

A photograph of a power plant interior. In the foreground, there are large, blue and yellow industrial components, possibly turbines or generators, surrounded by metal railings. A worker wearing a white hard hat, a high-visibility orange and yellow safety jacket, and blue jeans is walking on a metal walkway to the right. The background features large, arched windows and a high ceiling with exposed pipes and ductwork. The overall scene is industrial and well-lit.

# Ontario Power Generation 2018 Annual Report



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# Financial Highlights

(millions of dollars except where noted)	2018	2017
Revenue	5,537	5,158
Fuel expense	671	689
Gross margin	4,866	4,469
Operations, maintenance and administration	2,825	2,824
Depreciation and amortization	784	679
Accretion on fixed asset removal and nuclear waste management liabilities	985	960
Earnings on nuclear fixed asset removal and nuclear waste management funds	(854)	(801)
Earnings from Fair Hydro Trust	(28)	(1)
Income from investments subject to significant influence	(44)	(38)
Property taxes	37	40
	3,705	3,663
Income before other gains, interest, and income taxes	1,161	806
Other gains	(270)	(379)
Net interest expense	77	95
Income tax expense	141	209
<b>Net Income</b>	<b>1,213</b>	881
Net income attributable to the Shareholder	1,195	860
Electricity production (TWh)	74.0	74.1
<b>Cash Flow</b>		
Cash flow provided by operating activities	1,687	944

## Revenue & Operating Highlights

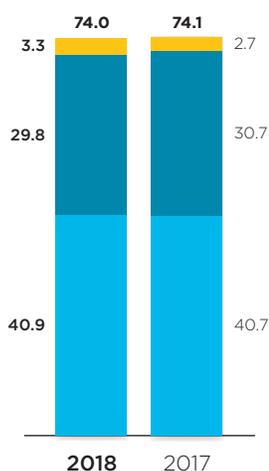
### Legend

- Regulated Nuclear\*
- Regulated Hydroelectric
- Contracted and Other Generation\*\*
- Other

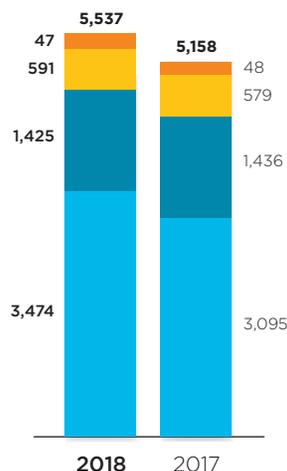
\* Reflects the impact of the removal from service of Darlington GS Unit 2 for refurbishment, which began in October 2016.

\*\* Includes OPG's hydroelectric and thermal generating stations in Ontario that are under contracts, OPG's share from its 50 per cent ownership interests in the gas-fired Portlands Energy Centre and Brighton Beach Generating Station, and its facilities in the U.S., through its subsidiary, Eagle Creek Renewable Energy, LLC (Eagle Creek).

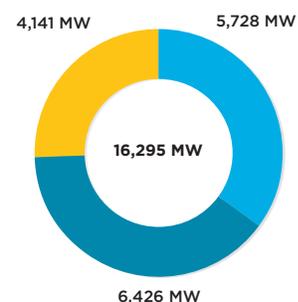
Electricity Generation (TWh)



Revenue (millions of dollars)



In-Service Generating Capacity (MW) Dec. 31, 2018

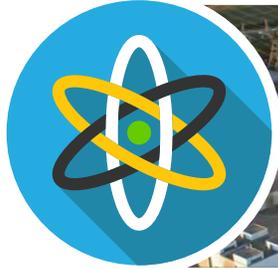


At Dec. 31, 2018, Ontario Power Generation's (OPG) generating portfolio had an in-service capacity of

**16,295\***  
megawatts (MW):

**2**

**Nuclear**  
Generating  
Stations



**66**

**Hydroelectric**  
Generating  
Stations



**63**

**Hydroelectric**  
Generating  
Stations in the U.S.



**2**

**Thermal**  
Generating  
Stations



\*Includes OPG's share of in-service generating capacity of 275 MW from the Portlands Energy Centre gas-fired generating station, 280 MW from the Brighton Beach gas-fired generating station, and approximately 10 MW from minority-held facilities in the U.S.



## Corporate Profile

OPG's focus is on the clean, reliable and low-cost generation and sale of electricity from its generating assets, while operating in a safe, open and environmentally responsible manner. OPG was established under the Business Corporations Act (Ontario) and is wholly owned by the Province of Ontario.

In Ontario, the company owns and operates a diversified generating portfolio consisting of two nuclear, 66 hydroelectric, and two thermal generating stations, one of which is biomass. In the U.S., OPG owns and operates 63 hydroelectric stations through its wholly-owned subsidiary, Eagle Creek.

In March 2019, OPG completed the 44 MW Nanticoke Solar facility in Haldimand County, Ont. That same month, the company completed the acquisition of the 9 MW Little Quinnesec hydroelectric generating station in Niagara, Wisconsin, through Eagle Creek.

OPG also owns two other nuclear generating stations, which are leased on a long-term basis to Bruce Power L.P. In addition, the company is co-owner but not operator of the Brighton Beach gas-fired generating station with ATCO Power Canada Ltd., and the gas-fired Portlands Energy Centre with TC Energy Ltd. Through Eagle Creek, OPG also has minority shareholdings in 13 hydroelectric and two solar facilities in the U.S.



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# 2018 OPG Annual Report

A message from the  
Board Chair and President



**Wendy Kei**  
Board Chair



**Ken Hartwick**  
President and  
Chief Executive  
Officer



As Ontario's largest low-cost clean power generator, OPG depends on a diverse and skilled workforce of more than 9,300 people to deliver strong, reliable performance.

Across our operations and offices, we rely on a talented group of professionals – whether they be skilled trades, young leaders, experienced engineers, or ambitious pioneers striving to break barriers in the workplace.

These are the faces and voices that define OPG. Across Ontario, our dedicated employees are making a difference through their innovation, hard work, and pride in performance. Their efforts keep our generating units safely operating 24 hours a day, 365 days a year. And it's their efforts that will ensure OPG successfully delivers on its projects while continuing to generate clean and reliable power in Ontario at a price approximately 40 per cent less than the average of other generators in the province.

# Committed to safety



Because our people are our most important asset, their safety is our main priority. Each and every day, OPG's employees dedicate themselves to achieving the goal of zero injuries while protecting our local communities and the environment. In 2018, OPG received a Canadian Electricity Association award for achieving the top safety performance for total recordable injury frequency within our benchmark group for 2017. This achievement reflects OPG's strong safety culture and our tireless commitment to safety above all.



## A year of growth and renewal



In 2018, our employees and project partners remained focused on executing our largest ongoing project, the Darlington Refurbishment, which will extend the life of our Darlington Nuclear Generating Station (GS) by another 30 years, securing low-cost, reliable and clean baseload power for the province for decades to come.

