employees associated with the Fair Hydro Trust segment.

The majority of OPG's employees are represented by the PWU and the Society. The PWU includes most workers below the level of first line manager – from clerical staff to technicians and trades staff and station operators. The Society includes supervisors, professional engineers, scientists and other professionals.

Bargaining rights with the 19 craft unions that perform construction work at OPG's generating facilities in addition to the regular workforce are established either through the Electrical Power Systems Construction Association (EPSCA) or directly with OPG. EPSCA is a voluntary association of owners and contractors who perform work in the electrical power systems sector. The primary purpose of EPSCA is negotiating and administering collective agreements on behalf of employers performing work on OPG property. Collective agreements between the Company and its construction unions are negotiated either directly or through EPSCA. OPG currently has 17 agreements through EPSCA and two direct trade agreements. The two direct trade agreements are with the Canadian Union of Skilled Workers and the Brick and Allied Craft

Union. All of these collective agreements currently have multi-year terms, with one expiring on April 30, 2025 and all others expiring on April 30, 2020.

Insurance

The principal types of discretionary insurance carried by OPG include directors' and officers' liability, excess commercial general liability, all risks property, boiler and machinery breakdown, including statutory boiler and pressure vessel inspections and business interruption. In addition to providing coverage for OPG's non-nuclear facilities, this insurance applies to the conventional operations at OPG's nuclear generating stations. OPG also maintains nuclear property insurance, including nuclear boiler and machinery breakdown, for damage to the nuclear portions of its generating stations and for perils propagating from the nuclear to the conventional side of its assets. This coverage complements the conventional property insurance program.

In 2018, OPG performed assessments of its cyber risk profile. As a result, OPG secured cyber insurance coverage effective 2019 in order to mitigate the potential financial impacts of cyber risks.

OPG also purchases or requires contractors to purchase discretionary insurance for construction projects. For the Darlington Refurbishment project, the insurance coverage for the pre-requisite construction works was placed in 2013 and for refurbishment execution in 2016. The owner-controlled insurance program for the refurbishment consists of wrap-up liability, course of construction and marine transit insurance.

OPG purchases certain insurance coverage as required by statute, namely owned and leased motor vehicle liability, aviation liability (for drone operations) and nuclear liability insurance. The federal *Nuclear Liability and Compensation Act* (NLCA) that came into effect on January 1, 2017, and its predecessor legislation, the *Nuclear Liability Act* (NLA), impose absolute liability on a licensed operator of a nuclear generating station for any damage to property of, or injury to, the public arising from a nuclear incident, other than damage resulting from sabotage or acts of war. As such, the legislation protects all other persons from liability, including suppliers of nuclear fuel and components used in nuclear reactors.

The NLCA requires all operators of nuclear generating stations in Canada to maintain specified amounts of nuclear liability insurance purchased from a federal government approved insurer or other equivalent forms of financial security approved by the federal government. Under the NLCA, OPG is required to maintain an initial $650 million per incident of nuclear liability insurance for each of its nuclear installations as defined by the NLCA effective in 2017, for which there is no deductible amount, with successive annual increases to $750 million, $850 million and $1 billion over the 2018-2020 period. The Pickering GS site and the Darlington GS site are considered to be two separate nuclear installations under the NLCA. OPG is also required to maintain $13 million per incident of nuclear liability insurance for the WWMF. OPG is not responsible for purchasing nuclear liability insurance for the Bruce nuclear generating stations. Previously, the NLA required OPG to maintain $75 million per incident of nuclear liability insurance for each of the Pickering GS site and the Darlington GS site and $6 million for the WWMF, purchased from a federal government approved insurer. OPG continues to maintain nuclear liability insurance or other forms of financial security that have been approved by the federal government equal to the required liability limits.

Under Part I of the NLCA, an operator is liable for all damages resulting from a nuclear incident. If, in the opinion of the Governor in Council, OPG's liability could exceed the specified insured amount in respect of a nuclear incident, or it would be in the public interest to do so, the Governor in Council shall proclaim Part II of the NLCA as applicable in respect of a nuclear incident. Under Part II of the NLCA, OPG's liability would be effectively limited to the amount of required abovementioned insurance, and the Governor in Council may authorize additional funds to be paid by the federal government as may be specified in an order.

RISK FACTORS

Details on risks faced by OPG are found in the section, *Risk Management* in the Company's 2018 year-end MD&A.

DIVIDENDS

The declaration and payment of dividends remains at the sole discretion of OPG's Board of Directors and is dependent on the results of OPG's operations, the Company's financial condition and cash requirements, securities legislation requirements and other factors considered relevant by the Board of Directors in exercising its discretion and judgment on an ongoing basis. OPG declared and paid a special dividend of $283 million in the first quarter of 2018 representing the proceeds from the sale of OPG's head office premises and associated parking facility, net of prescribed deductions under the Trillium Trust Act. Refer to the section, *General Development of the Business* under the heading, *Payment of Dividend to Shareholder* for further details. OPG did not declare or pay any dividends in 2016 or 2017.

There are no restrictions in the articles of the Company that could prevent the Company from paying dividends. However, the declaration and payment of dividends are subject to financial tests set forth in the OBCA.

DESCRIPTION OF CAPITAL STRUCTURE

The authorized share capital of OPG consists of an unlimited number of common shares, the voting shares of the Company, and an unlimited number of non-voting Class A shares. As at December 31, 2018, OPG had 256,300,010 common shares and 18,343,815 Class A shares issued and outstanding, all of which are owned directly by the Province at a stated value of $5,126 million and $787 million, respectively. OPG is authorized to issue an unlimited number of common shares and Class A shares without nominal or par value. Holders of common shares are entitled to one vote per share at meetings of the shareholders of the Company.
The Company's Articles of Amalgamation were amended effective December 1, 2017 to allow for the creation and issuance of non-voting Class A shares to the Province in exchange for its equity injections. The Class A and common shares rank equally as to dividends on a share for share basis, and all dividends declared by OPG shall be declared in equal amounts per share on all outstanding shares without preference or distinction. Upon the liquidation, dissolution or wind-up of OPG, whether voluntary or involuntary, the holders of Class A shares and common shares are entitled to share equally, on a share for share basis, in all distributions of property and assets without preferences or distinction. Any issuance of new shares is subject to the consent of the Province. OPG is entitled to redeem outstanding Class A shares as may be approved by OPG's Board of Directors.

As all of the Company's voting securities are held by the Province, the Company is controlled by the Province.

CREDIT RATINGS

DBRS Limited (DBRS) and S&P Global Ratings (S&P) provide credit ratings for commercial entities. A credit rating generally provides investors with an independent measure of credit quality of an issue of securities. Credit rating categories for long-term debt instruments range from highest credit quality (generally 'AAA') to default in payment (generally 'D').

In April 2018, DBRS re-affirmed the long-term credit rating on OPG's debt at 'A (low)' and the commercial paper rating at 'R-1 (low)'. All ratings from DBRS have a stable outlook. In July 2018, S&P re-affirmed OPG's long-term credit rating at BBB+ with a stable outlook. S&P's commercial paper rating for OPG is 'A-1 (low)'.

Long-term debt instruments that are rated in the 'A' category by DBRS are considered to be of good credit quality. The capacity for the payment of financial obligations by the obligor of such instruments is considered to be substantial, but of lesser credit quality than higher-rated entities. Entities in the 'A' category may be vulnerable to future events, but qualifying negative factors are considered manageable. The addition of a "high" or "low" modifier indicates relative standing within the rating category.

A ‘BBB’ rating category by S&P for long-term debt instruments means that the obligor has adequate capacity to meet its financial commitments, but is considered more subject to adverse economic conditions than higher-rated entities. The addition of a plus ‘+’ or minus ‘-’ designation after a rating indicates the relative standing within a particular rating category.

DBRS’s commercial paper credit rating scale ranges from ‘R-1(high)’ to ‘D’, which represents the highest to lowest quality of such securities rated. The rating of ‘R-1(low)’ is the third highest and is considered to be of good credit quality. S&P’s Canadian commercial paper rating scale ranges from ‘A-1 (high)’ to ‘D’, which represents the highest to lowest quality of such securities rated. The rating of ‘A-1 (low)’ is the third highest and is considered to be satisfactory.

There can be no assurance that a credit rating will remain in effect for any given period of time or that a credit rating will not be lowered, withdrawn or revised by either or both rating agencies if, in their judgment, circumstances so warrant. The rating of any securities is not a recommendation to buy, sell or hold such securities, and such ratings do not comment as to market price or suitability for a particular investor.

During the past three years, OPG has made payments to DBRS and S&P’s credit rating agencies for their credit rating services and for other services. OPG reasonably expects such payments will continue in the future for the services acquired.

MARKET FOR SECURITIES

In October 2017, OPG issued $500 million of Series 1 Notes due in 2027, with a coupon rate of 3.315 percent. In June 2018, OPG issued $450 million of Series 2 Notes due in 2048, as a green bond offering, with a coupon interest rate of 3.838 percent. The net proceeds from this green bond offering are to be used to finance eligible hydroelectric investments under OPG’s Green Bond Framework. In January 2019, OPG issued $500 million of Series 3 Notes due in 2049, as a green bond offering, with a coupon interest rate of 4.248 percent. The net proceeds from this green bond offering are to be used to finance eligible projects as defined in OPG’s Green Bond Framework, including the acquisition of Eagle Creek.

The Notes are currently outstanding and are not listed on any exchange or similar market for securities.

CORPORATE GOVERNANCE

National Instrument 58-101 *Disclosure of Corporate Governance Practices* (NI 58-101), has been implemented by Canadian securities regulatory authorities to provide greater transparency for the marketplace regarding issuers' corporate governance practices. OPG's corporate governance practices align with NI 58-101 and National Policy 58-201 *Corporate Governance Guidelines.* In addition, OPG has reviewed its governance practices against the principles discussed in the 2013 Report on Building High Performance Boards, being the most current such report issued by the Canadian Coalition for Good Governance, and concluded that OPG compares favourably to those principles that apply to OPG.

Information with respect to OPG's Board of Directors is as follows:

Board of Directors

OPG's Board of Directors (Board) is made up of 14 individuals with the following capabilities:

- managing large businesses;
- managing and operating nuclear stations;
- understanding of the Canadian nuclear environment;
- engineering and/or project management, including large infrastructure project management;
- managing capital intensive companies;
- knowledge and expertise in mergers and acquisitions;
- overseeing regulatory, government and public relations;
- human resources management;
- financial, investment, legal and corporate governance expertise;
- knowledge of information technology/cybersecurity;
- knowledge of Indigenous communities; and
- stakeholder management.

The Board exercises its independent supervision over management as follows: all of the members of the Board are independent of the Company except for the Company President and Chief Executive Officer (CEO); meetings of the Board are held at least five times a year; a formal Charter for the Board and for each Board committee has been adopted and the charters are reviewed annually; the Board and each Board committee is chaired by an independent Director and each have a written job description; and a portion of each Board and Board committee meeting is reserved for independent Directors to meet without management present.

OPG has a written position description for the CEO. This position is accountable to the Board for: ensuring a culture of integrity and ethical conduct; increasing Shareholder value; defining and executing a corporate strategy, including a sustainable business model that will service the long-term power generation needs of the province; and providing a standard of leadership that will achieve operational excellence with respect to matters of safety, stakeholder relationships, financial performance, asset reliability and health, environmental and regulatory compliance. In addition, the Board delineates the President and CEO role and responsibilities through the By-laws, the Board Charter, the Board policies and the corporate and CEO annual goals and objectives. The Board sets and monitors performance against annual corporate and CEO targets and objectives.

<u>Director Independence</u>

On an annual basis, the Compensation, Leadership and Governance Committee of the Board reviews the disclosures made by Directors in the annual Director Questionnaire and reviews each disclosed affiliation's relationship with OPG in order to determine whether the Director is (or remains) independent. The Compensation, Leadership and Governance Committee reports on its review to the Board.

Based on the meaning of Independence in Section 1.4 of National Instrument 52-110 *Audit Committees* (NI 52-110) and a review of the applicable factual circumstances against this standard, the Compensation, Leadership and Governance Committee has determined that all Directors listed are independent, except for Jeffrey Lyash, who is considered to have a material relationship with OPG by virtue of his position as President and CEO of OPG.

The Board has a Board of Directors Conflict of Interest Policy and Procedure that governs the disclosure and mitigation of Director conflicts or potential conflicts of interest and has adopted an annual process of written disclosure by Directors in order to:

(i) identify potential conflicts of interest for the purposes of complying with the Board of Directors Conflict of Interest Policy and the OBCA;
(ii) validate the Directors' independence and financial literacy for the purposes of complying with securities regulations related to boards of directors and audit committees; and
(iii) satisfy other disclosures and regulatory filings.

To further minimize potential conflicts of interest, the Board has a policy on interlocking directorships. This policy states that no more than two OPG Directors may sit on a board of directors of another reporting issuer at the same time. Directors must confirm that they are in compliance with OPG's policy on interlocking directorships when disclosing to the Board Chair appointments to other boards of directors.

Strategic Planning

OPG's Board holds an annual strategy session and devotes a significant portion of each regular Board meeting to discussion of corporate strategic matters. Management is responsible for developing the strategy and presenting it to the Board for discussion.

In 2018, the Board received reports on key strategic issues, risks, competitive developments and corporate opportunities related to the Company. Management ensures that the key strategic elements are incorporated into OPG's annual budget and business plan, which are reviewed and approved by the Board. The Board also periodically receives briefings from external advisors on broad energy industry developments and/or special strategic matters.

Overseeing the Management of Risk

The Board oversees OPG's approach of identifying, reporting and mitigating the risks that could significantly impact the Company's capacity to achieve its long-term strategic objectives, as well as specific business plan objectives. To fulfill its risk oversight responsibilities, the Board has established an Enterprise Risk Management Policy and an Audit and Risk Committee, comprised of independent Directors. The committee's mandate includes oversight of the Enterprise Risk Management (ERM) framework that management uses to manage the Company's risk profile. The ERM framework assists the Board in understanding how risks may affect the Company and how they are being addressed by management. The Audit and Risk Committee receives quarterly reports from OPG's Chief Risk and Audit Executive (CRAE) on enterprise-wide risks, and meets with the CRAE *in camera*, independent of other Company management.

Through the Compensation, Leadership and Governance Committee, the Board also monitors the risks associated with the Executive Compensation Program, to preclude the Company's decision-makers from taking excessive risk in order to achieve incentives under the compensation plans. The CRAE and Senior Vice President, People & Culture and Chief Ethics Officer jointly review the executive compensation framework on an annual basis to identify any potential for unintended risk-taking. The Senior Vice President, People & Culture and Chief Ethics Officer provides an annual report to the Compensation, Leadership and Governance Committee on the results of their review.

Directors

The following tables set forth the name, age, municipality of residence, position with the Company and principal occupation of each of the Directors of the Company as of March 8, 2019. Each Director holds office until he or she resigns or a successor is elected or appointed. For a discussion of the Board Committee structure, refer to the heading, *Committees of the Board of Directors*.

Bernard Lord
Age: 53
Moncton, New Brunswick, Canada

Bernard Lord was appointed Board Chair for Ontario Power Generation on April 1, 2014. Mr. Lord is the CEO of Médavie, a not-for-profit Canadian medical care insurance company headquartered in Moncton, New Brunswick.

Mr. Lord earned a bachelor's degree with a major in economics as well as a bachelor's degree in common law from l'Université de Moncton. He has also received honorary doctorate degrees from University of New Brunswick, l'Université de Moncton and Saint Thomas University. He was admitted to the New Brunswick Law Society in 1993 and was appointed as Queen's Counsel in 2011.

Mr. Lord was the CEO of the Canadian Wireless and Telecommunications Association from October 2008 until August 2016. He also served on several other boards of directors.

In 1999, Mr. Lord became one of Canada's youngest Premiers at the age of 33. His majority government was re-elected in 2003 and he served as Premier of New Brunswick until October 2006. He was elected four times as a Member of the New Brunswick Legislative Assembly.