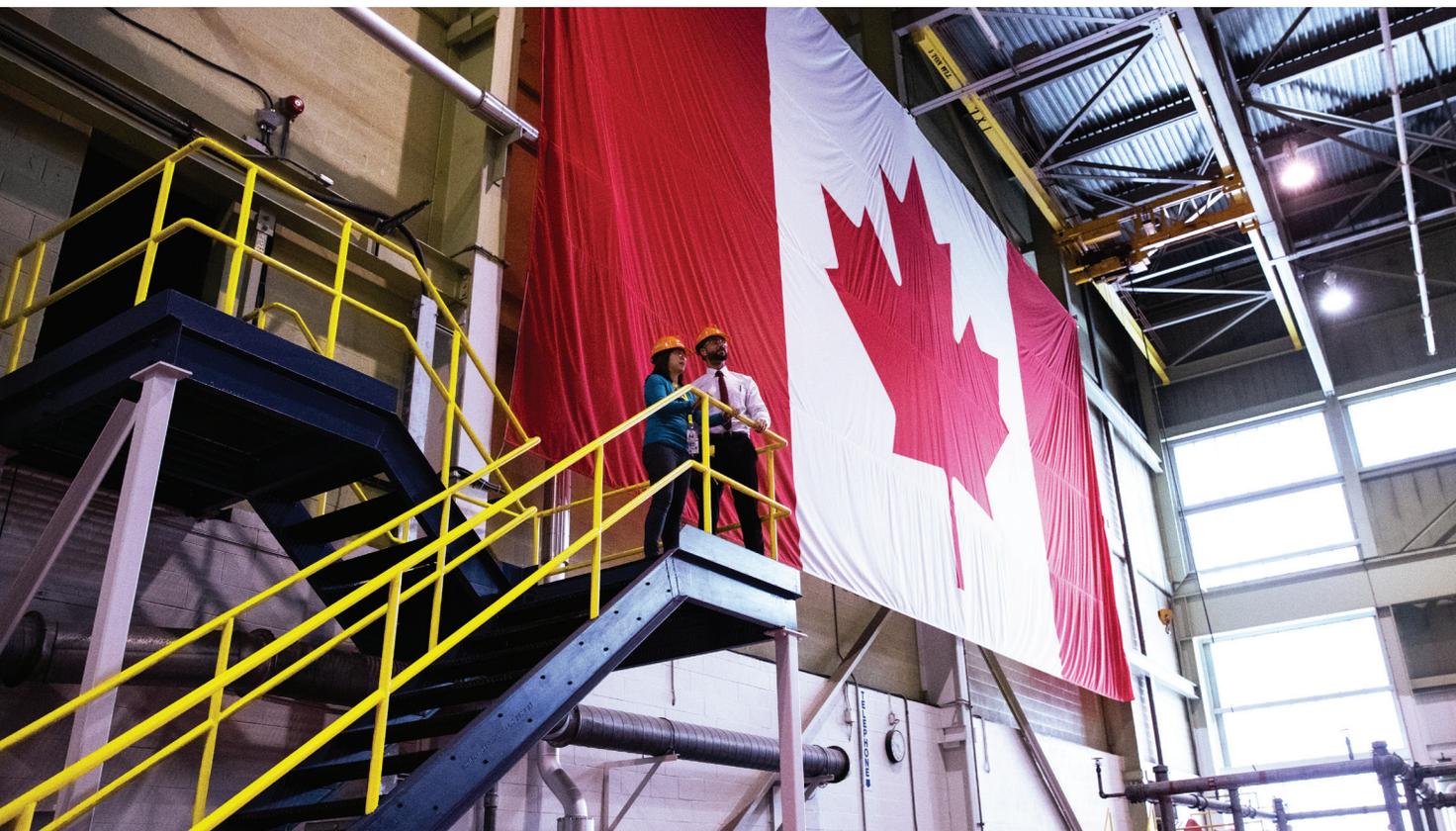
More than 200 companies from across Ontario are playing a key role in delivering the refurbishment, which is Canada's largest clean power project. In 2018, OPG made major strides as we disassembled Unit 2, the first of four units to undergo mid-life refurbishment, and began the careful work to put the reactor back together with new components. Meanwhile, OPG has started the planning and prerequisite activities for refurbishing Unit 3, the next unit to undergo refurbishment.

By 2021, when OPG is half-way through the Darlington Refurbishment, the demand for skilled tradespeople will reach its peak. OPG has established programs like the Indigenous Opportunities in Nuclear (ION), among other capacity-building initiatives, to help ensure the project and the nuclear industry is supported by highly qualified workers.

It was an eventful year outside of the Darlington Refurbishment as well. In August 2018, our nuclear regulator, the Canadian



Nuclear Safety Commission, granted OPG a 10-year licence for Pickering Nuclear GS which will take us through the end of commercial operations followed by safe storage activities, such as removal of fuel and water. The licence extension validates all of our hard work at Pickering and affirms the station's continued strong performance and importance to the province. Continuing operations will reduce greenhouse gas emissions by an estimated 17 million tonnes while providing jobs for about 7,500 people.



Also that same month, OPG signed an agreement to acquire 100 per cent of the equity of Eagle Creek Renewable Energy, LLC, an operator of small renewable power facilities in the United States. As at December 31, 2018, Eagle Creek owned and operated 63 small hydropower facilities representing 216 MW of capacity, primarily located in the U.S. Northeast and Midwest, and had ownership interests in 13 other hydroelectric assets and two solar facilities representing approximately 10 MW of capacity. This acquisition, which was finalized in November 2018, supports OPG's growth strategy and helps the company maintain its scale of operations while facilitating a lower carbon future.

On the projects front, we constructed a new 44 MW solar facility at the site of the former Nanticoke GS coal plant in Ontario. Nanticoke Solar, which went into service March 1, 2019, is a clean energy partnership between OPG and Six Nations of the Grand River and Mississaugas of the Credit First Nation. Construction also advanced on a new 10 MW single-unit powerhouse at Ranney Falls hydroelectric GS.

These projects aim to add value for our Shareholder, the Province of Ontario, and will secure many more years of low-cost, clean and reliable electricity for Ontario, positioning OPG for continued strength and growth in the coming years.

## Operating highlights



In 2018, OPG made significant strides financially and operationally, while working to ensure we remain Ontario's low-cost, clean power generator.

Our 2018 net income attributable to the Shareholder was \$1,195 million, compared to \$860 million in 2017. This increase was attributed to higher revenue from our regulated nuclear and regulated hydroelectric generation segments, which reflected the Ontario Energy Board's decision in December 2017 on OPG's application for new regulated rates. OPG also recorded an after-tax net gain of \$205 million on the sale of the former Lakeview GS site.

Overall, OPG's electricity generation has remained consistent. In 2018, we produced a total of 74.0 TWh of electricity, compared to 74.1 TWh in 2017. We saw an increase in nuclear electricity generation due to fewer planned outage days at our Darlington station, which was partially offset by a larger number of expected outage days at Pickering. On the regulated hydroelectric front, generation decreased due to lower water flows across most river systems. Meanwhile, generation in the Contracted and Other Generation segment saw an increase of 0.6 TWh due to higher demand.



# Innovation at work



To continue to be a strong and efficient company in the future, OPG must apply new technologies and embrace innovation in all its forms.

On the Darlington Refurbishment, our project partners are constantly evolving and improving their products and technologies to find solutions and efficiencies to emerging issues. At our nuclear and hydroelectric operations, we rely on innovative new techniques and tools – from 3D printing to augmented reality – to help keep operating costs down.

In addition, we continue to forge new partnerships that will help keep OPG on the cutting edge. In June 2018, we announced a partnership with BWX Technologies, Inc., to soon begin harvesting life-saving Molybdenum-99 isotopes from reactors at Darlington. The isotope is used in medical diagnostics to detect illnesses like cancer and heart disease. Under the new agreement, Darlington Nuclear will be the only source of Molybdenum-99 in North America, ensuring a stable domestic supply of this critical product.





OPG also continues to support the research and development of Small Modular Reactors – safe, small, scalable nuclear power plants that promise to be the next evolution of reliable, carbon-free nuclear power. And we continue to advocate for electric vehicles and the electrification of the transport sector. We recently joined the Climate Group’s EV100 initiative to pledge our commitment to convert our fleet of vehicles to electric and install more charging stations at our sites.

Finally, we are co-developing a micro grid with Gull Bay First Nation that will use solar, battery storage and grid technology to help the community reduce its use of diesel by 110,000 litres each year.



# Clean, low-cost power made in Ontario



OPG and its employees have much to be proud of. We have provided power to the people of Ontario for more than 100 years. And we have produced this power with a greater purpose in mind – from cleaning our air, to creating new jobs, strengthening our communities and the environment, and securing the future of energy generation.

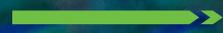
Since our predecessor company's beginnings more than a century ago, OPG has relied on innovation and technical expertise to build world-class facilities and provide clean, reliable, low-cost power to Ontarians. By continuing to innovate and adapt, OPG will remain viable, sustainable and strong, and Ontarians can look forward to another 100 years of clean, reliable power.

We are proud of all we have accomplished in 2018 and look forward to another strong year of performance and growth in 2019. We thank our employees for their tireless service and contributions to OPG.

**Wendy Kei**  
Board Chair

**Ken Hartwick**  
President and CEO





# 2018 Year-End Report



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# ONTARIO POWER GENERATION INC.

## MANAGEMENT'S DISCUSSION AND ANALYSIS

This Management's Discussion and Analysis (MD&A) should be read in conjunction with the audited consolidated financial statements and accompanying notes of Ontario Power Generation Inc. (OPG or Company) as at and for the year ended December 31, 2018. OPG's consolidated financial statements are prepared in accordance with United States generally accepted accounting principles (US GAAP) and are presented in Canadian dollars.

As required by *Ontario Regulation 395/11*, as amended, a regulation under the *Financial Administration Act* (Ontario) (FAA), OPG adopted US GAAP for the presentation of its consolidated financial statements, effective January 1, 2012. Since January 1, 2012, OPG has also received exemptive relief from the Ontario Securities Commission (OSC) that allows OPG to apply US GAAP instead of International Financial Reporting Standards (IFRS). In April 2018, the OSC approved an exemption which allows the Company to continue to apply US GAAP up to January 1, 2024. The term of the exemption is subject to certain conditions, which may result in the expiry of the exemption prior to January 1, 2024. For details, refer to the section, *Critical Accounting Policies and Estimates*. This MD&A is dated March 7, 2019.

### FORWARD-LOOKING STATEMENTS

The MD&A 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, including those set out in the section, *Risk Management*, and forecasts discussed in the section, *Core Business, Strategy and Outlook*. 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, defined benefit 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* (Fair Hydro 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 MD&A are made only as of the date of this MD&A. 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.

## Use of Non-GAAP Financial Measures

The Company uses the following non-GAAP financial performance measures in the MD&A:

- “Return on Equity Excluding Accumulated Other Comprehensive Income”;
- “Enterprise Total Generating Cost per Megawatt-Hour”;
- “Nuclear Total Generating Cost per Megawatt-Hour”;
- “Hydroelectric Total Generating Cost per Megawatt-Hour”; and
- “Gross Margin”.

For a detailed description of each of the non-GAAP measures used in this MD&A and a detailed reconciliation to the most directly comparable measure under US GAAP, refer to the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*. The non-GAAP financial performance measures set out in this MD&A are intended to provide additional information to investors and do not have any standardized meaning under US GAAP, and therefore may not be comparable to other issuers, and should not be considered in isolation or as a substitute for measures of performance prepared under US GAAP.

## THE COMPANY

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity. OPG was established under the *Business Corporations Act (Ontario)* (OBCA) and is wholly-owned by the Province of Ontario (Province or Shareholder). OPG’s electricity generation portfolio had an in-service capacity of 16,295 megawatts (MW) as at December 31, 2018.

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, Canada. In addition, OPG and TransCanada Energy Ltd. co-own the 550 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. The income from the co-owned facilities is accounted for using the equity method of accounting, and OPG’s share of income is included within income from investments subject to significant influence in the Contracted and Other Generation segment.

On November 27, 2018, OPG acquired 100 percent ownership interest of Eagle Creek Renewable Energy, LLC (Eagle Creek), an owner and operator of hydroelectric facilities in the US. Upon the acquisition of Eagle Creek, 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. The operating results related to these acquired facilities are consolidated in the Company’s financial results and reported in the Contracted and Other Generation segment. The acquisition of Eagle Creek is discussed in the section, *Highlights* under the heading, *Recent Developments – Acquisition of Eagle Creek Renewable Energy*.

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). Income from these leased stations is included in revenue under the Regulated – Nuclear Generation segment. The leased stations are not included in the generation and other operating statistics set out in this report. OPG does not operate PEC, Brighton Beach, the Bruce A GS, the Bruce B GS, and the minority-held facilities in the US.

OPG’s proportionate share of the in-service capacity and generation volume of the co-owned facilities and the minority shareholdings is included in the generation portfolio statistics set out in this report.

## OPG's Reporting Structure

The composition of OPG's reportable business segments effective as at December 31, 2018 is as follows:

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

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 supply contracts and the supply of energy and capacity into wholesale spot electricity markets.

OPG receives regulated prices for electricity generated from most of its Ontario-based hydroelectric facilities and all of the nuclear facilities that it operates (collectively, prescribed facilities or regulated facilities). The regulated facilities comprise 54 hydroelectric generating stations across a number of major river systems in Ontario, the Pickering Nuclear GS (Pickering GS) and the Darlington Nuclear GS (Darlington GS).

The operating results related to the regulated facilities are described under the Regulated – Nuclear Generation, Regulated – Nuclear Waste Management and Regulated – Hydroelectric segments. For the remainder of OPG's operating generating facilities, the operating results are described under the Contracted and Other Generation segment. A description of all of OPG's segments is provided in the section, *Business Segments*.

### In-Service Generating Capacity

OPG's in-service generating capacity by business segment as at December 31 was as follows:

(MW)	2018	2017
Regulated – Nuclear Generation <sup>1</sup>	5,728	5,728
Regulated – Hydroelectric	6,426	6,426
Contracted and Other Generation <sup>2</sup>	4,141	4,056
Total	16,295	16,210

<sup>1</sup> The in-service generating capacity as at December 31, 2018 and December 31, 2017 excludes Unit 2 of the Darlington GS. The unit, which has a generating capacity of 878 MW, was taken offline in October 2016 and is currently undergoing refurbishment.

<sup>2</sup> The in-service generating capacity as at December 31, 2018 and December 31, 2017 includes OPG's share of in-service generating capacity of 275 MW for PEC and 280 MW for Brighton Beach. As at December 31, 2018, the in-service generating capacity also includes Eagle Creek's share of in-service generating capacity of approximately 10 MW from minority-held facilities.

The total in-service capacity as at December 31, 2018 increased by 85 MW compared to 2017. The increase was primarily due to the acquisition of Eagle Creek in November 2018, partially offset by the closure of the Thunder Bay biomass-fuelled GS. The increase also reflected the completion of the overhaul and upgrade of Unit 1 of the Harmon hydroelectric GS and Unit 2 of the Little Long hydroelectric GS, which returned to service during 2018.

## REVENUE MECHANISMS FOR REGULATED AND NON-REGULATED GENERATION

### Regulated Generation

The OEB sets the prices for electricity generated from OPG's nuclear and regulated hydroelectric facilities. The following table presents the OEB-authorized regulated prices for electricity generated from these facilities for the period from January 1, 2017 to December 31, 2021 in effect as of the date of this MD&A:

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

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

The base regulated prices in effect since June 1, 2017 were established by the payment amounts order issued by the OEB on March 29, 2018, using an incentive ratemaking methodology for the hydroelectric facilities and a custom incentive regulation framework for the nuclear facilities. The payment amounts order reflected the findings in the OEB's decision on OPG's 2017-2021 application for new regulated prices issued in December 2017.

For the hydroelectric facilities, the base regulated prices in effect since June 1, 2017 are determined by annually escalating the base regulated prices in effect prior to June 1, 2017, with some adjustments, using an approved formula equal to an industry-specific weighted inflation factor based on indices published annually by the OEB, less a stretch factor adjustment. For the nuclear facilities, the base regulated prices have been set for the June 1, 2017 to December 31, 2021 period, using a rate smoothing approach that defers a portion of each year's approved nuclear revenue requirement for future collection in the Rate Smoothing Deferral Account, with the objective of making changes in OPG's overall production-weighted regulated price more stable year over year, consistent with the requirements of *Ontario Regulation 53/05* under the *Ontario Energy Board Act, 1998*. The approved nuclear revenue

requirement for each of the years 2017 to 2021 is based on the OEB-allowed level of operating costs and a return of and on invested capital, which is referred to as rate base. 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.

Amounts deferred in the Rate Smoothing Deferral Account for future collection are recorded as revenue in the period to which the underlying approved revenue requirement relates. The regulation requires the OEB to authorize recovery of the deferred amounts, together with interest at a long-term debt rate reflecting OPG's cost of long-term borrowing approved by the OEB, over a period not to exceed ten years following the end of the Darlington Refurbishment project.

Deferral and variance account rate riders for OPG are established to recover or repay approved balances in OEB-authorized regulatory deferral and variance accounts (regulatory accounts). Deferral and variance accounts typically 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 record the impact of items not reflected in the approved regulated prices. The deferral and variance account rate riders in effect over the January 1, 2018 to December 31, 2021 period were established by a combination of the OEB's March 2018 payment amounts order and the OEB's decision and order issued on February 21, 2019 on OPG's August 2018 deferral and variance account clearance application. The OEB's decision and order on OPG's August 2018 deferral and variance account clearance application is discussed further in the section, *Highlights* under the heading, *Recent Developments – OEB's Decision on OPG's Application to Recover Deferral and Variance Accounts*. Revenue received from the recovery of regulatory account balances is largely offset by amortization expense of regulatory assets and regulatory liabilities recorded for these balances.