Mr. Lord's government introduced several new initiatives to support the development of natural resources while also protecting the environment, including a new energy policy that lead to the restructuring of NB Power and the refurbishment of the Point Lepreau nuclear generating station.

During Mr. Lord's terms as Premier, New Brunswick saw the lowest unemployment rate in 30 years and tax cuts each year, combined with balanced budgets and debt reduction. His government made record investments in health care and education while strengthening local democracy and modernizing the Official Languages Act.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since November 2013) *****	7 of 7	100%
The Board Chair is not a member of any standing Committee. The Board Chair attends all Committee meetings.	18 of 21	86%

Principal Occupation: CEO of Médavie

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

* Chair

Jeffrey Lyash
Age: 57
Toronto, Ontario, Canada

Jeff Lyash is the President and CEO of OPG. Mr. Lyash was formerly the president of CB&I Power, a position he held from 2013 to 2015, where he was responsible for a full range of engineering, procurement and construction of multi-billion dollar electrical generation projects in both domestic and international markets. He also provided operating plant services for nuclear, coal, gas, oil and renewable generation.

Prior to joining CB&I in 2013, Mr. Lyash served as Executive Vice President of Energy Supply for Duke/Progress Energy from 2008 to 2012. With Duke Energy, he led engineering, maintenance and operations of the company's 42,000-megawatt generation fleet, fuel procurement, power trading, major projects and construction, environmental programs and health and safety programs.

Before the merger of Progress Energy and Duke Energy, Mr. Lyash served as Executive Vice President of Energy Supply for Progress Energy. In this role, he oversaw Progress Energy's diverse 22,000-megawatt fleet of generating resources including nuclear, coal, oil, natural gas and hydroelectric stations. In addition, he was responsible for generating fleet fuel procurement and power trading operations.

Mr. Lyash began his career in the utility industry in 1981, joining Progress Energy in 1993. Before assuming the role of Executive Vice President of Energy Supply, he served as Executive Vice President of Corporate Development, President and Chief Executive Officer of Progress Energy Florida, Senior Vice President of Energy Delivery Florida and Vice President of Transmission. He also held a wide range of management and executive roles in Progress Energy's nuclear program, including Operations Manager, Engineering Manager, Plant Manager and Director of Site Operations.

Before joining Progress Energy, Mr. Lyash worked for the US Nuclear Regulatory Commission (NRC) in a number of senior technical and management positions throughout the northeast United States and in Washington, D.C, receiving the NRC Meritorious Service Award in 1987.

Mr. Lyash earned a Bachelor's Degree in Mechanical Engineering from Drexel University, and was honored with the Drexel University Distinguished Alumnus Award in 2009. He has held a Senior Reactor Operator License from the NRC and is a graduate of the US Office of Personnel Management Executive Training Program and the Duke Fuqua School of Business Advanced Management Program.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since August 2015)	7 of 7	100%
The President and CEO attends all Committee meetings, excluding independent Director in-camera meetings/sessions.	21 of 21	100%

Principal Occupation: President & Chief Executive Officer, Ontario Power Generation Inc.

Board Memberships for other Reporting Issuers: None

Independence from OPG: Not Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Jeff Coles
Age: 47
Oshawa, Ontario, Canada

Jeff Coles is Group President of the TAGG Group of Companies, and President of M&G Steel. Mr. Coles has over two decades of experience in construction and service businesses. Prior to joining the TAGG Group of Companies, Mr. Coles worked in executive positions at Thyssenkrupp, and Schindler Elevator Corporation in both the United States and Canada. During his time at Schindler, Mr. Coles held progressively higher management and executive positions including President of Canada and North American Vice President of Modernization.

Mr. Coles is currently a Director on the board of Oshawa Power and Utilities Corporation. Mr. Coles is a former member of the Advisory Board for the Ontario Technical Safety and Standards Association and was previously Director, Schindler Canada Board of Directors and Director, National Elevator and Escalator Association.

Mr. Coles holds his Masters of Business Administration from the University of Ottawa, a Bachelor of Arts from McMaster University and has executive education diplomas from Harvard University, Massachusetts Institute of Technology, Queen's University and the International Institute for Management Development in Switzerland.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since October 2018)	1 of 1	100%
Audit and Risk Committee (since October 2018)	1 of 1	100%
Darlington Refurbishment Committee (since October 2018)	1 of 1	100%

Principal Occupation: Group President of the TAGG Group of Companies

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

William Coley
Age: 75
Charlotte, North Carolina, USA

Bill Coley served as Chief Executive of British Energy from 2005 to 2009 when he retired following the successful merger of British Energy and EDF Energy. He was President of Duke Power from 1997 until his retirement in February 2003, holding various officer level positions in engineering, operations and senior management during his 37-year career with the company.

Mr. Coley is a director of E.R. Jahna Industries. He also served on the WANO Fukushima Commission.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since January 2013)	7 of 7	100%
Compensation, Leadership and Governance Committee (since February 2016)	5 of 6	83%
Generation Oversight Committee (since February 2016)	5 of 5	100%
Darlington Refurbishment Committee (since May 2015)	4 of 4	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Elisabeth (Lisa) DeMarco
Age: 51
Toronto, Ontario, Canada

Lisa DeMarco is a senior partner at DeMarco Allan LLP with over two decades of experience in law, regulation, policy and advocacy relating to energy and climate change. Ms. DeMarco was previously a partner at Macleod Dixon LLP from 2002 to 2012, partner at Norton Rose Canada LLP from 2012 to 2013 and partner at Norton Rose Fulbright LLP from 2013 to 2014. She represents several governments and leading energy companies in a wide variety of natural gas, electricity, pipeline and energy storage matters before various regulatory agencies, including the OEB and the National Energy Board. She has been an adjunct professor at Osgoode Hall Law School, guest lecturer at a number of law schools and presents regularly.

Ms. DeMarco also assists leading Canadian energy companies and Indigenous business organizations on domestic and overseas power project development, renewable power projects, alternative fuel projects, cleantech development and finance, energy storage, carbon capture and storage, corporate social responsibility, environmental disclosure, clean energy finance and sustainable business strategy.

Ms. Demarco is ranked by Chambers Global as one of the world's leading climate change lawyers and regularly attends and advises on related United Nations negotiations. She is ranked and repeatedly recommended by LEXpert, Expert Guide, International Who's Who and Chambers Canada as a leading energy (oil, gas and electricity) and environment lawyer. Ms. DeMarco has worked for multilateral development banks and energy companies on deals and projects in India, Brazil, Sri Lanka, Thailand, Argentina, Chile, Ireland, Africa, Mexico, China, Russia, California, Alberta, Ontario, Nova Scotia, British Columbia, Saskatchewan, Prince Edward Island and Québec. She plays an ongoing and active role in the development and drafting of energy and greenhouse gas emissions policy, regulation and law throughout Canada, and in various countries around the world. She was also lead counsel on all aspects of the successful sale of an Ontario power distribution company to Hydro One. Ms. DeMarco was appointed member of the Ontario Premier's Clean Energy Task Force and Climate Action Group.

Ms. DeMarco is a member of the Board of Directors of the Advanced Energy Centre at MaRS. She is a graduate of the University of Western Ontario (BSc Hon. – 1990), the University of Toronto (MSc. – 1992), Osgoode Hall Law School, York University (LLB – 1995) and the Vermont Law School (MSEL, summa cum laude – 1995) and is called to the bar in England and Ontario.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since April 2014)	7 of 7	100%
Audit and Risk Committee (since February 2016)	6 of 6	100%
Generation Oversight Committee (since February 2016)	5 of 5	100%

Principal Occupation: Senior Partner, DeMarco Allan LLP

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Jean Paul (JP) Gladu
Age: 45
Toronto, Ontario, Canada

JP Gladu is currently the President and CEO of the Canadian Council for Aboriginal Business (CCAB) based in Toronto. Anishinaabe from Thunder Bay, Mr. Gladu is a member of Bingwi Neyaashi Anishinaabek located on the eastern shores of Lake Nipigon. Mr. Gladu has over two decades of experience in the natural resource sector working with Aboriginal communities and organizations, environmental non-government organizations, industry and governments from across Canada, including involvement in business development for the Bingwi Neyaashi Anishinaabek Nation from 2009 to 2012. He has produced a number of publications related to Aboriginal issues including: forest certification, Native values collection, biofuel opportunities, First Nation community land use plans, criteria and indicators for sustainable forestry and cedar product development.

Mr. Gladu holds a Forest Technician Diploma from the Sault College of Applied Arts and Technology, a Bachelor of Science degree in forestry from Northern Arizona University and an Executive Masters of Business Administration from Queens University in Kingston. In 2014, he was a recipient of the Community Service Award – Transformation Awards from Diversity Magazine. Mr. Gladu was nominated for the 2013 Premier's Award for Outstanding Ontario College Graduates, was recognized as one of five Northern Leaders in 2012 by Northern Ontario Business and was elected Class President of the 2012 Queens Executive Masters of Business Administration.

Mr. Gladu currently serves on the Canadian Electricity Association's Public Advisory Panel, the Board of Directors of Noront Resources Ltd. and as Chancellor of the Board of Governors of St. Paul's University College at the University of Waterloo. He has also held previous board positions with Colleges and Institutes Canada (previously the Association of Canadian Community Colleges), Northern Policy Institute, Canadian Foundation for Economic Education, Centre for Research and Innovation in the Bio-Economy, Papasay Management Corporation and Canadian Bioenergy Association. He also held advisory positions with the Canadian Association of Petroleum Producers Renewable Clean Energy Committee and the Ontario Provincial Forest Policy Committee.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since November 2015)	7 of 7	100%
Compensation, Leadership and Governance Committee (since February 2016)	6 of 6	100%
Generation Oversight Committee (since February 2016)	5 of 5	100%

Principal Occupation: President and CEO, Canadian Council for Aboriginal Business

Board Memberships for other Reporting Issuers: Noront Resources Ltd. *(TSX)*

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

John Herron
Age: 65
Punta Gorda, Florida, USA

John Herron retired from Entergy in April 2013 where he was the President, CEO and Chief Nuclear Officer of Entergy Nuclear, with responsibility for Entergy's nuclear plants located in New York, Massachusetts, Vermont, Michigan, Louisiana, Mississippi and Arkansas as well as the company's management service to the Cooper Nuclear Station for the state of Nebraska.

He previously served as Entergy's Senior Vice President for Nuclear Operations handling the operational side of fleet management. Mr. Herron joined Entergy in February 2001 as Vice President, Operations at the Waterford 3 Nuclear Station in Killona, Louisiana. He then moved to New York as the Senior Vice President of the Indian Point Energy Center in February 2002.

Mr. Herron began his career in nuclear operations in 1979 at Vermont Yankee Nuclear Power Corporation. His positions there included technical services superintendent, operations manager, technical programs manager, shift supervisor and supervisory control room operator. In 1994, he moved to Brownville, Nebraska to become plant manager at Nebraska Public Power District's Cooper Nuclear Station.

Mr. Herron then joined the Tennessee Valley Authority as plant manager at Sequoyah Nuclear Plant in Soddy-Daisy, Tennessee, from October 1996 through July 1999. From July 1999 to February 2001, Mr. Herron served as site Vice President at TVA's Browns Ferry Nuclear Plant.

Prior to his career in utilities, Mr. Herron served in the US Navy from 1972 to 1978. He was attached to the USS Tullibee and the S1C NPTU Windsor, where he was an instructor at the Nuclear Submarine Prototype School.

Mr. Herron holds a bachelor's degree in Business Management from Franklin Pierce College in Rindge, New Hampshire. He also attended the Advanced Management Program at the Harvard Business School in May 2005.

Mr. Herron currently serves on the board of directors for Duke Energy. He also served on the Board of Directors for the Institute of Nuclear Power Operations and on the Nuclear Strategic Issues Advisory Committee of the Nuclear Energy Institute. In the aftermath of Japan's 2011 earthquake, he was named to the WANO Post-Fukushima Commission and the US nuclear industry's Fukushima response steering committee.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since November 2013)	7 of 7	100%
Generation Oversight Committee* (since February 2016)	5 of 5	100%
Darlington Refurbishment Committee (since May 2015)	4 of 4	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: Duke Energy (NYSE)

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

* Chair of Committee

Ani Hotoyan-Joly
Age: 57
Markham, Ontario, Canada

Ani Hotoyan-Joly is a member of the Board of Directors of Women's College Hospital in Toronto. She is a member of the Board's Executive Committee and is the Chair of the Resources Committee. Most recently, Ms. Hotoyan-Joly was a member of the Board of Directors of Echelon Financial Holdings Inc. and the Chair of the Governance Committee and a member of the Audit & Risk Committee. She was also a member of the Board of Directors of Insurance Company of Prince Edward Island and Chair of the Audit and Risk Committee. Currently, she is a member of the Board of Directors of Friends of Canadian Broadcasting and a member of the Executive Board of Armenian Relief Society's Roubina (Toronto) Chapter. She was also the Past Chair of A.R.S. Armenian Private School's Board of Trustees.

Ms. Hotoyan-Joly was the Chief Financial Officer and Corporate Secretary of Coventree Inc. Prior to that she was the VP Finance and Chief Financial Officer at Swiss Reinsurance Company Canada (P&C) and prior to that she held senior positions at Zurich Canada.

Ms. Hotoyan-Joly is a Chartered Professional Accountant and Chartered Accountant and holds a Bachelor of Commerce degree from the University of Toronto and the ICD.D designation from the Institute of Corporate Directors. She was selected as a 2016 Diversity 50 Candidate by the Canadian Board Diversity Council.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since March 2017)	7 of 7	100%
Audit and Risk Committee (since March 2017)	6 of 6	100%
Compensation, Leadership and Governance Committee (since March 2017)	6 of 6	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Wendy Kei
Age: 51
Toronto, Ontario, Canada

Wendy Kei is the Chair of the Audit Committee for both Guyana Goldfields, Inc. and Royal Nickel Corporation (RNC Minerals).

Ms. Kei is an accomplished Finance Executive with over 25 years of business experience in a variety of industries. For the past 14 years, Ms. Kei has been working within the mining industry and brings a strong focus on corporate governance, finance, risk management and significant expertise in executing complex mergers and acquisitions.

Ms. Kei is a Chartered Professional Accountant (CPA, CA) and previously served as Chief Financial Officer of Dominion Diamond Corporation (formerly Harry Winston Diamond Corporation and Aber Diamond Corporation). Ms. Kei has also previously served as Chief Financial Officer – Mining Segment, Vice President and Corporate Controller for Dominion Diamond Corporation and held various senior management roles with Counsel Corporation, PricewaterhouseCoopers LLP and Sunoco Inc.

Ms. Kei is a member of Chartered Accountants of Ontario and holds a Bachelor of Mathematics from the University of Waterloo. Ms. Kei was selected as a 2016 Diversity 50 Candidate by the Canadian Board Diversity Council.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since March 2017)	7 of 7	100%
Audit and Risk Committee (since March 2017)	6 of 6	100%
Generation Oversight Committee (since March 2017)	5 of 5	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: Guyana Goldfields Inc. *(TSX)*, RNC Minerals *(TSX)*

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

M. George Lewis
Age: 58
Toronto, Ontario, Canada

George Lewis enjoyed a thirty-year career with RBC, Canada's largest financial institution and most valuable public company. He started as an investment banker in 1986 with RBC Capital Markets, became a top-rated equity analyst covering utilities, pipelines and telecom companies and led the segment's Research and Institutional Equity Sales and Trading businesses before moving to RBC Wealth Management in 2000. He led the segment's Global Asset Management business from 2000 until 2008, a period in which it became the largest asset manager in Canada. He also led the product businesses (credit cards, home equity, investments and deposits) within the RBC Banking segment from 2004 until his appointment to RBC's Group Executive (Management Board) in 2007 as Group Head, Wealth Management, adding responsibility for RBC Insurance in 2012.