### **Non-Regulated Generation**

Virtually all of OPG's non-regulated assets in Ontario are subject to Energy Supply Agreements (ESAs) with the Independent Electricity System Operator (IESO).

During 2018, ESAs were in effect for the following thermal generating facilities:

- Lennox GS: Station capacity and electricity production are subject to an ESA for the period from January 1, 2013 to September 30, 2022
- Atikokan GS: Station capacity and electricity production are subject to a ten-year ESA expiring in July 2024
- Thunder Bay GS: Station capacity and electricity production were subject to a five-year ESA expiring in January 2020. On July 26, 2018, OPG reached an agreement with the IESO to terminate the ESA, effective June 30, 2018, as discussed in the section, *Highlights* under the heading, *Recent Developments – Termination of Thunder Bay GS Energy Supply Agreement*.

In addition, long-term hydroelectric ESAs are in place for the following facilities in Ontario, with expiration dates ranging from 2059 to 2067:

- Lac Seul and Ear Falls generating stations
- Healey Falls GS
- Sandy Falls, Wawaitin, Lower Sturgeon and Hound Chute generating stations
- Little Long, Harmon, Smoky Falls and Kipling generating stations
- Peter Sutherland Sr. GS.

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, *Core Business, Strategy and Outlook* under the heading, *Project Excellence – Nanticoke Solar Facility*.

A number of OPG's hydroelectric generating facilities across the US operated by Eagle Creek receive revenue under long-term energy and capacity supply contracts, having expiry dates ranging from 2019 to 2039.

## HIGHLIGHTS

### Overview of Results

This section provides an overview of OPG's operating results for the years ended December 31, 2018 and December 31, 2017.

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>5,537</b>	5,158
Fuel expense	<b>671</b>	689
Operations, maintenance and administration	<b>2,825</b>	2,824
Depreciation and amortization	<b>784</b>	679
Other gains, net of expenses	<b>(174)</b>	(219)
Income before interest and income taxes	<b>1,431</b>	1,185
Net interest expense	<b>77</b>	95
Income tax expense	<b>141</b>	209
Net income	<b>1,213</b>	881
Net income attributable to the Shareholder	<b>1,195</b>	860
Net income attributable to non-controlling interest <sup>1</sup>	<b>18</b>	21
<i>Electricity production (TWh) <sup>2</sup></i>	<b>74.0</b>	74.1
<i>Cash flow</i>		
Cash flow provided by operating activities	<b>1,687</b>	944
<i>Segment Results</i>		
Regulated – Nuclear Generation	<b>351</b>	57
Regulated – Hydroelectric	<b>594</b>	614
Contracted and Other Generation	<b>301</b>	300
Total electricity generating business segments	<b>1,246</b>	971
Regulated – Nuclear Waste Management	<b>(117)</b>	(150)
Fair Hydro Trust	<b>27</b>	-
Other	<b>275</b>	364
Income before interest and income taxes	<b>1,431</b>	1,185

<sup>1</sup> Relates to the 25 percent interest of Amisk-oo-Skow Finance Corporation, a corporation wholly-owned by the Moose Cree First Nation, in Lower Mattagami Limited Partnership, the 33 percent interest of Coral Rapids Power Corporation (CRP), a corporation wholly-owned by the Taykwa Tagamou Nation, in PSS Generating Station Limited Partnership (PSS) and the 10 percent interest of a corporation wholly-owned by Six Nations of Grand River Development Corporation in Nanticoke Solar LP.

<sup>2</sup> Includes OPG's share of generation from its 50 percent ownership interests in PEC and Brighton Beach. For November 27, 2018 to December 31, 2018, also includes generation from Eagle Creek's facilities, including the proportionate share of generation from minority shareholdings in 13 hydroelectric and two solar facilities.

Net income attributable to the Shareholder was \$1,195 million for 2018, representing an increase of \$335 million compared to 2017. Income before interest and income taxes was \$1,431 million for 2018, representing an increase of \$246 million compared to 2017. The following summarizes the significant factors which contributed to the variance:

*Significant factors that increased income before interest and income taxes:*

- Higher revenue from the Regulated – Nuclear Generation and Regulated – Hydroelectric segments of approximately \$359 million, reflecting the impact of new regulated prices approved by the OEB in its December 2017 decision and March 2018 payment amounts order on OPG's application for new regulated prices, with an effective date of June 1, 2017.
- A pre-tax gain on the sale of the former Lakeview GS site of \$273 million recognized in net income upon completion of the transaction in the first quarter of 2018, as discussed further under the heading, *Recent Developments – Sale of Lakeview Site*.
- Higher earnings of \$33 million from the Regulated – Nuclear Waste Management segment, primarily due to higher earnings from the nuclear fixed asset removal and nuclear waste management funds (Nuclear Segregated Funds), partially offset by an increase in accretion expense on the nuclear fixed asset removal and nuclear waste management liabilities (Nuclear Liabilities).

*Significant factors that reduced income before interest and income taxes:*

- A pre-tax gain on the sale of OPG's head office premises and associated parking facility of \$378 million recorded in the second quarter of 2017.
- Higher depreciation and amortization expenses of \$56 million, excluding amortization expense related to the recovery of the regulatory account balances, mainly due to depreciation on new assets in service.

Net interest expense decreased by \$18 million in 2018, compared to 2017. The decrease was primarily due to a higher amount of interest costs capitalized related to the Darlington Refurbishment project expenditures and partially offset by a lower amount of interest costs deferred in regulatory accounts.

Income tax expense decreased by \$68 million in 2018, compared to 2017. The decrease was primarily due to a refundable tax credit of \$87 million and a higher amount of income tax expense deferred as regulatory assets in 2018, partially offset by the impact of higher income before taxes.

## Electricity Generation

Electricity generation for 2018 and 2017 was as follows:

(TWh)	2018	2017
Regulated – Nuclear Generation	40.9	40.7
Regulated – Hydroelectric	29.8	30.7
Contracted and Other Generation <sup>1</sup>	3.3	2.7
Total OPG electricity generation	74.0	74.1
Total electricity generation by other generators in Ontario <sup>2</sup>	73.7	70.5

<sup>1</sup> Includes OPG's share of generation from its 50 percent ownership interests in PEC and Brighton Beach. For the year ended December 31, 2018, includes generation from Eagle Creek's facilities from November 27, 2018 to December 31, 2018 of 0.1 TWh.

<sup>2</sup> Non-OPG generation is calculated as the Ontario electricity demand plus net exports, as published by the IESO, minus OPG electricity generation in Ontario.

Total OPG electricity generation decreased by 0.1 terawatt hours (TWh) in 2018, mainly due to lower electricity generation from the Regulated – Hydroelectric segment, partially offset by higher electricity generation from the Regulated – Nuclear Generation and Contracted and Other Generation segments.

The decrease in electricity generation of 0.9 TWh from the Regulated – Hydroelectric segment during 2018 was primarily due to higher water flows across most river systems in Ontario in 2017.

The increase in electricity generation of 0.2 TWh from the Regulated – Nuclear Generation segment in 2018 was primarily due to fewer planned outage days at the Darlington GS, largely offset by a higher number of outage days at the Pickering GS.

The electricity generation from the Contracted and Other Generation segment in 2018 increased by 0.6 TWh, primarily due to higher electricity demand in Ontario that resulted in greater electricity generation from non-hydroelectric contracted facilities, and partially due to the electricity generated from the Eagle Creek facilities following the closing of the acquisition on November 27, 2018.

OPG's operating results are affected by changes in grid-supplied electricity demand resulting from variations in seasonal weather conditions, changes in economic conditions, the impact of small scale generation embedded in distribution networks and the impact of conservation efforts. Ontario's electricity demand as reported by the IESO was 137.4 TWh in 2018 and 132.1 TWh in 2017, excluding electricity exports out of the province.