Mr. Lewis earned an MBA degree with distinction from Harvard University. He obtained the professional designation of Chartered Accountant while working with Arthur Andersen & Co. and a Bachelor of Commerce degree with high distinction from Trinity College at the University of Toronto. He became a Fellow of the Institute of Chartered Accountants (FCA) in 2013. Mr. Lewis is a CFA charterholder and is certified by the Institute of Corporate Directors.

Mr. Lewis also serves on the Board of Directors of Legal & General plc., AOG Resources Ltd., Ontario Teachers' Pension Plan (effective April 1, 2019), the Canadian Film Centre and the Anglican Diocese of Toronto Foundation. He has served previously on the boards of Enbridge Income Fund Holdings Inc., Operation Springboard, the Centre for Addiction and Mental Health (CAMH), The Toronto Symphony Orchestra, the Holland Bloorview Foundation and on the campaign cabinet for the United Way of Greater Toronto.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since February 2005)	5 of 7	71%
Audit and Risk Committee* (since February 2016)	6 of 6	100%
Compensation, Leadership and Governance Committee (since February 2016)	5 of 6	83%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: Legal & General plc. *(LSE)*

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

* Chair of Committee

Margaret (Peggy) Mulligan
Age: 60
Cameron, Ontario, Canada

Peggy Mulligan was the Executive Vice President and Chief Financial Officer, Valeant Pharmaceuticals International, Inc. until December 2010. Prior to this, she was a Principal at Priiva Consulting and before that she served as Executive Vice President and Chief Financial Officer of Linamar Corporation. Prior to Linamar, Mrs. Mulligan was with the Bank of Nova Scotia for eleven years as Executive Vice President, Systems and Operations and Senior Vice President, Audit and Chief Inspector. Before joining Scotiabank, she was an Audit Partner with PricewaterhouseCoopers in Toronto. She holds a B. Math (Honours) from the University of Waterloo and was named a Fellow of the Institute of Chartered Professional Accountants of Ontario in 2003.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since December 2005)	7 of 7	100%
Compensation and Leadership and Governance Committee* (since February 2016)	6 of 6	100%
Darlington Refurbishment Committee (since May 2015)	4 of 4	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: Canadian Western Bank (*TSX),* New Gold Inc. *(TSX/NYSE)*

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

* Chair of Committee

Yezdi Pavri
Age: 69
North York, Ontario, Canada

Yezdi Pavri retired as Vice Chairman of Deloitte Canada in June 2012 after a career of more than 30 years. Prior to being named Vice Chairman in 2010, Mr. Pavri was a member of the firm's national Management Committee for over ten years and was the Managing Partner of the Toronto practice since June 2004. He founded Deloitte's national Enterprise Risk Services practice in 1990 and led it for 15 years. He was a founding member of the global firm's India Steering Committee and co-chaired the firm's first Diversity and Inclusion Committee.

Mr. Pavri holds a Bachelor's degree in Aeronautical Engineering from the Indian Institute of Technology in Bombay and a Master's degree in Thermal Power Engineering from Imperial College in London. He is a Fellow of the Chartered Professional Accountants of Ontario.

Mr. Pavri currently serves on the boards of ICICI Bank Canada and Holland Bloorview Kids Rehabilitation Hospital. Mr. Pavri is a past member of the Board of Directors of Hydro One and a past Chairman of the Board of Trustees of United Way Toronto.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since September 2015)	7 of 7	100%
Audit and Risk Committee (February 2016)	6 of 6	100%
Compensation, Leadership and Governance Committee (since February 2016)	6 of 6	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Jim Reinsch
Age: 75
Frederick, Maryland, USA

Jim Reinsch retired from the Bechtel Group where he was Senior Vice President and Partner, and past President of Bechtel Nuclear. In this role, he was responsible for the global profit/loss, customer relations, operations, project management, marketing and business development of Bechtel's three nuclear business segments: nuclear operating plant services, steam generator replacement and operations of Bechtel's global nuclear activities. During his 40 years with Bechtel, he also presided over Bechtel Canada and managed large regions in the United States and Asia. He served as the President of the American Nuclear Society and was a member of the Nuclear Energy Institute as well as a member of their Executive Committee. Mr. Reinsch is also a member of several international nuclear energy organizations, including the WANO and the World Nuclear Association.

Mr. Reinsch holds a Bachelor of Science degree from the University of Maryland.

Mr. Reinsch currently serves on the board of directors for Frederick Memorial Hospital, the Hood College Board of Trustees and is a past board member of Duke Energy and the Smithsonian National Portrait Gallery. Additionally, he serves on the Emirate Nuclear Energy Corporation's committee on nuclear power which reports to the Board of Directors, and is a member of the international advisory board of Terrestrial Power.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since August 2015)	7 of 7	100%
Generation Oversight Committee (since February 2016)	5 of 5	100%
Darlington Refurbishment Committee* (since August 2015)	4 of 4	100%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: None

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

* Chair of Committee

James Sheppard
Age: 70
League City, Texas, USA

James Sheppard currently serves on the Board of Directors at Xcel Energy Inc. Mr. Sheppard had previously served as Interim Senior Vice President for Southern California Edison Company and served as Interim Chief Nuclear Officer from September 2010 to December 2010. From 1993 to 2009, Mr. Sheppard held several senior positions associated with the South Texas Project nuclear power plant including Chairman, President and Chief Executive Officer of South Texas Project Nuclear Operating Company, which operated the facility for its three owners.

Prior to his time at South Texas Project Nuclear Operating Company, Mr. Sheppard was the President and CEO of Sequoyah Fuels in Gore, Oklahoma. He served in that capacity from 1991 to 1993.

From 1979 to 1991, Mr. Sheppard was an employee of Carolina Power & Light Company where he had various positions in North and South Carolina including Plant General Manager of the Robinson Nuclear Project in Hartsville, SC.

From 1977 to 1979, Mr. Sheppard was a project engineer at the Oak Ridge National Laboratory in Tennessee. Prior to that, from 1971 to 1977, Mr. Sheppard served as an officer in the Submarine Service of the US Navy.

Mr. Sheppard holds a bachelor of science degree in aerospace engineering from the US Naval Academy and a master’s degree in business administration from Duke University. He was also licensed as a Senior Reactor Operator by the US Nuclear Regulatory Commission in 1988.

2018 Board/Committee Membership:	**2018 Attendance:**	
Board (since March 2017)	7 of 7	100%
Darlington Refurbishment Committee (since March 2017)	3 of 4	75%
Generation Oversight Committee (since March 2017)	4 of 5	80%

Principal Occupation: Corporate Director

Board Memberships for other Reporting Issuers: Xcel Energy Inc. *(NYSE)*

Independence from OPG: Independent

Interlocking Directorships on Boards of other Reporting Issuers: None

Nicole Boivin served as a Director from April 2014 to March 2017 and was a member of the Compensation, Leadership and Governance Committee and the Darlington Refurbishment Committee. Brendan Hawley was a Director from April 2014 to March 2017 and was a member of the Audit and Risk Committee and Darlington Refurbishment Committee. Ira Kagan was a Director from April 2014 to March 2017 and served as a member of the Audit and Risk Committee and the Generation Oversight Committee. Gerry Phillips served as a Director from January 2013 to October 2018 and was a member of the Audit and Risk Committee and Darlington Refurbishment Committee.

Orientation and Continuing Education

The Compensation, Leadership and Governance Committee is responsible for reviewing and recommending appropriate orientation programs for new Directors. New directors are provided relevant documentation relating to OPG's governance practices and policies and to its business. New Directors attend plant tours of OPG generating facilities, where they also receive comprehensive introductory briefings from OPG senior executives on OPG's operations and business activities.

The Board supports and sponsors the continuing education of OPG Directors, both in the business of OPG and in their duties as Directors. This includes plant tours of OPG's major facilities, site visits to projects with OPG's Indigenous business partners and special presentations by internal and external experts on topical business-related issues or on specific aspects of OPG's operations. Directors are also provided with articles and publications on current topics of interest. Board members have full access to all Board and Board committee materials and records. OPG has developed a Director Governance Handbook which provides Directors with information necessary to fulfill their roles, including director duties and obligations under the OBCA, and relevant corporate policies and procedures. OPG also co-sponsors Director attendance at the Institute of Corporate Directors' Director Education Program, or equivalent, and sponsors attendance at the Goizueta Director program for members of Board committees responsible for oversight of nuclear operations.

Ethical Business Conduct

The Board has adopted a policy for ethical business behaviour and a Code of Business Conduct. The mandate of the Audit and Risk Committee requires that it receive regular reports throughout the year on the Code of Business Conduct in order to satisfy itself that appropriate code of conduct and compliance programs are in place and are being enforced and that remedial action is being taken. The Audit and Risk Committee receives quarterly reports from management on the Code of Business Conduct (including reports on any substantiated cases of fraud) and the disposition of cases including disciplinary action, as well as an annual report on the Code of Business Conduct and a report on the annual review of the Board policy. A copy of the Code of Business Conduct can be found on SEDAR at www.sedar.com and also is available on the Company's website at www.opg.com. The Audit and Risk Committee has procedures for the receipt, retention and treatment of complaints received pertaining to accounting, internal controls or auditing matters and for the confidential anonymous submission by employees concerning such matters.

Nomination of Directors

The Compensation, Leadership and Governance Committee, which is comprised of six independent Directors within the meaning of NI 52-110, is responsible for conducting an annual review of the OPG Board's principles and systems of governance and oversight of annual Board, Board committee and Director evaluations. The Compensation, Leadership and Governance Committee maintains a robust Succession Plan for the orderly rotation of directors to ensure that the Board has the skills, experience and diversity required. The Succession Plan includes the following components: (i) core requirements for a high performing board, (ii) skill sets required by the OPG Board as a whole, (iii) skills profile for the current Board, (iv) tenure map of the current Board, (v) Board diversity target and implementation, (vi) "evergreen list" of potential Board candidates and (vi) Board succession priorities. The Compensation, Leadership and Governance Committee recommends candidates to the Shareholder. Nominations of Directors by the Shareholder may also be considered by the Compensation, Leadership and Governance Committee. When considering a potential candidate, the committee considers the qualities, experience and skills that the

Board, as a whole, should have in light of the business opportunities and risks facing OPG. The attributes the Compensation, Leadership and Governance Committee considers in a candidate include integrity, business judgment and experience, diversity, professional expertise, independence from management, financial literacy and communication skills, as well as sufficient time available to fulfill his or her obligations as a Board member. Further, the Board ensures that a diverse candidate is interviewed for every vacancy on the Board. OPG defines diversity to include: women, aboriginal peoples, people with disabilities and visible minorities. These four enumerated groups mirror the four enumerated groups in the definition of "designated groups" in the federal *Employment Equity Act*. The Board's diversity targets are set out below under the heading, *Diversity in Leadership.*

From time to time, the Compensation, Leadership and Governance Committee may engage outside advisors to assist in identifying potential candidates.

Director Tenure/Board Renewal

The OPG Board Charter sets out the Board's policy on tenure being that directors may serve on the Board for up to ten years from the date that they were first appointed to the Board, with the possibility of an extension to a director's tenure for one further term in exceptional circumstances. When considering Board renewal, the Compensation, Leadership and Governance Committee regularly reviews the OPG's Board skills profile and Board Diversity and Inclusion Policy. The Board maintains an "evergreen list" of potential Board candidates. From time to time, the committee makes recommendations to add skills to the Board that reflect OPG's business opportunities and risks.

Diversity in Leadership

Board of Directors

The Compensation, Leadership and Governance Committee interviews a diverse candidate for every vacancy on the Board, where diversity is defined as: women, aboriginal peoples, people with disabilities and visible minorities. The Board set a target for "diverse" representation on the Board of 50 percent, including a target of 40 percent women on the Board by 2019. As of the date of this AIF, overall diversity of the Board is at 50 percent. Representation of women on the Board is 29 percent (four of fourteen directors) as of the date of this AIF.

Senior Management

OPG strives to create a workforce that reflects diverse populations of the communities in which it operates. As at December 31, 2018, women filled 18 percent of Corporate Officer roles and 26 percent of senior management (senior managers and above) positions. In total, there were two women in Corporate Officer roles and 161 women in senior management positions. OPG tracks and monitors diversity succession planning metrics and strives to have a diverse candidates list for senior management positions.

Compensation

Executive Compensation Framework

In September 2016, the previous Government of Ontario introduced *Regulation 304/16: Executive Compensation Framework*. The regulation set out how all employers, including OPG, designated under the *Broader Public Sector Executive Compensation Act, 2014* must establish and post compensation programs for executives. The regulation required all designated employers to have a written Executive Compensation Program that describes the compensation they may provide to executives. The program was required to include the compensation philosophy, salary and performance-related pay caps, comparative analysis details and a description of other elements of compensation. OPG met the requirements of *Ontario Regulation 304/16* and, effective January 1, 2017, implemented its Executive Compensation Program. OPG's Executive Compensation Program applies to employees at the Vice President level and higher. A copy of OPG's Executive Compensation Program is available on the Company's website at www.opg.com.

On August 13, 2018, the Government of Ontario introduced the *Compensation Framework Regulation 406/18* under the *Broader Public Sector Executive Compensation Act, 2014*. This regulation replaces the *Executive Compensation Framework* regulation, imposes a freeze on base salary for designated executives, which covers OPG employees at the Vice President level and higher, and restricts pay-at-risk payments to the pay-at-risk envelope disbursed for the previous year. The Government of Ontario is in the process of reviewing Executive Compensation programs throughout the broader public sector and until a review is completed, there remains uncertainty on the executive compensation parameters that will be applicable going forward. The review is expected to be completed by mid-2019.

Director Compensation

As at March 8, 2019, OPG's Director compensation framework provides each Director who is not an employee of OPG with an annual retainer of $25,000. Directors also receive a $3,000 retainer for each Board committee of which they are a member. There are four standing committees of the Board and Directors serve on at least two committees. Directors receive an additional retainer for serving as committee chairs. The retainer for the chair of the Audit and Risk Committee is $8,000. The chairs of the other three committees receive retainers of $5,000.

In addition to the above, Directors are compensated for each regular and/or special meeting that they attend and receive a fee of $2,000 or $1,000 for a long or short meeting, respectively. The Board Chair may also determine that no fee is warranted.

In order to retain national and international expertise, non-resident Directors are compensated in US dollars and Directors who travel over certain distances receive a travel time fee to cover travel related to Board and Board committee meetings they attend.

Since 2004, the Chair of the Board, in his role as non-executive Chair, receives an all-inclusive annual fee of $150,000 and is reimbursed for out-of-pocket expenses including travel and other expenses.

CEO Compensation

Among its other responsibilities, the Compensation, Leadership and Governance Committee oversees, on behalf of the Board, the setting of the CEO's annual goals and objectives and the annual review of CEO performance and makes recommendations to the Board with respect to CEO compensation. The Committee may seek input from an independent advisor with regard to monitoring and benchmarking compensation trends.

The CEO's base pay and incentives compensation are compliant with the *Compensation Framework Regulation 406/18*. Other elements of the CEO's compensation will be compliant within the three-year period provided in the regulation to bring all elements of compensation into compliance.

For details regarding compensation paid to Directors and executive officers during the financial year ended December 31, 2018, see OPG's Statement of Executive Compensation, which is attached to this AIF as Appendix B.

Committees of the Board of Directors

The following are the current standing Board committees as at March 8, 2019:

Audit and Risk Committee

This committee is responsible for the integrity, quality and transparency of OPG's financial information, the adequacy of the financial reporting process, the systems of internal controls and related principles, policies and procedures established by management. The Committee is responsible for the oversight of the Company's regulatory filings, financial statements, MD&A and press releases prior to their disclosures to the public, including approval of quarterly financial statements and recommending approval of the annual financial statements and various other annual disclosures to the Board. The committee is also responsible for recommending the appointment and compensation of the external auditor to the Board and for oversight of the external auditor.

The committee also provides oversight of OPG's corporate financing strategies including:

- policies related to financial exposure management;
- processes for identifying major financial risks;
- performance of the OPG Pension Fund, the Used Fuel Segregated Fund and the Decommissioning Segregated Fund;
- review and approval of the audited financial statements of the OPG Pension Fund, the Used Fuel Segregated Fund and the Decommissioning Segregated Fund; and
- review and approval of the statements of investment policies and procedures for the OPG Pension Fund and the Decommissioning Segregated Fund.

The Audit and Risk Committee also oversees risk and associated risk management activities, including the review of management's assessment of significant risks to achieving OPG's business plan objectives. The committee also is responsible for ensuring that an effective Code of Business Conduct is in place at OPG and monitors compliance with this code.

As of November 22, 2017, the Audit and Risk Committee assumed oversight responsibilities of OPG's role as Financial Services Manager under the Fair Hydro Act.

As of the date of this AIF, the Audit and Risk Committee consists of George Lewis (Chair), Jeff Coles, Elisabeth (Lisa) DeMarco, Ani Hotoyan-Joly, Wendy Kei and Yezdi Pavri.

For further details regarding the Audit and Risk Committee, see *Audit and Risk Committee Information*.

Compensation, Leadership and Governance Committee

This committee provides oversight of OPG's human resources and compensation policies and practices, including CEO objectives and compensation, disclosure on compensation and human resources matters, leadership talent review, succession planning and collective bargaining negotiations. The committee also provides oversight of the design of OPG's benefit and pension plans.

The Compensation, Leadership and Governance Committee oversees the Board's governance program and practices to ensure that they are consistent with high standards of corporate governance, including annually reviewing and assessing the Board's system of corporate governance with a view to maintaining these high standards. The committee also is responsible for overseeing OPG's reputation management plan, and for identifying and recommending to the Board candidates for nomination to the Shareholder in consideration of the Board's Succession Plan and Board Diversity and Inclusion Policy. Finally, the committee oversees OPG's processes for Board, Board committee and Director assessments, as well as Director compensation and new Director orientation.

As of the date of this AIF, the Compensation, Leadership and Governance Committee consists of Margaret (Peggy) Mulligan (Chair), Bill Coley, JP Gladu, Ani Hotoyan-Joly, George Lewis and Yezdi Pavri.

Darlington Refurbishment Committee

The Darlington Refurbishment Committee is responsible for oversight of the execution of the Darlington Refurbishment project, including retaining external independent oversight advisors. The committee was also responsible for making a recommendation to the Board with respect to a final budget and schedule for the Darlington Refurbishment project, which was subsequently approved by the Board of Directors in November 2015. The committee monitors and reports on the progress of the refurbishment program against the approved budget and schedule. The committee is responsible for making recommendations to the Board with respect to the refurbishment of subsequent Darlington units and other recommendations for approvals related to the refurbishment program as may be required from time to time.

As of the date of this AIF, the Darlington Refurbishment Committee consists of Jim Reinsch (Chair), Jeff Coles, Bill Coley, John Herron, Margaret (Peggy) Mulligan and James Sheppard.

Generation Oversight Committee

This committee is responsible for the oversight of safe, secure and efficient operations of OPG's generating facilities. Additionally, the committee is responsible for the development, risk management, financing and execution of the Company's major generation projects, including those related to nuclear waste management but not the Darlington Refurbishment project. This committee also is responsible for providing oversight for matters relating to business development and business acquisitions. The committee is also responsible for the oversight of OPG's environment and dam safety management systems and OPG's Indigenous relations. The committee reviews reports of internal and external advisors/assessors in respect of OPG's generation operations and management's response to the findings from such assessments. The committee provides oversight to ensure that OPG's generating facilities are in compliance with nuclear safety, industrial and occupational health and safety and environmental laws and regulations.

As of the date of this AIF, the Generation Oversight Committee consists of John Herron (Chair), Bill Coley, Elisabeth (Lisa) DeMarco, JP Gladu, Wendy Kei, Jim Reinsch and James Sheppard.

Assessments

The Compensation, Leadership and Governance Committee is responsible for the annual process for evaluating the performance of the Board, its committees and individual Directors. The Board and committee evaluations are based upon the completion of confidential questionnaires regarding assessment of performance and compliance with the Board and Committee Charters. The individual Director evaluations are based on self-assessment questionnaires, which are submitted in confidence to the Board Chair and the Chair of the Compensation, Leadership and Governance Committee. In addition, the process includes a follow-up one-on-one meeting between each Director and the Board Chair. The Compensation, Leadership and Governance Committee reports the results of the evaluations to the Board and the results are discussed amongst the Board. The Compensation, Leadership and Governance Committee makes recommendations to the Board for enhancing the Board's governance and effectiveness.

Further Information on OPG Governance

OPG provides additional information on the Company's governance on its website (www.opg.com) including:

- Memorandum of Agreement with the Shareholder
- Shareholder Directives
- List of Corporate Officers
- Board and Committee Charters
- Board and Committee Chair Position Descriptions
- Board of Directors Conflict of Interest Policy
- Board Diversity and Inclusion Policy
- Indigenous Relations Policy
- Code of Business Conduct
- Disclosure Policy
- Environmental Policy
- Employee Health and Safety Policy
- Nuclear Safety Policy
- Safe Operations Policy
- Cyber Security Policy
- Executive Compensation Program

Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website nor any of the contents of the aforementioned additional information on OPG's governance are incorporated by reference herein.

EXECUTIVE OFFICERS

The following table sets forth the name, municipality of residence, position with the Company and the date of commencement for each of the executive officers of the Company as of March 8, 2019:

Name and Municipality of Residence	**Current Position Held**	**Executive Officer Since**
Bernard Lord *Moncton, New Brunswick*	Board Chair	April 2014
Jeff Lyash *Toronto, Ontario*	President and Chief Executive Officer	August 2015
Alec Cheng *Markham, Ontario*	Vice President, Treasurer	December 2018
Chris Ginther *Newmarket, Ontario*	Chief Administrative Officer	July 2012
Ken Hartwick *Milton, Ontario*	Chief Financial Officer & Senior Vice President – Finance	March 2016
David Kaposi *Toronto, Ontario*	Vice President, Chief Investment Officer	November 2013
Barb Keenan *Toronto, Ontario*	Senior Vice President, People & Culture and Chief Ethics Officer	March 2010
Mike Martelli *Etobicoke, Ontario*	President, Renewable Generation	July 2013
Carlton Mathias *Toronto, Ontario*	Vice President, Corporate Governance and Corporate Secretary	August 2018
Dominique Minière *Toronto, Ontario*	President, Nuclear	March 2019
Dietmar Reiner *Clarington, Ontario*	Senior Vice President, Nuclear Projects	June 2014
Jennifer Rowe *Toronto, Ontario*	Senior Vice President, Corporate Affairs	January 2017

On February 13, 2019, OPG announced the departure of Mr. Lyash from OPG, effective March 31, 2019 to take on another role. The Company also announced that the Board of Directors has appointed Mr. Hartwick, Chief Financial Officer and Senior Vice President Finance, to President and CEO, effective April 1, 2019.

All of the executive officers of the Company have been engaged for more than five years in their current principal occupations, except as set out below:

- Mr. Lyash was President at CB&I Power from July 2013 to July 2015.
- Mr. Cheng was Director, External Reporting and Accounting Policy at OPG from June 2012 to March 2017 and Project Director, Nuclear Commercial Management at OPG from March 2017 to November 2018.
- Mr. Ginther was Senior Vice President, Law and General Counsel and Chief Ethics Officer at OPG from July 2012 to January 2016 and Senior Vice President, Legal, Ethics and Compliance at OPG from January 2016 to February 2017.
- Mr. Hartwick was President and CEO at Just Energy Corp. from February 2008 to April 2014, Interim President and CEO at Atlantic Power Corporation from September 2014 to January 2015, Chief Financial Officer at Wellspring Financial Corporation from February 2015 to March 2016 and Senior Vice President, Finance, Strategy, Risk and Chief Financial Officer at OPG from March 2016 to February 2017.
- Ms. Keenan was Senior Vice President, People and Culture at OPG from March 2012 to January 2016 and Senior Vice President, People, Culture and Communications from January 2016 to February 2017.
- Mr. Martelli was Senior Vice President, Hydro-Thermal Operations at OPG from July 2013 to January 2016 and President, Renewable Generation and Power Marketing from January 2016 to November 2017.
- Mr. Mathias was Assistant General Counsel at OPG from 2010 to December 2016 and Assistant Corporate Secretary from January 2017 to July 2018.
- Mr. Minière was Chief Operating Officer at Electricitè de France from January 2015 to March 2019.
- Mr. Reiner was Senior Vice President, Nuclear Refurbishment at OPG from March 2010 to April 2014.
- Ms. Rowe was Senior Vice President and Chief Marketing Officer at Meridian Credit Union from October 2012 to April 2016.

Indebtedness of Directors and Executive Officers

As of the date of this AIF, no director or executive officer of the Company or any of its subsidiaries had any outstanding indebtedness to the Company or any of its subsidiaries except routine indebtedness or had any indebtedness that was the subject of a guarantee, support agreement, letter of credit or other similar arrangement or understanding provided by the Company or any of its subsidiaries.

Cease Trade Orders, Bankruptcies, Penalties or Sanctions

To the knowledge of OPG, no director or executive officer is, at the date of the AIF, or was within ten years before the date of the AIF, a director, chief executive officer or chief financial officer of any company, that (a) was subject to an order that was issued while the director or executive officer was acting in the capacity as director, chief executive officer or chief financial officer, or (b) was subject to an order that was issued after the director or executive officer ceased to be a director, chief executive officer or chief financial officer and which resulted from an event that occurred while that person was acting in the capacity as director, chief executive officer or chief financial officer, except for:

- Ani Hotoyan-Joly was the Chief Financial Officer and Corporate Secretary of Coventree Inc. (Coventree) on November 8, 2011, when the Ontario Securities Commission issued an order that trading in any securities by Coventree cease and any exemptions contained in Ontario securities law do not apply to Coventree until such time as Coventree completes its winding up. The order was made on the basis that Coventree had contravened Ontario securities law by failing to issue and file certain news releases and material change reports in 2007. The events in question occurred before Ms. Hotoyan-Joly became the Chief Financial Officer and Corporate Secretary of Coventree in May 2009. Coventree completed a court-supervised winding up process on June 29, 2018.

To the knowledge of OPG, no director or executive officer of OPG, or a shareholder holding a sufficient number of securities of OPG to affect materially the control of OPG (a) is, as at the date of the AIF, or has been within the ten years before the date of the AIF, a director or executive officer of any company (including OPG) that, while that person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets; or (b) has, within the ten years before the date of the AIF, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager, or trustee appointed to hold the assets of the director, executive officer or shareholder, except for:

- Bernard Lord was a director of AEA Technology from the fall of 2010 until the fall of 2012 when it became insolvent.
- Ani Hotoyan-Joly was the Chief Financial Officer and Corporate Secretary of Coventree from May 2009 to June 2018. On February 15, 2012, Coventree announced that the winding up of the company would commence and that Duff & Phelps Canada Restructuring Inc. (now known as KSV Advisory Inc.) was appointed as the liquidator of the company for the purpose of winding up its affairs. Coventree completed a court-supervised winding up process on June 29, 2018.
- Peggy Mulligan was a director of MethylGene Inc. from May 2012 to June 2014. On May 9, 2013, MethylGene announced a plan of arrangement that was successfully completed on June 28, 2013.
- Bernard Lord was a director of Clean Air Power during September 2015 while it was subject to liquidation proceedings under the laws of Bermuda. Mr. Lord is no longer a director of Clean Air Power.
- William Coley was a director of Peabody Energy Corporation which declared voluntary Chapter 11 bankruptcy protection in April 2016 for most of its U.S. entities and completed its restructuring on April 13, 2017. As of April 13, 2017, Mr. Coley is no longer a director of the entity.

AUDIT AND RISK COMMITTEE INFORMATION

NI 52-110 has been implemented by Canadian securities regulatory authorities to encourage reporting issuers to establish and maintain strong, effective and independent audit committees, to enhance the quality of financial disclosure and to foster increased investor confidence in Canada's capital markets. The Audit and Risk Committee's Charter is attached to this AIF as Appendix A.

Composition of the Audit and Risk Committee

As at March 8, 2019, the members of the Audit and Risk Committee were George Lewis (Chair), Jeff Coles, Elisabeth (Lisa) DeMarco, Ani Hotoyan-Joly, Wendy Kei and Yezdi Pavri. All members are independent within the meaning of NI 52-110 and have experience in business and financial matters. Each member has an understanding of internal controls and procedures for financial reporting. As part of OPG's Continuing Education Program for Directors, Audit and Risk Committee members are provided with access to both internal and external educational resources, including seminars and courses, in order to maintain or enhance their financial literacy.

Activities of the Audit and Risk Committee

The Chartered Professional Accountants of Canada (CPA Canada) and the Canadian Public Accountability Board have recommended that audit committees perform a comprehensive review of the external audit firm at least once every five years. CPA Canada issued guidelines in early 2014 to assist audit committees in implementing these recommendations. The Audit and Finance Committee of the Board conducted its first comprehensive review of the Company's external auditor, Ernst & Young LLP (EY) in 2014, for the period from 2009 to 2013, using the guidelines and format recommended by CPA Canada. EY provides audit and audit related services to OPG, including the audit of OPG's annual consolidated financial statements, reviews of OPG's quarterly financial statements and audits of the financial statements of OPG's consolidated subsidiaries and other financial information.

In conducting the 2018 review of EY's performance, the Audit and Risk Committee considered input from management, EY and OPG's internal audit function. The Committee performed this review taking into consideration the information submitted by these parties, as well as their individual experience. The results of the 2018 annual review were discussed at the Audit and Risk Committee meeting in November 2018. As part of the review, the Committee considered factors such as the auditor's independence, engagement team quality, including the Committee's involvement in the selection of EY's lead engagement partner, and communication effectiveness between EY and OPG. Upon completion of the review, the Committee was satisfied with the performance of EY, concluded that their reappointment was in the best interests of OPG, and in November 2018, recommended that the Board reappoint EY as the Company's auditor for the 2019 fiscal year. The Board reappointed EY as the Company's auditor for the 2019 fiscal year in November 2018.

External Auditor Service Fees

The following fees were accrued by OPG in connection with services rendered by EY:

(thousands of dollars)	**2018**	**2017**
Audit Fees [1]	**2,442**	2,561
Audit-Related Fees [2]	**587**	515
Tax Fees [3]	**2**	-
All Other Fees [4]	**6**	17

[1] "Audit Fees" refer to fees for audit services.
[2] "Audit-Related Fees" refer to fees for assurance and related services that reasonably relate to the performance of the audit or review of the Company's financial statements and are not reported under "Audit Fees".
[3] "Tax Fees" refer to fees for tax compliance and tax advisory services.
[4] "All Other Fees" refer to fees for services not included in the categories of "Audit Fees", "Audit-Related Fees" and "Tax Fees".

INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

Relationship with the Province and the OEFC

Relationship with the Shareholder

As a corporation created under and governed by the OBCA, OPG's management is supervised by its Board of Directors, which is obligated by law to act in the best interests of the Company. The Company's sole Shareholder, the Province, owns all of the Company's issued and outstanding common shares and thereby has the power to determine the composition of the Company's Board of Directors.

As one of several wholly-owned government business enterprises of the Province, OPG has transactions in the normal course of business with various government ministries and organizations in Ontario that fall under the purview of the Province.

Memorandum of Agreement

On August 17, 2005, OPG entered into the MOA with the Shareholder regarding OPG's role and responsibility as a power producer in Ontario. In July 2015, the MOA was revised. The MOA serves as the basis of agreement between OPG and the Shareholder regarding OPG's mandate, governance, performance, reporting and communications and establishes the accountabilities between OPG and the Province. OPG's strategic imperatives are based on the Company's mandate as set out in the MOA. The MOA remains in effect for not more than five years from the date of execution.