Power that is surplus to the Ontario market is managed by the IESO, mainly through generation reductions at hydroelectric and certain nuclear stations, and other grid-connected renewable resources. Baseload generation supply surplus in Ontario was lower in 2018, compared to 2017, mainly due to higher electricity demand in Ontario and lower water flows across most river systems in the province, resulting in total OPG forgone hydroelectric electricity generation due to SBG conditions in Ontario of 3.5 TWh in 2018 and 5.9 TWh in 2017. The gross margin impact of production forgone at OPG's regulated hydroelectric stations due to SBG conditions in 2018 and 2017 was offset by the impact of a regulatory variance account authorized by the OEB. Production forgone at OPG's regulated hydroelectric stations due to SBG conditions was 3.2 TWh in 2018 and 5.2 TWh in 2017. OPG did not forgo any electricity production at the Pickering and Darlington nuclear generating stations due to SBG conditions.

### **Average Sales Prices**

The majority of OPG's generation is from the Regulated – Nuclear Generation and Regulated – Hydroelectric segments. The regulated prices approved by the OEB for electricity generated from these segments are discussed in the section, *Revenue Mechanisms for Regulated and Non-Regulated Generation*.

The average sales price for the Regulated – Nuclear Generation segment during 2018 was 7.7 cents per kilowatt hour ( $\text{\$/kWh}$ ), compared to 7.1  $\text{\$/kWh}$  during 2017. The increase in the average sales price primarily reflected the impact of the new base regulated prices approved by the OEB in its December 2017 decision and March 2018 payment amounts order with an effective date of June 1, 2017. The increase in the average sales price during the year was partially offset by a partial reversal of the regulatory asset for the June 1, 2017 to December 31, 2017 interim period revenue shortfall initially recorded in the fourth quarter of 2017 to reflect management's best estimate of the impact of the OEB's December 2017 decision, based on OPG's submission of a draft payment amounts order to the OEB in January 2018. The partial reversal was recorded in the first quarter of 2018 to reflect the issuance of the final payment amounts order in March 2018, which made certain adjustments to OPG's draft payment amounts order. These adjustments did not have a material impact on the results of operations in 2018 as the revenue and income impact of the partial reversal of the interim period revenue shortfall regulatory asset was largely offset by the reversal of the regulatory liability for the Rate Smoothing Deferral Account initially recorded in the fourth quarter of 2017 based on the draft payment amounts order. Pursuant to the final payment amounts order, 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. Amounts deferred in the Rate Smoothing Deferral Account are not included in the calculation of the average sales price until the period they are settled with ratepayers.

The average sales price for the Regulated – Hydroelectric segment during 2018 was 4.3 ¢/kWh, compared to 4.2 ¢/kWh during 2017. The higher average sales price in 2018 was mainly due to the impact of the new base regulated price approved by the OEB in its December 2017 decision and March 2018 payment amounts order with an effective date of June 1, 2017.

### **Cash Flow from Operations**

Cash flow provided by operating activities for 2018 was \$1,687 million, compared to \$944 million for 2017. The increase in cash flow provided by operating activities was primarily due to higher cash receipts from generation revenue reflecting the impact of the new regulated prices that were implemented following the issuance of the OEB's March 2018 payment amounts order.

### **Return on Equity Excluding Accumulated Other Comprehensive Income**

ROE Excluding AOCI is an indicator of OPG's performance consistent with the Company's strategy to provide value to the Shareholder. ROE Excluding AOCI is measured over a 12-month period. ROE Excluding AOCI for 2018 was 9.5 percent compared to 7.6 percent for 2017. The increase in ROE Excluding AOCI was primarily due to higher net income attributable to the Shareholder as a result of increased revenue reflecting the full-year impact of the new regulated prices approved by the OEB effective June 1, 2017.

The gains on the sale of the former Lakeview GS site in 2018 and the sale of the head office premises and associated parking facility in 2017, including the effect of the associated special dividend authorized and paid in March 2018, together with the income tax impacts of these transactions, contributed approximately 2.2 percent to ROE Excluding AOCI for the twelve months ended December 31, 2018 and approximately 2.5 percent for the twelve months ended December 31, 2017.

### **Enterprise Total Generating Cost per Megawatt-Hour**

The Enterprise TGC per megawatt-hour (MWh) was \$53.24 for the year ended December 31, 2018, compared to \$50.66 for the same period in 2017. The increase in Enterprise TGC per MWh was primarily due to lower SBG-adjusted hydroelectric electricity generation as a result of higher water flows in 2017 and higher capital expenditures in 2018.

### **Nuclear Total Generating Cost per Megawatt-Hour**

The Nuclear TGC per MWh was \$72.00 for the year ended December 31, 2018, compared to \$70.95 for the same period in 2017. The increase in Nuclear TGC per MWh was primarily due to higher capital expenditures in support of improved equipment reliability.

### **Hydroelectric Total Generating Cost per Megawatt-Hour**

The Hydroelectric TGC per MWh was \$25.88 for the year ended December 31, 2018, compared to \$23.79 for the same period in 2017. The increase in the Hydroelectric TGC per MWh was primarily due to lower SBG-adjusted electricity generation as a result of higher water flows in 2017.

## Recent Developments

### Acquisition of Eagle Creek Renewable Energy

On November 27, 2018, the Company completed the acquisition of Eagle Creek for US\$298 million, subject to working capital and other customary adjustments, a hydropower platform with interests in 76 hydroelectric generating stations and two solar facilities throughout the US. 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.

### OEB's Decision on OPG's Application to Recover Deferral and Variance Accounts

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 nuclear and regulated hydroelectric rate riders commencing January 1, 2019.

On February 21, 2019, the OEB issued a decision and order that approved a 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 new rate riders will contribute to improved cash flow from operating activities but will not have a material impact on net income, as revenue received from the recovery of regulatory balances is largely offset by amortization expense related to these balances. The total approved balances of \$1.3 billion included \$433 million in balances previously approved but not yet authorized for collection by the OEB. Amounts recovered from the Pension & OPEB Cash Versus Accrual Differential Deferral Account will be subject to carrying charges in favour of ratepayers at a prescribed interest rate set quarterly by the OEB based on the quarterly return of a mid-term corporate bond index yield.

Also in its August 9, 2018 application, OPG applied for the annual formulaic adjustment to set the 2019 base regulated price for the regulated hydroelectric facilities pursuant to the OEB's December 2017 decision. On December 13, 2018, the OEB approved the adjustment proposed by OPG and authorized an increase in the base regulated price for the regulated hydroelectric facilities to \$42.51/MWh effective from January 1, 2019 to December 31, 2019. The currently approved base regulated prices and rate riders are found in the section, *Revenue Mechanisms for Regulated and Non-regulated Generation*.

### Canadian Nuclear Safety Commission Safety Rating for the Darlington GS and the Pickering GS

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. In September 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.

### Continued Operations Plan for Pickering GS

In August 2018, following public hearings, OPG obtained a ten-year licence renewal for the Pickering GS from the CNSC, valid until August 31, 2028, which supports the plan to extend safe and reliable commercial operation of the station to December 31, 2024 and subsequently place the station in a safe storage state by 2028. 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.

### Collective Agreements

The three-year governing collective agreement between OPG and the Power Workers' Union (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 of United Professionals (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.

### Termination of Thunder Bay GS Energy Supply Agreement

On July 26, 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. The termination of the ESA and closure of the station will not have a material impact on OPG's financial results in future periods.

### Green Bond Offerings

In June 2018, OPG issued an inaugural green bond offering under its existing Medium Term Note Program. The \$450 million 30-year bonds were priced with a coupon interest rate of 3.84 percent and represent the first green bond issuance in the Canadian energy sector. The net proceeds from the June 2018 issuance are to be used to finance eligible hydroelectric projects under OPG's Green Bond Framework. In January 2019, OPG issued a second green bond offering under its existing Medium Term Note Program. The \$500 million 30-year bonds were priced with a coupon interest rate of 4.25 percent. The net proceeds from the January 2019 issuance are to be used to finance eligible projects as defined in OPG's Green Bond Framework, including the acquisition of Eagle Creek. Further details on the use of proceeds from these issuances can be found in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Climate Change – Performance and Key Climate-Related Metrics*.

### 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.

### 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.

## CORE BUSINESS, STRATEGY AND OUTLOOK

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 expansion opportunities to the benefit of the Shareholder.