A copy of the MOA can be found on the Company's website at www.opg.com. ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website nor any of the contents of the MOA are incorporated by reference herein.***

Shareholder Directives

The Shareholder may at times direct OPG to undertake special initiatives. A Shareholder directive is issued when the Shareholder finds it necessary to assume decision-making power and authority over certain aspects of the business operations of the Corporation. Under a Shareholder directive, the Shareholder assumes all the rights, powers, duties and liabilities of the Directors to manage or supervise the management of the business and the Directors are relieved of their duties and liabilities. Shareholder directives are communicated as written pursuant to section 108 of the OBCA. Copies of each Shareholder directive can be found on the Company's website at www.opg.com. ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website nor any of the contents of the Shareholder directives are incorporated by reference herein.*** The Shareholder directives issued by the Shareholder to date are listed below in reverse chronological order:

- Sale of the Corporation's Lakeview site (June 9, 2016);
- Sale of the Corporation's Head Office (December 14, 2015);
- Bruce Power L.P. Lease Agreement and Used Fuel Agreement (November 30, 2015) – For further details, see *Description of the Business – Generation Operations – Nuclear*;
- Bruce Power L.P. Amended and Restated Heavy Water and Associated Services Agreement (November 30, 2015) – For further details, see *Description of the Business – Generation Operations – Nuclear*;
- Conversion of One Unit of Thunder Bay Generating Station to Advanced Biomass (May 1, 2014);
- Thunder Bay Generating Station Conversion (December 16, 2013);
- Early Closure of OPG's Lambton and Nanticoke Coal-Fired Generation Stations (March 7, 2013);
- First Nation Directive (April 1, 2011) – OPG was directed to pay a part of the Shareholder's portion of the settlement liability with a First Nation on its behalf;
- Atikokan Generating Station Conversion (March 8, 2011);
- Addressing Carbon Dioxide Emissions from the Use of Coal at Coal-Fired Generating Stations (May 20, 2010);
- Request for Indicative Prices for the Supply of Wood Pellet Fuel Declaration (Atikokan) (March 18, 2010);
- Request for Expressions of Interest for Supply and Transportation of Solid Biomass Fuel Declaration (January 13, 2009);
- Addressing Carbon Dioxide Emissions from the Use of Coal at Coal-Fired Generating Stations (May 15, 2008);
- Thunder Bay Gas Conversion Cancellation (July 12, 2006);
- Nuclear Directive (June 16, 2006) – OPG was directed to begin feasibility studies on refurbishing existing nuclear units, an environmental assessment on refurbishing Pickering B units and federal approvals processes (including environmental assessment) for new nuclear units;
- Lower Mattagami River Agreement (May 23, 2006);
- Bruce Power Lease Agreement (October 14, 2005); and
- Thunder Bay Gas Conversion Declaration (October 6, 2005).

Ontario Nuclear Funds Agreement

The ONFA between OPG and the Province sets out the responsibility for funding the obligations for the decommissioning of OPG's nuclear facilities and the long-term management of OPG's used nuclear fuel and other nuclear waste. Pursuant to the ONFA, the Company has established a Used Fuel Segregated Fund and a Decommissioning Segregated Fund to fund the future costs of these activities. Additional details can be found in the section, *Description of the Business* under the heading, *Regulated – Nuclear Waste Management Segment – Funding Mechanisms*.

OPG Debt Held by the OEFC

A portion of OPG's long-term debt has been financed by the OEFC. As at December 31, 2018, the OEFC held $3.4 billion of OPG's long-term debt with maturities ranging from one month to 29 years. For additional details, see Note 8 to the Company's audited annual financial statements as at and for the year ended December 31, 2018.

Payments-In-Lieu of Corporate Income Taxes and Property Taxes

OPG is exempt from income taxes on its operations under the *Income Tax Act* (Canada). However, under the *Electricity Act, 1998*, OPG is required to make payments in lieu of corporate income taxes to the OEFC. These payments are calculated in accordance with the *Income Tax Act* (Canada) and the *Taxation Act, 2007* (Ontario), as modified by the *Electricity Act, 1998* and related regulations. This results in OPG paying taxes similar to those imposed under the federal and Ontario tax acts.

OPG is subject to income tax audits by the Ontario Ministry of Finance. As of the date of this AIF, income tax audits up to and including the 2014 taxation year have been completed.

The *Electricity Act, 1998* also provides that OPG and certain of its subsidiaries are required to make payments in lieu of property tax to the OEFC on their non-hydroelectric generating station buildings and structures. These payments generally equal the difference between property taxes that would be otherwise payable if these assets were privately owned, and the amount payable to municipalities in respect of these assets as determined under the *Assessment Act, 1990* (Ontario). As with other hydroelectric generators in Ontario, OPG's hydroelectric generation operations are not subject to payments in lieu of property taxes because they are subject to the GRC regime. Additional details on the GRC regime can be found in the section, *Description of the Business* under the heading, *Generation Operations – Renewable Generation*.

LEGAL PROCEEDINGS AND REGULATORY ACTIONS

Legal Proceedings

OPG is potentially the subject of various legal proceedings and claims that arise in the ordinary course of business. The outcome of these proceedings and claims is uncertain. Based on information available as of the date of this AIF, management believes that none of the proceedings and claims, individually and in the aggregate, are expected to have a material impact on OPG.

British Energy Claim

On August 9, 2006, a Notice of Action and Statement of Claim filed with the Ontario Superior Court of Justice in the amount of $500 million was served against OPG and Bruce Power by British Energy Limited and British Energy International Holdings Limited (together British Energy). The action is for contribution and indemnity of any amounts British Energy was liable for in an arbitration against it by some of the owners of Bruce Power regarding an alleged breach of British Energy's representations and warranties to the claimants when they purchased British Energy's interest in Bruce Power (the Arbitration). Both the action and the Arbitration relate to corrosion to a steam generator unit discovered after OPG leased the Bruce nuclear generating stations to Bruce Power.

In 2012, the arbitrator found that British Energy was liable to the claimants for some of the damages they claimed. The final settlement amount was valued by British Energy at $71 million. In September 2014, British Energy amended its Statement of Claim (Amended Claim) to reduce the claim amount to $100 million to reflect that the purchasers of British Energy's interest in Bruce Power did not receive the full damages they originally claimed in the Arbitration. British Energy also added an allegation to its Amended Claim that OPG breached a covenant to maintain the steam generator between the time of the initial agreement to lease and the effective date of the lease in accordance with "Good Utility Practices".

In November 2016, British Energy obtained consent to a timetable for the remaining steps in the litigation, pursuant to which the matter must be set down for trial by December 31, 2018. OPG has delivered a statement of defence in accordance with an extension of the original June 30, 2017 delivery deadline set out in the timetable. British Energy served a reply on November 14, 2018 and served its Affidavit of Documents on November 23, 2018. British Energy obtained an extension to the time required to set the matter down for trial. OPG is awaiting further information about the timing of next steps in the matter.

Regulatory Actions

OPG is not aware of any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or other regulatory body against the Company, nor has the Company entered into any settlement agreements before a court relating to securities legislation or with a securities regulatory authority. Penalties or sanctions imposed by a court or regulatory body other than a securities regulatory authority and where not related to securities legislation are disclosed when considered important to a reasonable investor in making an investment decision.

MATERIAL CONTRACTS

Except for contracts entered into in the ordinary course of business (unless otherwise required by applicable securities requirements to be disclosed), there were no material contracts entered into by the Company or its subsidiaries during the most recently completed financial year, or before the most recently completed financial year that are still in effect.

INTERESTS OF EXPERTS

The external auditor of the Company is Ernst & Young LLP, Chartered Professional Accountants, located at 100 Adelaide Street West, P.O. Box 1, Toronto, Ontario M5H 0B3. Ernst & Young LLP has been the Company's auditor since OPG was formed in 1999, and is independent in accordance with the Rules of Professional Conduct of the Chartered Professional Accountants of Ontario.

GLOSSARY

Adaptive Phased Management	Canada's plan for the long-term management for nuclear fuel waste, whereby nuclear fuel waste would be permanently placed in a deep geologic repository at a suitable geological site.
ancillary service	a service necessary to maintain the reliability of the electricity grid.
availability	when used in reference to a generating unit, a measure of mechanical reliability represented by the percentage of time a generating unit is capable of providing service, whether or not it is actually in-service, relative to the total time for the period.
baseload facilities	electricity generation facilities that produce a constant supply of energy.
bilateral contract	an agreement covering the generation of electricity and/or electricity services, including capacity and ancillary services, entered into between an electricity generator and an end-user, or between an electricity generator or end-user and a market intermediary such as a local electric utility.
biomass	plant material from agricultural and forest sources that can be used to produce energy, including beneficiated biomass, which includes torrefied, carbonized and steam exploded biomass.
black start capability	generator's ability to help restore the province's power system without relying on an external supply of electricity.
CANDU	an acronym for CANada Deuterium Uranium, a family of nuclear fission reactors developed in Canada which use pressurized heavy water coolant (deuterium oxide) as a moderating agent and natural uranium (uranium dioxide) as fuel.
capacity factor	the ratio (usually specified as a percentage) of the amount of energy that a generating asset actually generated over a period of time divided by the amount of energy that the generating asset would have produced over the same period of time if it had operated continuously at full capacity.
CNSC	an acronym for Canadian Nuclear Safety Commission, a federal body that regulates the use of nuclear energy and materials in Canada.
decommissioning	actions taken in the interest of health, safety, security and protection of the environment to retire a facility permanently from service and render it to a predetermined end-state condition.
deep geologic repository	network of underground tunnels and placement rooms for used nuclear fuel and low-level and intermediate-level nuclear waste containers. It is designed to safely contain and isolate Canada's used nuclear fuel and low-level and intermediate-level nuclear waste over the long term.
detritiation	the removal of tritium from heavy water.
deuterium oxide	see heavy water.
distributed generation	production of electricity closer to end users and away from large scale production facilities that require more transmission.

equivalent forced outage rate	the hours of unit failure given as a percentage of the total hours of the availability of that unit.
Energy Supply Agreement	a bilateral contract between the IESO and an electricity generator covering the generation of electricity and/or electricity services in Ontario, including capacity and ancillary services.
FERC	an acronym for Federal Energy Regulatory Commission, the federal agency responsible for the regulation of sale and transmission of wholesale electricity, natural gas and oil in interstate commerce in the United States.
Global Adjustment	includes the difference between Ontario's electricity market clearing price used to dispatch generation and the prices paid to contracted and regulated generators in the province, and the cost of conservation and demand management programs.
government business enterprises	Government organizations that are separate legal entities with the power to contract in their own name, have the financial and operating authority to carry on a business, are principally focused on the selling of goods and services to individuals and non-government organizations, and are able to maintain their operations and meet their obligations through revenues generated outside the government reporting entity.
gross revenue charge	taxes and charges levied on hydroelectric generating stations in Ontario as prescribed by *Ontario Regulation 124/02* under the *Electricity Act, 1998.*
heavy water (deuterium oxide)	water containing significantly more than the natural proportion of heavy hydrogen (deuterium) atoms to ordinary hydrogen atoms, used as a moderator in CANDU reactors.
IESO	an acronym for Independent Electricity System Operator, a non-profit entity responsible for operating the electricity market and directing the operation of the bulk electrical system in Ontario.
in-service capacity	the portion of installed capacity (the highest level of output which a generating unit is designed to maintain indefinitely without damage to the unit) that has not been removed from service.
interconnection	a transmission line which carries power across the service area boundary of geographically adjacent jurisdictions.
intermediate facilities	electricity generation facilitates that are needed for intermediate load requirements to meet demand during peak hours of the day, adjusting output as consumer demand moves up and down.
intervenor	individuals or groups who have the OEB's permission to actively participate in a public hearing about a utility's application.
kWh	a kilowatt hour, the commercial unit of electric energy (the amount of electricity consumed by ten 100 watt light bulbs burning for one hour).
load	the quantity of electricity consumption measured as either the energy consumed over a given period of time or the rate of energy consumption at a given time by a particular customer or group of customers.

memorandum of understanding	an agreement between two or more parties outlining the terms and details of an understanding, including each parties' requirements and responsibilities.
microsievert	a measure of radiation dose to an individual.
MW	a megawatt, equal to 1,000,000 watts or 1,000 kilowatts.
MWh	a megawatt hour, equal to 1,000 kWh.
OEB	an acronym for the Ontario Energy Board, an independent, quasi-judicial tribunal that regulates market participants in Ontario's natural gas and electricity industries.
OEFC	an acronym for the Ontario Electricity Financial Corporation, the legal continuation of the former Ontario Hydro. The OEFC is responsible for managing the debt and certain other obligations not transferred to other successor companies of Ontario Hydro.
ONFA	an acronym for the Ontario Nuclear Funds Agreement between OPG and the Province that sets out the responsibility for funding the liabilities for the decommissioning of OPG's nuclear stations and the long-term management of OPG's used nuclear fuel and other nuclear waste.
Ontario NFWA Trust	a trust established by OPG pursuant to the *Nuclear Fuel Waste Act* (Canada) for the purpose of funding the implementation of Canada's long-term nuclear fuel waste management plan.
operating reserve	the capacity that can be called upon on short notice by the IESO to replace scheduled energy supply that is unavailable as a result of an unexpected outage or to augment scheduled energy as a result of unexpected demand or other contingencies.
peaking facilities	electricity generation facilities that generally run only when there is a high demand for electricity.
prescribed facilities	OPG's electricity generating stations the output of which receives regulated prices determined by the OEB. OPG's prescribed facilities are the Pickering and Darlington nuclear generating stations and 54 hydroelectric generating stations located across a number of major river systems in the province.
rate rider	an amount which is added to or subtracted from the base regulated rate to recover or refund a specific amount of money for a temporary period.
reactive support	the control and maintenance of prescribed voltages on the IESO-controlled grid.
refurbishment	the work needed to extend the life of a reactor unit by replacing the major life-limiting components (such as pressure tubes, steam generators, etc).
regulation service	regulation service acts to balance total electricity system generation with total electricity system load demand (plus transmission losses) on a minute-by-minute or second-by-second basis, and acts to help correct variations in power system frequency. This service corrects for short-term changes in electricity use that might affect the stability of the power system.
Shareholder	the sole shareholder of OPG, the Province of Ontario.

specified consumers	categories of electricity consumers whose electricity bills are reduced under the Fair Hydro Plan, including residential, farm, small businesses and other eligible consumers.
surplus baseload generation	a condition that occurs when electricity generation from baseload facilities is greater than the electricity market demand.
tritium	a radioactive substance that is created within CANDU reactors as a result of heavy water in the reactor moderator and heat transport systems.
TWh	a terawatt hour, equal to 1,000,000 MWh.
unit	an electrical generator, together with its driving turbine and auxiliary equipment.
unit capability factor	amount of energy a generating unit is capable of producing as a percentage of its maximum output assuming no external constraints such as transmission limitations.
watt	a scientific unit of electric power representing the rate of work of one joule per second.

APPENDIX A

ONTARIO POWER GENERATION INC.

AUDIT AND RISK COMMITTEE CHARTER

Ontario Power Generation Inc.

Audit and Risk Committee of the Board

CHARTER

Purpose

The function and purpose of the Audit and Risk Committee is to assist the Board of Directors in their responsibility for oversight of matters relating to:

1. The integrity of OPG's financial statements and reporting, including with respect to OPG's role as Financial Services Manager of the Fair Hydro Trust
2. The integrity and adequacy of internal controls and standards of Codes of Conduct and ethics
3. The performance of OPG's internal audit function
4. The performance and independence of OPG's external auditors
5. Business and financial planning
6. The performance of OPG's pension, nuclear decommissioning, and used fuel investment funds
7. OPG's Enterprise Risk Management
8. Assessment of committee performance and board policies
9. OPG's cyber security program.

Management is responsible for the preparation, presentation and integrity of OPG's interim and annual financial statements and related disclosure documents. Management is responsible for maintaining appropriate accounting and financial reporting principles and policies and systems of internal and disclosure controls and procedures to comply with accounting standards and applicable laws and regulations which provide reasonable assurance that the assets of the Company are safeguarded and transactions are authorized, executed, recorded and properly reported.