OPG's four key strategic imperatives are as follows:

- Operational Excellence
- Project Excellence
- Financial Strength
- Social Licence

### 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.

#### Electricity Generation Production and Reliability

Key strategic initiatives in support of operational excellence, specific to each of OPG's core generating operations, are discussed below. Generation and reliability performance for 2018 is discussed by operating segment in the section, *Discussion of Operating Results by Business Segment*.

#### *Nuclear Operations*

OPG is pursuing a number of strategic initiatives aimed at the continued safe and reliable operation of the Pickering GS and targeting top performance at the Darlington GS.

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, 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. 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.

OPG's nuclear operations are regularly benchmarked against top performing nuclear facilities around the world. This allows OPG to identify, develop and implement initiatives to further improve performance. 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 2017 which confirmed that the station 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. IAEA reviews are standard undertakings that assess operational safety performance and adherence to international safety standards.

In the fourth quarter of 2018, OPG hosted a World Association of Nuclear Operators 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 the station's excellent standing for the fourth consecutive review period as one of the top performing nuclear plants in the world.

OPG remains focused on improving reliability and increasing electricity generation output from its nuclear fleet. This includes improving equipment reliability, optimizing outages, implementing integrated asset management planning and enhancing maintenance programs. Improved equipment reliability generally results in fewer generation interruptions. Nuclear inspection and testing programs are largely driven by maintenance and regulatory requirements, and are designed to ensure that equipment is performing safely and reliably. Execution of this and other outage work continues to be a high priority. As part of its commitment to operational excellence, OPG continues to focus on improving the planning, execution and monitoring of outage work.

OPG continues to make investments in the performance of the Pickering GS, with a focus on improving plant reliability and maximizing the value of the asset over its remaining life through implementing equipment modifications and fuel handling reliability improvements, reducing equipment maintenance backlogs, and completing critical and high priority work. OPG also continues to make investments in the Darlington GS necessary to sustain safe and reliable operations for the next three decades, aimed at positioning the station for industry-leading operating and cost performance in the longer term. This includes investments in life cycle and aging management projects, facility upgrades and work in support of regulatory commitments.

Establishing challenging cost performance targets based on comprehensive benchmarking and taking into account the operating environment of the nuclear stations continues to be a vital part of OPG's strategy to strengthen the financial performance of the nuclear business unit. Cost performance and staffing targets continue to be reviewed and adjusted where necessary to reduce operating costs, while ensuring safety and reliability are not compromised.

In February 2018, following an application process to the CNSC including a set of public hearings, the CNSC announced renewal of OPG's operating licence for the Pickering Waste Management Facility for a ten-year period valid until August 31, 2028.

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 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.

## *Renewable Generation Operations*

OPG's renewable generation fleet comprises 66 hydroelectric generating stations located in Ontario and Eagle Creek's 63 hydroelectric generating stations located throughout the US, primarily in the Northeast and Midwest regions.

The objectives of OPG's 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 facilities' output by improving operational flexibility, enhancing reliability, optimizing outage planning and, subject to water conditions, increasing availability to meet electricity system demand. OPG continues to evaluate and implement plans to increase capacity, maintain and improve operational performance and extend the operating life of its hydroelectric generating assets. OPG is also continuing to pursue opportunities to expand its renewable generation portfolio through strategic acquisitions in key North American markets.

OPG's hydroelectric operations are regularly benchmarked against peer utilities in North America. Based on 2017 data, 21 of OPG's 25 largest regulated hydroelectric facilities benchmarked in the top two quartiles for unit energy costs. This group of 21 facilities represents approximately 95 percent of the energy delivered from the regulated hydroelectric fleet. Similarly, 15 of the 25 largest regulated hydroelectric facilities benchmarked in the top two quartiles for Hydroelectric Availability. OPG continues to pursue innovation and technology-based improvements in its asset management and equipment maintenance strategies in order to increase reliability and further reduce costs of the hydroelectric fleet.

OPG's plans for its existing hydroelectric generating stations 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. The aim of OPG's runner replacement and upgrade program is to increase hydroelectric station capacity by leveraging efficiency enhancements in runner design. Where economical and practical, OPG also pursues opportunities to refurbish, expand or redevelop its existing hydroelectric stations. 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 the planned Sir Adam Beck I GS frequency conversion project. These respective projects are discussed under the headings, *Project Excellence – Ranney Falls Hydroelectric GS* and *Project Excellence – Sir Adam Beck 1 GS*. OPG is also planning to repair, rehabilitate or replace a number of aging civil hydroelectric structures.

As part of its commitment to operational excellence, OPG continues to make investments in its existing hydroelectric generating fleet. During 2018, OPG continued to execute a number of projects, including:

- Completion of the overhaul and rehabilitation of Unit 1 of the Sir Adam Beck Pump GS and Unit 2 of the Lower Notch GS to ensure reliable unit operation for approximately the next 20 years
- Completion of the overhaul and upgrade of Unit 1 of the Harmon GS and Unit 2 of the Little Long GS, which increased the stations' capacity by eight MW and four MW, respectively
- Execution phase work on the overhaul and upgrade of Unit 2 of the DeCew Falls GS, the overhaul and rehabilitation of Unit 6 of the Sir Adam Beck Pump GS, and the automatic sluiceways system replacement at the Whitedog Falls GS
- Continued definition phase work for the Water Conveyance System project to rehabilitate the Sir Adam Beck 1 GS canal and associated structures, to ensure their continued safe and reliable operations for approximately the next 50 years
- Continued definition phase work for the rehabilitation of Caribou Falls Block Dam No. 2, the overhaul and upgrade of Unit 5 of the Sir Adam Beck 1 GS, the overhaul and upgrade of the R.H. Saunders GS units, and the construction of a new, minimum unit flow unit at Eagle Creek's Swinging Bridge GS. Execution phase activities on these projects are expected to commence in 2019.

In August 2018, OPG and the New York Power Authority renewed the Joint Works Agreement to share the water, maintenance practices, safety experience and common operational costs and responsibilities, ensuring 15 more years of cross-border collaboration to generate clean power from the St. Lawrence River.

### *Thermal Operations*

OPG's thermal operations are located in Ontario and consist of the biomass-fuelled Atikokan GS and the oil/gas dual-fuelled Lennox GS. The Atikokan GS is the largest generating station in North America fuelled by 100 percent biomass, while the Lennox GS is Canada's largest oil/gas-fuelled power plant.

These stations, which operate as peaking facilities under their respective ESAs, provide Ontario's electricity system with the flexibility to meet changing daily system demand and capacity requirements and have enabled the system to accommodate the expansion of Ontario's renewable generation portfolio. The continued operation of these stations provides Ontario with over 2,300 MW of peaking generation capacity.

OPG's strategy in operating thermal stations is to ensure their availability to meet the electricity system requirements over their remaining service lives, through station reinvestment within technical, regulatory and contractual constraints and with an expectation of achieving an appropriate return on investment.

### Improving Efficiency and Reducing Costs

As part of its commitment to operational excellence, OPG remains strongly 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.

## **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. This includes continuing to plan and execute a portfolio of maintenance and capital improvement projects to maximize the value of its existing assets. OPG strives for excellence in the planning and delivery of all projects across the Company.

OPG's vision for project excellence is to be an industry leader in project management capability and performance. As part of its commitment to project excellence, OPG continues to enhance and streamline its approach to project planning and execution, with the goal of delivering all projects safely, on time, on budget and with high quality. Achieving project excellence at OPG involves, among other things, leveraging a common, scalable project delivery model across all business units, ensuring qualified project management teams, optimizing contracting strategies, engaging qualified and experienced vendors and effectively monitoring and controlling performance.

The status updates for OPG's major projects as at December 31, 2018 are outlined below.