Management is also responsible for the identification, assessment, monitoring, and management of the risks to achieving OPG's strategic and business plan objectives and the development and implementation of policies and procedures to respond to such risks.

The Committee's role is to provide oversight that ensures the Company's assets are protected and safeguarded within reasonable business limits and report such to the Board.

Committee Responsibilities and Duties

The Committee shall perform the duties set out in this Charter and shall perform such other duties as may be necessary or appropriate under applicable law or securities rules, or as may be delegated to the Committee by the Board from time to time.

1. The integrity of OPG's financial statements and reporting

The Committee reviews and makes recommendations to the Board with respect to:

a) appointment or replacement of the Chief Financial Officer.

b) OPG's annual financial statements and external audit report, including financial statements, Management Discussion and Analysis (MD&A), related footnotes and any documentation required by the *Securities Act* to be prepared and filed by OPG or that OPG otherwise files with securities regulators.

c) OPG's Annual Information Form, if required, prior to filing with securities regulators.

The Committee reviews and approves:

d) OPG's quarterly financial statements and interim financial information and disclosures in the MD&A and earnings press release, prior to filing.

In carrying out its responsibilities for oversight of the integrity of OPG's financial statements and reporting, the Committee will include in its review:

e) adequacy of procedures in place for the review of OPG's public disclosure of financial information extracted or derived from OPG's financial statements.

f) the adequacy of OPG's role as Financial Services Manager of the Fair Hydro Trust, including in relation to the Management Oversight Committee (MOC) Charter and the continuing sufficiency of the MOC Charter as reviewed by the Committee from time to time.

g) significant accounting principles and reporting issues and impact on the financial statements, including complex or unusual transactions, highly judgmental areas, major issues regarding or changes to OPG's selection/application of accounting principles, financial presentations, the effect of regulatory and accounting initiatives, as well as off-balance sheet arrangements on OPG's financial statements.

h) analysis prepared by Management and/or the external auditor detailing financial reporting issues and judgments made in connection with the preparation of financial information, including analysis of the effects of alternative generally accepted accounting principles methods.

i) whether any other matters related to conduct have come to the Committee's attention that causes it to believe that the financial statements contain an untrue statement of material fact or omit to state a necessary material fact.

2. <u>Integrity and adequacy of Internal Controls and standards of Codes of Conduct and ethics</u>

In carrying out its responsibilities for the integrity and adequacy of internal controls, including compliance with legal and regulatory requirements and standards of codes of conduct and ethics, the Committee reviews:

a) legal, tax, or regulatory matters that may have a material impact on OPG's operations and the financial statements, including, but not limited to, violations of securities law or breaches of fiduciary duty.

b) the scope of review of internal control over financial reporting, significant findings, recommendations and Management's responses for implementation of actions to correct weaknesses in internal controls.

c) disclosures made by the Chief Executive Officer and Chief Financial Officer during the certification process regarding significant deficiencies in the design or operation of internal controls or any fraud that involves Management or other employees who have a significant role in OPG's internal controls.

d) procedures for the receipt, recording and treatment of complaints received by OPG regarding accounting, internal accounting controls, or auditing matters, and procedures for the confidential and anonymous submission by OPG employees of concerns regarding accounting or auditing matters.

e) expenses of the Board Chair, Board of Directors, President/CEO and the President/CEO's direct reports on an annual basis, and of any other senior officers and employees the Committee considers appropriate.

f) reports from the Chief Ethics Officer on independent reviews and investigations of fraud allegations, matters that may involve fraud and/or Codes of Conduct violations and compliance.

3. <u>Performance of OPG's internal audit function</u>

The Committee reviews and makes recommendations to the Board with respect to:

a) appointment or replacement of the Chief Risk and Audit Executive.

The Committee reviews and approves:

b) the annual internal audit plan and all major changes to the plan, including the organizational structure, budget and the adequacy of resources.

c) the charter of the internal audit function triennially.

In carrying out its responsibilities for the performance of OPG's internal audit function, the Committee reviews:

d) results of Internal Audit reports including significant findings, the adequacy of the control processes, Management's response and the timetable for implementation of Management actions to correct weaknesses, and any difficulties encountered in the course of their work (such as restrictions on the scope of their work or access to information).

e) Internal Audit's confirmation of organizational independence and disclosure of any conflict of interest.

f) Internal Audit performance relative to the annual internal audit plan.

4. <u>Performance and Independence of External Auditor</u>

The Committee reviews and makes recommendations to the Board with respect to:

a) the external auditor to be annually appointed on behalf of the Shareholder and related compensation, including results of a cyclical performance review, and a comprehensive review of the external audit firm at least once every five years.

The Committee reviews and approves:

b) pre-approval of additional audit services and fees to be provided by the external auditors if such services are required further to the annual compensation approved by the Board. The Committee may delegate such pre-approval authority to the Committee Chair up to a limit of $250,000. Any decisions of the Committee Chair to whom pre-approval authority is delegated must be presented to the full Audit and Risk Committee at its next scheduled meeting.

In carrying out its responsibilities for the performance and independence of OPG’s external audit function, the Committee reviews:

c) the work and report of the external auditor engaged for the purpose of preparing or issuing an auditor’s report or performing other audit, review or attest services for OPG, including the resolution of disagreements between Management and the external auditor regarding financial reporting.

d) the independence and qualifications of the external auditor.

e) the annual report by the external auditor describing the auditing firm’s internal quality control procedures, any material issues raised by the most recent internal quality-control review or peer review of the auditing firm or by any inquiry or investigation by governmental or professional authorities within the preceding five years respecting one or more independent audits carried out by the external auditor and any steps taken to deal with any such issues and all relationships between the external auditors and OPG.

f) scope and approach of the annual audit plan with the external auditors.

g) quality and acceptability of OPG’s accounting principles including all critical accounting policies and practices used, any alternative treatments that have been discussed with Management as well as any other material communications with Management.

h) external auditor's process for identifying and responding to key audit and internal control risks.

i) rotation of the lead audit partner and other audit partners every seven years, and consider regular rotation of the audit firm.

j) all related-party transactions.

k) OPG’s hiring policies regarding partners, employees and former partners and employees of the present and former external auditor of OPG.

5. <u>Business and Financial Planning</u>

The Committee reviews and makes recommendations to the Board on:

a) OPG’s business plan, including overall financing plan in support of the Company’s capital expenditures and medium – long term forecast.

b) OPG’s rate applications to the Ontario Energy Board, including proposed payment amounts and any agreement arising from a Settlement Conference with intervenors.

c) corporate financing vehicles, credit facilities, including any plans to access capital debt markets and other related financing activities. The Board may delegate to an officer of the Company authority to enter into such financing activities in such a manner as the Board shall determine at the time of such delegation. Any decisions of the officer to whom authority is delegated must be presented to the full Audit and Risk Committee at its next scheduled meeting.

6. **Pension, Nuclear Decommissioning and Used Fuel Investment Funds**

The Committee reviews and makes recommendations to the Board on:

a) the appointment or replacement of the Chief Investment Officer.

b) the appointment of the auditor for the OPG Pension Fund and the Used Fuel Segregated Fund and Decommissioning Segregated Fund.

c) the broad objectives, governance frameworks and risk posture for the OPG Pension Fund and the Used Fuel Segregated Fund and Decommissioning Segregated Fund and annual status report on these Funds.

d) the tri-ennial valuation of the Pension Fund and annual valuation of the Supplementary Employee Retirement Pension Plans. (*The Committee provides advice to the Compensation, Leadership and Governance Committee on the affordability of proposed pension benefit changes.)*

The Committee reviews and approves:

e) the appointment of the members of OPG's Pension Committee. In addition, the Committee may, at any time, remove or replace any member of the Pension Committee or fill a vacancy on the Pension Committee. The Pension Committee Chair may temporarily appoint a senior management employee to fill a vacancy on the Pension Committee until the next regularly scheduled Audit and Risk Committee meeting.

f) the annual audited financial statements for the OPG Pension Fund, the Used Fuel Segregated Fund and the Decommissioning Segregated Fund.

g) the investment policies and procedures, including the design of modifications, for the OPG Pension Fund, as required by the *Pension Benefits Act* (Ontario) and its regulations, and for the Decommissioning Segregated Funds, as required by the Ontario Nuclear Funds Agreement.

h) the appointment of the Pension Plan actuary.

In carrying out its responsibilities for the oversight of financial planning and investment funds, the Committee reviews:

i) reports on a quarterly, annual or by exception basis, on compliance with and appropriateness of the asset mix policy; total fund and asset class returns relative to benchmarks; material compliance with breaches of policies or procedures; and work conducted by the plan actuary.

j) periodic reports on the calculation of OPG's nuclear waste liability.

7. **OPG's Enterprise Risk Management**

The Committee reviews and makes recommendations to the Board on:

a) the appointment or replacement of the Chief Risk and Audit Executive.

b) the Company's enterprise risk policy, framework, overall risk appetite and targets.

In carrying out its responsibilities for oversight of OPG's Enterprise Risk Management the Committee reviews:

c) the processes employed by Management for identifying and assessing the Company's principal risks.

d) periodic reports on Management's assessment of the principal risks to achieving the Company's strategic and business plan objectives, and the strategies for monitoring, managing and responding to those risks.

e) periodic reports on significant emerging and evolving risks and relevant external events that could potentially impact OPG's risk profile.

f) compliance metrics related to OPG's commercial operations trading, treasury, and fuels management.

g) regular reports on OPG's cyber security position and programs.

h) periodic reports on OPG's Insurance Program.

8. <u>Assessment of Committee Performance and Board Policies</u>

In carrying out its responsibilities for assessment of Committee performance and Board policies, the Committee shall:

a) review and assess Committee performance, including a review of the adequacy of and its compliance with this Charter, in accordance with the evaluation process approved by the Board and taking into account all legislative and regulatory requirements applicable to the Committee as well as any best practice guidelines recommended by regulators with whom OPG has a reporting relationship.

b) provide oversight of the implementation of the following Board policies, and review these policies at least annually (or as otherwise noted below) to ensure their continuing adequacy:

   i. Delegation and Exercise of Authority Policy
   ii. Disclosure Policy
   iii. Code of Business Conduct and Supplier Code of Conduct, including anti-bribery and corruption
   iv. Enterprise Risk Management Policy (*reviewed every three years*)
   v. Cyber Security Policy

c) provide oversight of the development of any new policies deemed necessary by the Committee.

9. Oversight of OPG's Cyber Security Program

In carrying out its responsibilities for oversight of OPG's cyber security program, the Committee shall:

a) review reports provided by Management on the overall status of OPG's cyber security program at least annually.

b) designate members of Management, with appropriate expertise, that are accountable for implementing and managing an appropriate cyber security program that includes compliance with applicable regulatory standards, maintaining policies and procedures devoted to the management of cyber security risk and developing an incident response plan.

c) confirm that sufficient resources are devoted to the management of cyber security risks.

d) engage Management in discussions to identify OPG's most critical data assets, where they reside, how they can be accessed, and how often the systems are tested to ensure the data is adequately protected.

e) discuss with Management whether specific cyber security insurance is required.

f) encourage a culture where all employees understand cyber security as an enterprise-wide risk management issue and receive training on how to manage risk.

Organization

Members

The Audit and Risk Committee shall consist of three or more Directors as determined by the Board of Directors. All members of the Committee shall be independent as defined by the Ontario Securities Commission, and not "affiliated" with OPG.

The Board shall appoint the members of the Committee and the Chair of the Committee annually. The Board may appoint a member to fill a vacancy which occurs in the Committee between annual elections of Directors. Any member of the Committee may be removed or replaced at any time by the Board.

If a member of the Committee becomes "affiliated" with OPG, the member may continue as a member of the Committee with the approval of the Board Chair, in consultation with the Corporate Secretary.

As a "venture issuer", OPG is exempt from the statutory requirements of National Instrument 52-110 requiring members of Audit Committees be independent and financially literate. However, OPG considers such independence and financial literacy to be "best practice" and therefore each of the members of the Audit and Risk Committee shall satisfy the applicable independence and financial literacy requirements of the laws and regulations governing Audit Committees.

The Board of Directors shall confirm that each member of the Audit and Risk Committee is financially literate; as such qualification is interpreted by the Board of Directors in its business judgment, and in compliance with National Instrument 52-110 and its Companion Policy.

Meetings

The Committee shall meet as frequently as it determines but not less than quarterly. During quarterly meetings, the Committee will hold separate in camera sessions with the external auditors, the Chief Risk and Audit Executive and Management to discuss any matters that the Committee believes should be discussed and to provide a forum for any relevant issues to be raised.

Notice of the time and place of each meeting of the Committee must be given to each member of the Committee not less than 48 hours before the time of the meeting.

A quorum of the Committee shall be a majority of its members, but not less than two. The powers of the Committee may be exercised at a meeting at which a quorum of the Committee is present in person or by telephone or other electronic means, or by a resolution signed by all members entitled to vote on that resolution at a meeting of the Committee. Each member is entitled to one vote in Committee proceedings.

The Chair shall preside at all meetings of the Committee at which he or she is present (or if not able to be present designate another member of the Committee to chair the meeting) and shall develop the agenda for each Committee meeting. The agenda for each meeting of the Committee shall be delivered to each member of the Committee at least 48 hours prior to any meeting of the Committee, together with such other materials as the Chair determines necessary.

Minutes shall be kept of all meetings of the Committee and shall be maintained by OPG's Corporate Secretary. The procedure at meetings is to be determined by the Committee unless otherwise determined by the by-laws of OPG, by a resolution of the Board or by this Charter.

The Committee may meet in camera (without management present) at any time during the meeting consistent with the Board guideline on the conduct of in camera sessions and the keeping of minutes from in camera sessions.

The Committee may invite any Director, officer or employee of OPG or OPG's counsel or any other person to attend meetings of the Committee to assist in the discussion and examination of the matters under consideration by the Committee.

Reports

The Committee will report its activities and actions to the Board of Directors with recommendations, as the Committee deems appropriate.

The Committee will provide for inclusion in OPG's financial information or regulatory filings any report from the Audit and Risk Committee required by applicable laws and regulations and stating among other things whether the Committee has:

(i) Reviewed and discussed the audited financial statements with Management.
(ii) Discussed pertinent matters with the internal and external auditors.
(iii) Received disclosures from the external auditors regarding the auditors' independence and discussed with the auditors their independence.
(iv) Recommended to the Board of Directors that the audited financial statements be included in OPG's Annual Report.

Authority

The Audit and Risk Committee shall have the authority to:

a) conduct or authorize investigations into any matters within the Committee's scope of responsibilities.

b) set and pay the compensation for any advisors employed by the Committee.

c) to communicate directly with the internal and external auditors.

While the Audit and Risk Committee has the responsibilities and powers set forth in this Charter, it is not the duty of the Audit and Risk Committee to plan or conduct audits or risk assessments, or to determine that OPG's financial statements and disclosures are complete and accurate and are in accordance with generally accepted accounting principles and applicable rules and regulations. These are the responsibility of Management and, as appropriate, the external auditor.

Delegation of Authority

The Committee may not delegate its oversight responsibilities. The Committee may delegate to a sub-committee, the Chief Executive Officer or any employee of OPG the authority to exercise any right, power or responsibility that the Committee may have on such terms and conditions and within such limits as the Committee deems appropriate provided that the sub-committee, Chief Executive Officer or employee subsequently advises the Committee of any right, power or responsibility so exercised.

Access to Management and Outside Advisors

The Audit and Risk Committee shall have unrestricted access to members of Management and relevant information.

The Audit and Risk Committee has the authority to retain legal counsel, accountants or other advisors to assist it in the conduct of any investigation, as it determines necessary to carry out its duties.

Effective: May 13, 2016
Revised: March 7, 2019
Last Reviewed: March 7, 2019

APPENDIX B

ONTARIO POWER GENERATION INC.