Project <i>(millions of dollars)</i>	Capital expenditures		Approved budget	Expected in-service date	Current status
	Year-to-date	Life-to-date			
Darlington Refurbishment	1,079	5,513	12,800 <sup>1</sup>	First unit - 2020 Last unit - 2026	The reassembly of Unit 2 reactor components is in progress, with the new fuel channel installation series targeting completion in the first half of 2019 and the new upper and middle feeder installation series underway. Planning activities for the refurbishment of Unit 3 are continuing. The overall project is tracking on schedule and to the \$12.8 billion budget.
Ranney Falls Hydroelectric GS	29	57	77	2019	Construction continues with the balance of plant activities. Gate installation 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 is tracking on schedule and on budget.
Nanticoke Solar Facility	86	89	107	2019	Construction commenced during the second quarter of 2018 and continued throughout the year. 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.
Deep Geologic Repository (DGR) for Low and Intermediate Level Radioactive Waste (L&ILW)	9 <sup>2</sup>	213 <sup>2</sup>			In August 2017, the federal Minister of Environment and Climate Change (MOECC) requested OPG to update its analysis of potential cumulative effects of the project on the Saugeen Ojibway Nation's (SON) physical and cultural heritage. OPG continues its engagement with the SON towards securing support for the project and to formulate a response to the information request.

<sup>1</sup> The total project budget of \$12.8 billion is for the refurbishment of all four units at the Darlington GS.

<sup>2</sup> Expenditures are charged against the Nuclear Liabilities.

## 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 approved budget for the four-unit refurbishment is \$12.8 billion, which includes the costs of the pre-requisite projects in support of the execution phase of the refurbishment. The first refurbished unit is scheduled to be returned to service in the first quarter of 2020 and the last unit is scheduled to be completed by 2026.

The Darlington Refurbishment project is a multi-phase program comprising the following five major sub-projects:

- Re-tube and Feeder Replacement, which includes the removal and replacement of feeder tubes and fuel channel assemblies in each reactor
- Turbines and Generators, which consists of inspections and repairs of turbine generator sets and the replacement of analog control systems with digital control systems
- De-fuelling and Fuel Handling, which involves the de-fuelling of the reactors and the refurbishment of the fuel handling equipment
- Steam Generators, which includes mechanical cleaning, water lancing and inspection and maintenance work on the generators
- Balance of Plant, which consists of work on smaller projects to replace or repair certain other station components.

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. The first major segment of the Unit 2 refurbishment, which included de-fuelling of the reactor and the physical separation of the unit from the three operating units, was completed in 2017.

The second major segment included the disassembly and removal of reactor components, including end fittings, pressure tubes and calandria tubes, and was completed in the second quarter of 2018.

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. 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 for the station.

Most of the pre-requisite projects, including construction of facilities, infrastructure upgrades and installation of safety enhancements, have been completed and placed in service. Construction activities for the Heavy Water Storage and Drum Handling Facility (HWSF) are continuing. 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. 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.

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. As of December 31, 2018, \$252 million has been invested in planning and prerequisite activities related to the Unit 3 refurbishment.

On December 5, 2018, the Office of the Auditor General of Ontario released its 2018 Annual Report that included a value-for-money audit report on the Darlington Refurbishment project. The report reaffirmed that OPG has a clear accountability structure to monitor that the project remains on track.

#### Ranney Falls Hydroelectric GS

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

The construction of a 44 MW solar facility at the Nanticoke GS site and adjacent lands commenced in the second quarter of 2018. The installation of piles and the solar modules onto the racking has been completed. The facility will operate under an LRP I contract with the IESO, through Nanticoke Solar LP, a partnership between OPG and a subsidiary of Six Nations of Grand River Development Corporation. 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.

#### 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 Western Waste Management Facility (WWMF) in Kincardine, Ontario. 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 December 2016, at the request of the federal MOECC, OPG submitted additional information on certain aspects of the EA, including information related to alternate locations for the project. 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 EA process and advised that a draft report and updated terms and conditions would be prepared for public review.

In August 2017, as part of the EA approval process, the federal MOECC requested OPG to update its analysis of potential cumulative effects of the project on the SON's physical and cultural heritage, including a description of the potential effects of the project on the SON'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.

#### Sir Adam Beck 1 Hydroelectric GS

The Sir Adam Beck 1 GS, located at Niagara Falls, Ontario was originally placed in service in the 1920s. A project to rehabilitate two of the older units at the station (G1 and G2) is in its early stages of planning. These two units used outdated technology prior to being decommissioned in 2009. The conversion of these units to newer technology is expected to add approximately 100 MW of incremental generating capacity, providing many more decades of cost effective, clean power from one of the cornerstone stations in the Company's hydroelectric fleet. OPG is developing detailed cost and schedule commitment estimates for the project. The Sir Adam Beck 1 GS is included in the Regulated – Hydroelectric segment.

#### Decommissioning of Thermal Generating Stations

Former thermal stations that are no longer available to generate electricity are excluded from the Contracted and Other Generation segment once they are removed from service. This includes the Lambton GS and the Nanticoke GS, which ceased operations in 2013. Over 2015 and 2016, OPG announced that these stations would be decommissioned safely, securely and in an environmentally responsible manner.

As part of the process to decommission the Nanticoke GS, OPG safely demolished the station's stacks in February 2018. Demolition activities continue for the station's powerhouse and associated structures. The decommissioning plan for the Nanticoke GS accommodates the construction and operation of the Nanticoke solar facility. 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 contractor had been mobilized to site and the removal of saleable equipment, asbestos abatement and demolition activities is in progress. The costs of the decommissioning activities are charged to a previously established decommissioning provision.

### **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 four 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
- Managing risks, which is discussed in the section, *Risk Management*.

#### Increasing Revenue, Reducing Costs and Achieving Appropriate Return

In line with its commercial mandate, OPG is focused on increasing revenue and net income and achieving an appropriate rate of return on the Shareholder's investment, while taking into account the impact on electricity customers by seeking further efficiencies in the Company's cost structure.

For regulated operations, achievement of the above objectives is largely dependent on outcomes of applications for regulated prices to the OEB and growth of the asset base earning a return.

OPG has been focused on demonstrating in its applications for regulated prices that the costs required to operate and invest in the Company's regulated assets are reasonable and being prudently incurred and should be fully recovered, and that the Shareholder's investment in these assets should earn an appropriate rate of return.

The OEB's December 2017 decision and March 2018 payment amounts order on OPG's 2017-2021 rate application that established new regulated prices effective June 1, 2017 provide substantial price certainty for the regulated business up to 2021. While the OEB set costs for determining the regulated prices below OPG's forecasted levels, including through the use of stretch factors under incentive ratemaking, the regulated prices provide a substantial increase in revenue and net income compared to the previously approved prices.

To further improve the financial strength of the regulated operations, OPG continues to focus on optimizing operational performance and outage plans across the generating fleet and to pursue further efficiency improvements in the Company's cost structure and operating model. OPG's cost reduction and productivity improvement strategies are discussed further in the section, *Core Business, Strategy and Outlook* under the heading, *Operational Excellence – Improving Efficiency and Reducing Costs*.

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 decision and March 2018 payment amounts order on the basis of the June 1, 2017 effective date, the motion decision did not impact OPG's reported financial results for the year ended December 31, 2018.

OPG continues to invest in the regulated asset base, with the Darlington Refurbishment project being the single largest such capital investment. In its December 2017 decision, the OEB has allowed inclusion of a total of \$5.5 billion in Darlington Refurbishment in-service capital additions by 2021 in the new regulated prices, excluding the HWSF. Once in service, these assets attract the OEB-prescribed return on equity of approximately 8.8 percent as part of the regulated prices for the 2017-2021 period, based on the approved deemed capital structure of 45 percent equity and 55 percent debt. The average OEB-approved cost of deemed debt for the 2017-2021 period is approximately 4.6 percent. OPG also continues to pursue an extensive capital program across its regulated hydroelectric operations that includes expansion, redevelopment and life extension of the generating facilities, where economical. These renewable assets have long service lives and, with either maintenance efforts or rebuilding, will continue to supply electricity for the foreseeable future.

OPG's revenues from the regulated operations include recovery of amounts deferred in OEB-authorized deferral and variance accounts. In August 2018, OPG filed an application with the OEB to recover approximately \$1.3 billion in December 31, 2017 balances in these regulatory accounts and associated income tax impacts, including \$433 million that was previously approved but not yet authorized for collection by the OEB. In February 2019, based on a settlement agreement between OPG and intervenors, the OEB approved these balances for recovery and authorize OPG to collect \$535 million of the approved balances through incremental nuclear and regulated hydroelectric rate riders over the January 1, 2019 to December 31, 2021 period. The collection of the riders will contribute positively to the Company's cash flow from operating activities. Refer to the section, *Highlights* under the heading, *Recent Developments – OEB's Decision on OPG's Application to Recover Deferral and Variance Accounts* for further details.