STATEMENT OF EXECUTIVE COMPENSATION

Form 51-102F6
Statement of Executive Compensation

(*with respect to financial year ended on December 31, 2018*)

Ontario Power Generation Inc.

Compensation Discussion and Analysis

Executive Summary

This Compensation Discussion and Analysis describes the material elements of the compensation paid to the named executive officers ("NEOs") of Ontario Power Generation Inc. (OPG). When we refer to the NEOs in this Compensation Discussion and Analysis, we are referring to the following individuals as a group:

Position	Name	OPG Title
Chief Executive Officer	Jeffrey Lyash	President & Chief Executive Officer
Chief Financial Officer	Kenneth Hartwick	Chief Financial Officer and Senior Vice President Finance
Next three most highly compensated executive Officers	Glenn Jager	OPG Nuclear President
	Sean Granville	Chief Nuclear Officer
	Dietmar Reiner	Senior Vice President Nuclear Projects

OPG's compensation program for the NEOs includes both fixed and variable (i.e. pay-at-risk) components and is designed to provide total target compensation at the 50th percentile of the respective labour markets within which we compete for talent (the "comparator groups"). An overview of our philosophy and approach related to executive officer compensation is provided, followed by an analysis of the resulting compensation earned by each NEO during 2018 under "Summary Compensation Table".

OPG's compensation program for executive officers is also governed by legislation enacted by the Province of Ontario, OPG's sole shareholder. This legislation has established compensation restraints and controls that affect compensation for NEOs and other non-unionized employees.

Compensation Governance

The OPG Board of Directors (Board) follows compensation best practices and government requirements. There is a six-member Compensation Leadership and Governance Committee (CLGC). The role and scope of the work by the CLGC is set out in the CLGC Charter. As of December 31, 2018, the members of the CLGC were Peggy Mulligan (Chair), Bill Coley, JP Gladu, Ani Hotoyan-Joly, George Lewis and Yezdi Pavri, all of whom are independent directors. Each of the members has direct or indirect experience that is relevant to their responsibilities in executive compensation. The members include individuals who were senior executives from large organizations. The skills and experience of the members include salary administration and oversight, executive compensation experience, and responsibility for compensation matters.

Additional information on CLGC membership and the annual performance evaluation for Board members can be found in OPG's 2018 Annual Information Form and Analysis in the "Corporate Governance" section.

The CLGC meets a minimum of four times a year. Each meeting is presided by a Chair of the Committee, and minutes of the meetings are kept. Time is allotted at each meeting for the members to meet in camera without management present. The CLGC reports on the proceedings of each meeting to the Board of Directors at the next Board meeting. Committee decisions are either reported to the Board if the decision was within the authority delegated to the Committee under its Charter, or, for matters beyond the Committee's authority it puts forth a recommendation to the full Board for approval.

The CLGC is responsible for overseeing all significant compensation matters including:

- Reviewing compensation structures, decisions and payouts (base salary, pay-at-risk incentive, etc.), and ensuring a strong link between pay and performance.
- Reviewing annually and approving the changes, as appropriate, to OPG compensation, including compensation principles and objectives for total compensation, desired competitive positioning and comparator groups.
- Ensuring that compensation programs and performance measures in the pay-at-risk compensation programs appropriately reflect the corporation's approach to risk management.
- Ensuring that executive compensation levels and performance targets are consistent with the Board's compensation philosophy and aligned with and designed to achieve OPG's strategic and operating objectives.
- Overseeing senior executive pay, as it relates to corporate governance and legislation, including total compensation, individual contract provisions in senior executive employment offers, severance agreements.
- Overseeing succession planning for the CEO and senior executives.

Compensation Related Fees

The CLGC engage Hugessen Consulting to provide independent support to the Committee in reviewing compensation matters. Decisions made by the CLGC, however, are the responsibility of the CLGC and may reflect factors and considerations other than the information and recommendations provided by Hugessen Consulting.

Hugessen Consulting has been engaged by the CLGC since 2013 to provide research and advice on compensation and benefits design and benchmarking, executive compensation including pay-at-risk incentive plans, and pension plans and policies. The aggregate fees for Hugessen Consulting for services provided to the CLGC in 2017 and 2018 were $21,365, and $24,128, respectively. This work continues into 2019.

In addition, OPG management engaged a number of consulting firms, including Willis Towers Watson, Hay Group and Aon-Hewitt to provide a variety of pension, benchmarking, compensation and competitive market reviews and recommendations for all levels of employees.

Compensation Risk Assessment

OPG conducts an annual review of its executive compensation framework to ensure an appropriate level of risk and reward is maintained while minimizing opportunities for excessive risk taking. The CLGC and CEO approve the goals and objectives in the stakeholder return program (SRP) and medium-term incentive plan (MTIP). The CLGC ensures that a rigorous process is followed including input from the Committee's independent advisor.

Objectives of Executive Compensation

OPG's compensation philosophy guides the development of all compensation elements and is a key consideration in the development of OPG's Executive Compensation Program (the "program"). The philosophy is intended to ensure that OPG is able to attract, retain and motivate key talent in a manner that complies with the Regulation, is competitive and affordable, and aligns with OPG's business strategy. OPG's compensation philosophy is comprised of five key principles:

- Drive organization results with a performance orientation that aligns with OPG's business strategy and risk tolerance, while taking into consideration affordability and market competitiveness as well as the context and environment in which OPG operates.
- Demonstrate fiscal responsibility through sustainability and sound financial management while supporting the attraction and retention of top talent.
- Support a strong performance orientation linked to OPG's value creation and results while allowing individual compensation to be meaningfully differentiated based on performance, where appropriate.
- Recognize OPG's role as a significant Ontario employer; encourage long-term employment and development, a culture of trust and respect and a seamless integration with talent and succession management objectives.
- Be simple to understand and administer, sustainable and scalable; communicated in a way that is integrated with messages about other monetary and non-monetary rewards such that the perceived value of all programs meet or exceed program costs.

Comparator Group

OPG seeks to offer a competitive total compensation package. In order to ensure that the NEOs are competitively compensated, OPG periodically reviews and benchmarks total compensation against the 50th percentile compensation of the appropriate comparator groups. Comparator groups are established based on a mix of private and public sector organizations that are similar in size, scope and complexity, reflecting organizations from which OPG competes for talent. In order to tailor the external market comparisons effectively OPG categorizes its roles into three segments: Utilities (Nuclear and Non-Nuclear), Authorized Nuclear and General Industry, as described below.

Segment	Definition
Utilities	• Requires specific education and in-depth knowledge in a unique discipline related to the theories, principles and methods associated with the generation, regulation or trading of energy. The requirement to apply this professional body of knowledge represents a significant portion of the job.
Nuclear Authorized	• Requires specific education and in-depth knowledge in a unique discipline related to the theories, principles and methods associated with the generation and regulation of nuclear energy. The requirement to apply this professional body of knowledge represents a significant portion of the job.
General Industry	• Roles that do not meet the Utilities and Nuclear segment definition criteria. • These roles may require formal education and/or in-depth knowledge of a professional body of knowledge; however, this body of knowledge is not specific to energy generation. • Previous industry experience may support faster contextual understanding; however this can be learned "on the job".

OPG benchmarks its executive positions in each of these segments, based on the following selection criteria:

- The scope of responsibilities of the organization's executives
- The type of operations the organization engages in
- The Industries within which the organization competes for executives
- The size of the organization
- The location of the organization

Components of OPG's Executive Compensation Program

The components of the executive compensation program in which the NEOs participated during 2018 are described in the section that follows. Additional details about how decisions are made with respect to base salary and pay-at-risk incentives are provided in "Elements of Cash Compensation". Information on elements of a pay-at-risk program introduced in January 2017 is also included.

Compensation Element	Type	Comments
Base Salary	Fixed	The base salary provides a competitive level of fixed compensation that reflects the market value of the position and recognizes the skills and experience the NEO brings to OPG.
Short Term Incentives (pay-at-risk)	Variable	All the NEOs participate in a short-term (annual) pay-at-risk incentive plan intended to deliver a portion of total compensation on a pay-at-risk basis. The NEOs can earn short-term cash pay-at-risk amounts if key OPG financial and operational objectives and individual performance measures are achieved.
Medium Term Incentives (pay-at- risk)	Variable	In 2018, all the NEOs except the CEO participate in a medium term pay-at- risk incentive plan intended to deliver a portion of total compensation on a pay- at-risk basis. The NEOs can earn medium term cash pay-at-risk amounts if key OPG financial and operation objectives are achieved over a 3-year period.
Pension	Fixed	The pension plans in place are designed to provide retirement income to the NEOs based on their income and length of service to OPG.
Benefits	Fixed	The NEOs participate in health, dental and group life insurance benefit programs available to other management employees and in 2018 also received an annual non-pensionable executive allowance.

Elements of Cash Compensation

In September 2016, the Government of Ontario introduced Regulation 304/16: Executive Compensation Framework. The regulation set out how all employers, including OPG, designated under the Broader Public Sector Executive Compensation Act, 2014 must establish and post compensation programs for executives. The regulation required all designated employers to have a written Executive Compensation Program that describes the compensation they may provide to executives. The program included the compensation philosophy, salary and performance-related pay caps, comparative analysis details and a description of other elements of compensation. OPG met the requirements of Ontario Regulation 304/16 and, effective January 1, 2017, implemented its Executive Compensation Program. OPG's Executive Compensation Program applies to employees at the Vice President level and higher. A copy of OPG's Executive Compensation Program is available on the Company's website at www.opg.com.

On August 13, 2018, the Ontario government introduced the Compensation Framework Regulation 406/18 under the Broader Public Sector Executive Compensation Act, 2014. This regulation replaces the earlier Executive Compensation Framework regulation. It imposes a freeze on base salary for designated executives, which covers employees at the Vice President level and higher and restricts pay-at-risk payments to the pay-at-risk envelope disbursed the previous year. The Ontario government is in the process of reviewing Executive Compensation programs throughout the broader public sector. The review is expected to be completed by June 2019. Until this point there remains uncertainty on the new parameters set forth.

Base Salary

The CLGC establishes salary ranges for all non-unionized (Management Group) employees including NEOs. The OPG salary structure is very detailed and rigorously maintained with base salaries defined by job responsibilities and salary ranges defined for each job level. When reviewing executive salaries and pay-at-risk incentives, the CLGC consults its external compensation advisors to obtain information on the executive compensation market including external benchmarks.

Short-Term Incentive (pay-at-risk)

OPG's short term pay-at-risk incentive program, the SRP, is intended to motivate and reward employees to achieve results that will benefit the people of Ontario, our largest stakeholder. This program provides compensation on a pay-at-risk basis if key financial and operational objectives of the Corporation and individual objectives are met. At the beginning of each year the CEO and leadership team develop a proposed Corporate Scorecard and individual objectives are proposed. The corporate scorecard is reviewed by the CLGC and approved by the Board. The scorecard key performance indicators (KPI) are measured on the basis of threshold, business plan and stretch targets. The final SRP pay out reflects the overall corporate score achieved by the enterprise and individual performance ratings. The CLGC and the Board have the discretion to adjust the final score and payout amounts under the plan.

The CEO's pay-at-risk incentive amount is approved by the Board of Directors; 70% is based on the achievement of corporate scorecard results and 30% on achievement of strategic initiatives which are agreed with the CEO annually.

For the remaining NEOs, the amount of their annual pay-at-risk incentive under the program is determined by the following formula: base salary x individual performance rating (based on CEO's assessment of their individual results and performance) x corporate score. The target level of pay-at-risk incentive award varies according to position and level and is also approved by the CLGC.

The corporate scorecard results are used to set the envelope of SRP funds available for payout. An adjustment factor is used, if necessary, to ensure the total of individual pay-at-risk amounts does not exceed the available SRP funds.

Medium-Term Incentive (pay-at-risk)

OPG's medium-term incentive pay-at-risk program, the MTIP, is a component of OPG's Board approved Executive Compensation Program (ECP) effective January 1, 2017.

It is specifically designed to recognize the role Executives and senior leaders play in delivering strategic multi-year objectives by providing cash pay-at-risk linked to achievement of OPG's business targets on a 3-year cycle. As a cornerstone of the ECP, MTIP helps ensure OPG has a market-competitive and sustainable compensation plan to help attract and retain top talent at executive levels. MTIP augments the SRP's focus on annual corporate and individual, performance with a focus on longer term, collective performance.

Each NEO's MTIP pay-at-risk is based on OPG's performance against goals over a three-year performance period. The 2016 to 2018 MTIP performance measures align with the longer term strategic objectives of the organization and focus on financial and operational criteria, for example, Return on Equity (ROE), Net Income Attributable to the Shareholder, and key project milestones. The Board approves the targets and measures for each cycle. The individual's pay-at-risk opportunity is calculated based on the NEO's target, established at the beginning of the 3-

year cycle, multiplied by OPG's performance against up to three key corporate performance measures adjusted by the Board's informed judgement.

At the end of the 3-year MTIP performance cycle, the CLGC reviews the corporate performance score based on the numerical data and the recommendation of the CEO. The Board has discretion on the final score and payout.

The pay-at-risk cash awards are paid following assessment of performance at the end of each year for SRP and at the end of the 3-year performance cycle for MTIP. The first performance cycle for MTIP closes at the end of 2018 and incorporates assessment of 2016, 2017 and 2018. The table below shows the NEOs' SRP and MTIP pay-at-risk target opportunities as a percentage of base salary as determined by benchmarking:

Name	SRP Pay-At-Risk Target Opportunity (% of base salary)	MTIP Pay-At-Risk Target Opportunity (% of base salary)
J. Lyash	100%	N/A[1]
K. Hartwick	45%	25%
G. Jager	45%	70%
S. Granville	45%	60%
D. Reiner	45%	60%

[1] Mr. Lyash does not participate in MTIP

The actual pay-at-risk amount paid can vary from those shown above, depending on whether performance met threshold levels or achieved exceptional performance. If corporate performance is below threshold, no pay-at-risk incentives are paid.

2018 Short Term Incentive (SRP)

The structure of the annual scorecard is based on KPIs with a predetermined scale of Threshold/Business Plan/Stretch targets and a given weighting. At year-end, actual results are scored and given appropriate weighting to determine the final Corporate Score. The aggregate corporate SRP score for 2018 is 1.029 as summarized on the following table:

Corporate 2018 Balanced Scorecard - Final

	Key Performance Indicators	Threshold	Business Plan	Stretch	Actual Result	Score	Weighted	Result
10%	**Social Licence** - Through building and maintaining public trust, positive indigenous relations and an engaged workforce							
10%	**Safety: TRIF (Total Recordable Injury Frequency)**	0.48	0.37	0.31	0.51	0.00	0.050	At Threshold
	Safety focus areas:							
	o Continued focus on iCare to reduce safety incidents							
	o Ensure resiliency of OPG's H&S Managed System through regulatory transitions to meet or exceed regulatory requirements	As determined by CEO				1.00		
	o Continue to advance the Total Health culture to reduce sick leave absences and drive engagement							
	Reputation: No significant events that impact OPG's reputation							
35%	**Financial Strength** - Through regulated asset revenue and expansion of our core business, risk management, commercial focus and financial flexibility							
20%	**EBT**, excl. Nuclear Waste Management segment and Fair Hydro Plan segment ($M)	$948	$1,198	$1,448	$1,434	1.47	0.294	Above BP
15%	**Operating OM&A Expenses** – Total OPG ($M)	$2,658	$2,533	$2,408	$2,465	1.27	0.191	Above BP
20%	**Operational Excellence** - Through efficiencies and optimized asset management in a safe and environmentally responsible manner							
20%	**Production** – Total OPG adjusted for SBG (TWh)	69.9	72.4	74.9	73.5	1.22	0.244	Above BP
35%	**Project Excellence** - Through delivering project results on time and on budget and industry leading project management							
10%	**Refurbishment Project Cost** – 2018 actual expenditures ($M) - % of approved 2018 budget	100%	97.50%	95%	>100%	0.00	0.000	Below Threshold
10%	**Refurbishment Project Schedule** – 2018 Schedule Adherence - # of days of schedule contingency used in the period	44	27	0	34	0.79	0.079	Below BP
5%	**Nanticoke Solar** Guaranteed Mechanical Completion Date (Milestone M1440)	14-Dec-18	27-Nov-18	20-Nov-18	25-Jan-19	1.0	0.050	At Target
5%	**Ranney Falls G3**- Draft tube and stayring second phase concrete placement complete (Activity CS01-6980)	3-Sep-18	9-Aug-18	16-Jul-18	13-Aug-18	0.92	0.046	Below BP
5%	**Total In-service Capital - ($M)** not including major projects otherwise on scorecard (DRP, Ranney Falls, Nanticoke Solar)	$699 +/-10% to +/-15%	$699 +/- 3% to +/-10%	$699 to +/- 3%	+1.1%	1.50	0.075	Stretch
100%							**1.029**	

These measures form the basis on which our overall Corporate performance will be assessed, but the scores against these measures and overall Corporate Score are not absolute. The Board and President reserve the right to determine the Corporate Score. In exercising their discretion, the Board and President may choose to make adjustments to the Corporate Score or individual scorecard items.

2016 to 2018 Medium Term Incentive (MTIP)

The 2016-2018 MTIP scorecard includes measures for ROE, Net Income (NI) attributable to the Shareholder and Darlington Refurbishment Fuel Channels Installed. The overall results for ROE and NI attributable to the Shareholder were above target. The metric for fuel channel installation was below threshold.

The final MTIP score for the 2016-2018 cycle is 0.849 as summarized in the following table:

MTIP 2016-2018 Scorecard – Final			
KPI	**KPI Weight**	**Result**	**Weighted Score**
ROE	30%	Above Target	0.424
NI Attributable to the Shareholder	30%	Above Target	0.425
Darlington Refurbishment Fuel Channels Installed	40%	Below Threshold	0.000
Total Actual Score	**100%**		**0.849**

Material Terms of Employment Agreements and Arrangements with Named Executive Officers

The following is a summary of the material terms of the employment agreements for the NEOs. For further information regarding the NEO's pension benefits and other post-employment compensation, see "Pension Benefits" and "Termination and Change in Control Payments".

Mr. Lyash

OPG entered into a five-year employment agreement with Mr. Lyash, commencing August 4, 2015, as President & Chief Executive Officer. Mr. Lyash is provided with a $24,000 annual executive (non-pensionable) allowance. The current terms of Mr. Lyash's contract are compliant with Regulation 406/18. Mr. Lyash participates in the Short Term (SRP) pay-at-risk program. Mr. Lyash participates in the OPG registered and supplemental pension plans. Mr. Lyash does not participate in the MTIP.

Mr. Hartwick

Mr. Hartwick joined OPG as CFO and SVP Finance on March 14, 2016. Mr. Hartwick was also provided with a $20,000 annual executive (non-pensionable) allowance. The annual executive allowance ceased as of December 31, 2018. Mr. Hartwick participates in the SRP, MTIP and OPG registered and supplemental pension plans.

Mr. Jager

Mr. Jager was appointed as Nuclear President and Chief Nuclear Officer on April 1, 2015. He was provided with a $20,000 annual executive (non-pensionable) allowance. Mr. Jager was also eligible for, and received in April 2018 an at-risk incentive amount of $150,000, as established criteria were met. Mr. Jager participated in the SRP, MTIP and OPG registered and supplemental pension plans. He retired from OPG on August 31, 2018.

Mr. Granville

Mr. Granville was appointed Chief Nuclear Officer on May 1, 2018. He was provided with a $20,000 annual executive (non-pensionable) allowance. The annual allowance ceased as of December 31, 2018. Mr. Granville was also eligible for, and received in 2018, an at-risk incentive amount of $150,700, as established criteria were met. Mr. Granville participates in the SRP, MTIP and OPG registered and supplemental pension plans.

Mr. Reiner

Mr. Reiner was appointed as Senior Vice President Nuclear Projects on June 2, 2014. He was provided with a $20,000 annual executive (non-pensionable) allowance. Mr. Reiner was also eligible for, and received in March 2018, an at-risk incentive amount of $100,000 as established criteria were met. The annual executive allowance ceased as of December 31, 2018. Mr. Reiner participates in the SRP, MTIP and OPG registered and supplemental pension plans.

Summary Compensation Table

The following table summarizes the compensation paid by OPG to the Chief Executive Officer, Chief Financial Officer and to each of the other NEOs, for the three years ended December 31, 2018.

The information provided in the Summary Compensation Table below differs from that published under the *Public Sector Salary Disclosure Act, 1996* (Ontario) for the year ended December 31, 2018. The differences are due to the timing of payment of pay-at-risk incentive amounts. Salary disclosure under the *Public Sector Salary Disclosure Act, 1996* (Ontario) is limited to amounts reported on T4 forms for each year. Information in the Summary Compensation Table is based on the year the pay-at-risk incentive was earned. Under OPG's pay-at-risk program, incentives are generally earned in one year and paid in the following year.

Summary Compensation

Name and Title	Year	Salary	Non-Equity Incentive Compensation (pay-at-risk)		Pension Value	All Other Compensation	Total Compensation
			SRP	MTIP			
J. Lyash	2018	$775,000	$837,233		$414,000	$31,089	$2,057,322
President & Chief Executive Officer	2017	$775,000	$947,825		$421,000	$30,864	$2,174,689
	2016	$775,000	$755,459		$460,000	$38,138	$2,028,597
K. Hartwick	2018	$404,250	$233,985	$38,014	$184,000	$24,939	$885,188
CFO and SVP Finance	2017	$385,000	$257,938		$172,000	$24,618	$839,556
	2016	$308,278	$130,165		$130,000	$119,678	$688,121
G. Jager	2018	$594,825	$183,383	$135,129	$228,000	$229,427	$1,370,764
Nuclear President	2017	$577,500	$340,175		$337,000	$53,620	$1,308,295
	2016	$550,000	$232,279		$299,000	$51,102	$1,132,381
S. Granville	2018	$407,173	$188,716	$77,015	$969,000	$188,167	$1,830,071
Chief Nuclear Officer	2017	$338,000	$180,999		$151,000	$84,531	$754,530
	2016	$325,000	$106,754		$150,000	$86,721	$668,475
D. Reiner	2018	$398,580	$230,703	$86,494	$196,000	$144,145	$1,055,922
SVP Nuclear Projects	2017	$383,250	$225,752		$212,000	$58,557	$879,559
	2016	$365,000	$169,564		$(16,000)	$54,887	$573,451

Notes:
Non-equity incentive compensation includes earned pay-at-risk amounts for 2018 SRP and the first MTIP cycle which was completed December 31, 2018.
Mr. Hartwick was appointed March 14, 2016 and received a $100K transitional bonus as per the terms of his employment contract (captured in 2016 All Other Compensation).
Mr. Jager retired August 31, 2018. He received a retention bonus of $150K as well as vacation pay on termination of $45K in 2018.
Mr. Granville was promoted to Chief Nuclear Officer on May 1, 2018. He received retention bonuses of $151K in 2018, $49K in 2017 and $49K in 2016.
Mr. Reiner received a retention bonus of $100K in 2018.
MTIP award payments for the 2016-2018 cycle were limited by the total OPG 2017 pay for performance envelope, in accordance with Compensation Framework Regulation 406/18. Based on this requirement the NEOs will receive a portion of the MTIP award as shown in the table above with the balance pending the outcome of the government review of Regulation 406/18. The balance of MTIP award payments for the NEOs are as follows: Ken Hartwick $43,702; Glenn Jager $155,351; Sean Granville $88,540; and Dietmar Reiner $99,437.

Pension Benefits

The table below shows the following information for each NEO participating in OPG's defined benefit pension arrangements:

- Years of credited service as at December 31, 2018;
- Estimated annual benefit accrued, or earned, for service up to December 31, 2018 and up to the age of 65; and
- A reconciliation of the accrued obligation from December 31, 2017 to December 31, 2018.

Name	Number of years credited service at December 31, 2018 (#)	Annual benefits payable ($)		Opening present value of defined benefit obligation ($)	Compensatory change ($)	Non-compensatory change ($)	Closing present value of defined benefit obligation ($)
		At December 31, 2018	At Age 65				
J. Lyash	3.4	$100,000	$310,000	$1,680,000	$414,000	$166,000	$2,260,000
K. Hartwick	2.8	$30,000	$120,000	$460,000	$184,000	$66,000	$710,000
G. Jager	36.8	$370,000	$370,000	$9,800,000	$115,000	($685,000)*	$9,230,000
S. Granville	36.4	$260,000	$310,000	$5,740,000	$969,000	($189,000)	$6,520,000
D.Reiner	32.3	$250,000	$300,000	$5,920,000	$196,000	($186,000)	$5,930,000

Notes:

Compensatory elements

Compensatory changes are changes to the pension liabilities due to the impact of an additional year of service (always a positive change) that is attributable to OPG (i.e. net of member contributions) as well as the impact of any pay increases on the employee's total pension benefit for all service to date.

Include:

Service cost, net of employee contributions.

Difference in actual pension earnings versus expected pensionable earnings

Non-compensatory elements include (changes in plan assumptions):

Non-Compensatory changes are changes to the Plan liabilities due to interest on the beginning of year liability, changes in assumptions (e.g. the discount rate), member contributions during the year, and the impact of any other non-pay related if different from assumed.

Include:

Change in discount rate (Increase from 3.57% to 3.83% results in decrease in liability)

Lump sum settlement rate (Decrease from 4.0% to 3.8% results in increase in liability)

Extension to select period of base salary increase assumption

Member contributions

Non-pay related experience such as termination payment/retirement pension commencement

Interest on obligation

*G. Jager received a lump-sum payment for a portion of his pension entitlement

OPG provides pension benefits to its employees through two pension arrangements: The Ontario Power Generation Inc. Pension Plan (the “Registered Plan”) and the Ontario Power Generation Inc. Supplementary Pension Plan (the “Supplementary Plan”). Details of these plans are provided in the table below:

	Registered Plan	Supplementary Plan
Type of Plan	Contributory defined benefit pension plan registered under the *Income Tax Act* (Canada) and the *Pension Benefits Act* (Ontario). Pensions earned for service after 1992 are subject to limits under the Income Tax Act (Canada).	Provides benefits to those employees whose entire benefit could not be provided through the Registered Plan as a result of the limits under the *Income Tax Act* (Canada). Members of the Supplementary Plan earn benefits under one of three schedules: Supplementary Payment Schedule (“SPS”), Executive Supplementary Payment Schedule (“ESPS”) and the Designated Supplementary Payment Schedule (“DSPS”).
Annual Pension Benefit	2.0% of final average earnings less 0.5% of final average earnings up to the average of the Year’s Maximum Pensionable Earnings	Same as Registered Plan
Bridge Benefit	Temporary bridging pension is provided to age 65	Same as Registered Plan
Indexing	Fully indexed to CPI, to a maximum increase of 8% per annum.	SPS - Same as Registered Plan ESPS - Benefits are indexed at 50% of CPI (to a maximum of 4% per annum)
What’s included in Pensionable Earnings?	Base salary plus pay-at-risk incentive amounts (limited to 5% of base pay)	SPS - Same as Registered Plan ESPS - Base salary plus pay-at-risk incentive amounts (limited to target level)
When eligible for an Unreduced Pension?	Age plus continuous service equals 84 (if hired pre-June 30, 2014) Age plus continuous service equals 90 (if hired post-June 30, 2014) Effective Jan 1, 2025 age plus continuous service equals 90	SPS - Same as Registered Plan ESPS - Age equals 60

As at December 31, 2018, the NEOs participated in the following pension arrangements:

Executive	Employment Agreement
J. Lyash	Mr. Lyash participates in the Registered Plan and the ESPS provision of the Supplementary Plan.
K. Hartwick	Mr. Hartwick participates in the Registered Plan and the ESPS provision of the Supplementary Plan.
G. Jager	Mr. Jager participates in the Registered Plan and the SPS provision of the Supplementary Plan.
S. Granville	Mr. Granville participates in the Registered Plan and the SPS provision of the Supplementary Plan.
D. Reiner	Mr. Reiner participates in the Registered Plan and the SPS provision of the Supplementary Plan

Termination and Change in Control Payments

Based on the terms and conditions of the employment agreements of each of the NEOs, the following summarizes entitlements upon certain termination scenarios, and the potential or actual payments which each NEO would be eligible for in the event of termination without cause as at December 31, 2018.

Executive Name & Job Title	Employment Agreement	Total Payment ($)
J. Lyash President & Chief Executive Officer	Provides that upon termination without cause, his severance shall be a lump sum payment of two (2) times his total cash remuneration (i.e. his then current base salary and target short term incentive/pay-at-risk amounts). Provides for moving expenses to relocate back to the United States up to $50,000 USD, as he was recruited from the United States if he remains for the full duration of his contract.	$1,550,000 Base + $1,550,000 STI + $50,000 Moving = $3,150,000
K. Hartwick CFO and SVP Finance	Provides that upon termination without cause, his severance shall be equivalent to 12 months base salary payable on a continuance basis, benefits will be maintained during the period other than short and long term disability benefits which will cease at the end of applicable statutory Period	$404,250 Base
G. Jager Nuclear President	The employment contract does not contain any specific termination clauses.	None
S. Granville Chief Nuclear Officer	The employment contract does not contain any specific termination clauses.	None
D. Reiner SVP Nuclear Projects	The employment contract does not contain any specific termination clauses.	None

Director Compensation

The table below captures the fees and other compensation provided to OPG's Board of Directors. Amounts are shown in Canadian dollars unless otherwise specified.

Name	OPG Board Fees ($)	Notes
Bernard Lord	$150,000	Board Chair
Bill Coley[1]	$93,500	Non-resident director
Elisabeth (Lisa) DeMarco	$64,000	
JP Gladu	$66,000	
John Herron[1]	$91,000	Non-resident director
Ani Hotoyan-Joly	$69,000	
Wendy Kei	$68,000	
George Lewis	$72,000	
Peggy Mulligan	$78,000	
Yezdi Pavri	$67,000	
Gerry Phillips[2]	$55,100	
Jim Reinsch[1]	$95,000	Non-resident director
James Sheppard[1]	$88,000	Non-resident director
Jeff Coles[3]	$15,750	

[1] US dollars shown for US non-resident directors who are compensated in US dollars in order to retain national and international expertise.
[2] Gerry Phillips resigned from the Board on October 22, 2018.
[3] Jeff Coles was appointed to the Board on October 22, 2018.

Note: Table has been modified from prescribed format. OPG does not provide Directors with share-based awards, option-based awards, non-equity incentive plan compensation or a pension.

The total fees are contingent upon the number of committees the Director sits on, if they are a Chair of a Committee, and the number of meetings they attend.

Each director who was not an employee of OPG received:
$25,000 annual Board retainer
$3,000 annual retainer for each Committee membership
Committee chairs received an annual retainer of $5,000, except for the Chair of the Audit and Risk Committee received an annual retainer of $8,000
$2,000 for a long meeting attended, or $1,000 for a short meeting attended, as determined by the Board Chair. The Board Chair may also determine no meeting fee is warranted.
Travel time allowance, based on the distance travelled to a meeting, of $1,000 for travel of 160-645 kilometres, $1,500 for travel of 645-2,415 kilometres, or $2,500 for travel greater than 2,415 kilometres.

Information on committee membership and the annual performance evaluation for Board members can be found in OPG's year-end 2018 Annual Information Form under the "Corporate Governance" section.

The Chair of the Board, in his role as non-executive Chair, receives an all-inclusive annual fee of $150,000. This amount is determined by resolution of OPG's shareholder and has remained unchanged since 2004.

Mr. Lyash does not receive additional compensation for serving as a director of OPG.

OPG director compensation was well below the 50th percentile of the compensation levels of comparator companies in 2018. From time-to-time the Board and Compensation, Leadership and Governance Committee may engage a third-party to review Director compensation.