For generation assets that do not form part of the rate regulated assets, OPG seeks to secure appropriate long-term revenue arrangements. In line with this strategy, virtually all of OPG's non-regulated facilities in Ontario are subject to long-term contracts with the IESO. A number of Eagle Creek's facilities are also subject to long-term energy and capacity supply contracts. Eagle Creek continues to pursue new agreements where appropriate.

### Ensuring Availability of Cost Effective Funding

OPG actively monitors its funding requirements and forecasts availability of funds to ensure that it can meet the Company's operational needs, project commitments and long-term obligations. OPG utilizes multiple sources of funds, including funds generated from operations, commercial paper, securitization of assets, letters of credit, credit facilities, long-term corporate debt sourced from the Ontario Electricity Financial Corporation (OEFC) and public debt offerings, credit facilities with the OEFC, private placement project financing and equity issuances. The Company's financing strategy leverages the strength of its balance sheet to obtain cost effective long-term corporate debt. OPG also accesses the capital markets for private placement project financing, secured by the assets of the project, where the characteristics of the project support such financing. Maintaining an investment grade credit rating is critical to OPG's ability to access cost effective financing.

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

The Company continues to evaluate arrangements that would appropriately support its financing needs, capital expenditure programs and business expansion strategy. OPG's liquidity and capital resources are discussed in the section, *Liquidity and Capital Resources*.

### Building Our Business

Through pursuit of commercial-based opportunities to expand its business, OPG strives to be a leader in the North American transition toward a low carbon future while maintaining and expanding the Company's scale and energy industry leadership. This strategy considers the Company's financial position and anticipated future changes in the generating fleet, including the planned end of commercial operation at the Pickering GS. The strategy is also informed by industry, technological, environmental, social and economic external factors. Opportunities are evaluated using financial and risk-based analyses as well as strategic considerations.

OPG's strategy primarily focuses on the renewal and expansion of the Company's portfolio of generating assets, including the redevelopment and expansion of existing sites, potential new developments and business acquisitions. The strategy leverages OPG's operating and project development expertise as well as the Company's existing diverse physical asset base. Acquisition opportunities are considered taking into account potential operating synergies, strategic benefits, financial returns and risk profile. OPG's current major generation development projects and asset life extension initiatives are discussed in the section, *Core Business, Strategy and Outlook* under the headings, *Operational Excellence and Project Excellence*.

OPG also actively seeks to expand beyond its core generation business through investments in innovation and emergent low-carbon technologies, including nuclear innovation, energy storage, distributed generation, electric vehicle infrastructure and other development. Additionally, OPG continues to consider potential paths to extend its business through broader electricity sector opportunities, within and outside Ontario. Business expansion opportunities may be pursued in partnership with other commercial entities where appropriate synergies exist and are aligned with OPG's business objectives.

### **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's Social License initiatives and activities are discussed in the section, *Environmental, Social, Governance and Sustainability*.

## Outlook

The financial performance of OPG's regulated operations is driven, in large part, by the outcome of the Company's applications for regulated prices to the OEB and the generation performance of the nuclear and hydroelectric fleet.

Based on the OEB-approved regulated prices and anticipated generation performance and outage plans for the generation fleet, OPG expects its existing operations to provide a largely consistent level of net income and ROE Excluding AOCI in 2019, compared to 2018, excluding the impact of the sale of the former Lakeview GS site and the tax effect of the special dividend paid in 2018. The increase in the regulated prices in 2019, as set out in the section, *Highlights* under the heading, *OEB's Decision on OPG's Application to Recover Deferral and Variance Accounts*, is expected to contribute to an improvement in cash flow from operating activities in 2019, compared to 2018.

Several regulatory accounts will continue to reduce the relative variability of the regulated operations' contribution to the Company's net income, particularly for the Regulated – Hydroelectric Generation segment. Among others, these accounts include those related to the revenue impact of variability in water flows and forgone production due to SBG conditions at the regulated hydroelectric stations. As such, segment earnings from the Regulated – Hydroelectric segment are expected to continue to be generally stable on a year-over-year basis.

There are no regulatory accounts in place related to the impact of variability in the nuclear stations' generation performance on revenue from base regulated prices. OPG continues to operate and maintain its nuclear facilities with a view to optimize their performance and availability, building on recent initiatives to improve the overall reliability and predictability of the fleet. Taking into account the stations' cyclical maintenance schedule, earnings from the Regulated – Nuclear segment in 2019 are expected to be comparable to 2018.

Energy and capacity provided by most of OPG's non-regulated assets is subject to ESAs with the IESO or other long-term power purchase agreements. Based on these agreements, OPG expects existing operations of the Contracted and Other Generation segment to continue to contribute a generally stable level of earnings and cash flow from operating activities in 2019, taking into account the acquisition of Eagle Creek, the closure of the Thunder Bay GS, and the expected commencement of the Nanticoke solar facility's operations.

Lower nuclear generation due to the Darlington Refurbishment outages will continue, as planned, to negatively impact the Enterprise TGC and Nuclear TGC measures for the duration of the refurbishment project. Lower hydroelectric generation due to outages related to various refurbishment and operational projects may negatively impact Enterprise TGC and Hydroelectric TGC for the duration of these projects. Variability in sustaining capital investment expenditures, nuclear outage profile and water flows may also impact TGC measures in future periods.

OPG's total forecast capital expenditures for the 2019 year are approximately \$2.1 billion. This includes amounts for the Darlington Refurbishment project, hydroelectric and other development projects, and sustaining capital investments across the generating fleet. OPG's major projects are discussed in the section, *Core Business, Strategy and Outlook* under the heading, *Project Excellence*.

In addition to the operating and financial performance of the electricity generation business, OPG's results are affected by earnings on the Nuclear Segregated Funds established under the Ontario Nuclear Funds Agreement (ONFA) between OPG and the Province, which are reported in the Regulated – Nuclear Waste Management segment. While the Nuclear Segregated Funds are managed to achieve, in the long term, the target rate of return based on the discount specified in the ONFA, the rates of return earned in a given period can be subject to volatility due to financial market conditions, including changes in the Ontario consumer price index (CPI) that affect earnings on the portion of the Used Fuel Segregated Fund guaranteed by the Province, and can cause fluctuations in the Company's income in the short term. This volatility is partially reduced by the impact of the OEB-authorized Bruce Lease Net Revenues Variance Account and during periods when the funds are in a fully funded or overfunded position, as discussed further in the section, *Risk Management* under the heading, *Risks to Financial Strength – Nuclear Liabilities and Nuclear Segregated Funds*.

As at December 31, 2018, the Decommissioning Segregated Fund was overfunded by approximately 20 percent, and the Used Fuel Segregated Fund was underfunded by less than one percent, based on the current ONFA reference plan. Variability in asset performance due to volatility inherent in financial markets and changes in Ontario CPI, or changes in funding liability estimates, may result in either or both funds becoming underfunded in the future. No overall contributions to the Nuclear Segregated Funds are currently expected until the end of 2021 when the next update of the ONFA reference plan is scheduled. At that time, the value of the funds will be compared to the respective underlying funding liabilities to determine any required future contributions.

OPG's current results include the earnings and operating cash flow from the Fair Hydro Trust segment, primarily related to interest income from the Fair Hydro Trust (the Trust). The future financial impact of OPG's involvement with the Trust is expected to be significantly reduced once the Province's September 2018 announcement to cancel the Global Adjustment refinancing component of Ontario's Fair Hydro Plan (Fair Hydro Plan) is implemented. The Province's September 2018 announcement is discussed in the section, *Discussion of Operating Results by Business Segment* under the heading, *Fair Hydro Trust Segment*.

## **ENVIRONMENTAL, SOCIAL, GOVERNANCE AND SUSTAINABILITY**

### **Environmental and Sustainability**

OPG recognizes that operating in a sustainable manner is directly connected to business success and strives to be a leader in climate change mitigation through the implementation of operational and growth strategies that support reductions in greenhouse gas (GHG) emissions. OPG is Ontario's largest low-cost clean energy provider, producing electricity that is currently over 99 percent free of GHG emissions.

OPG is 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.

In 2018, OPG maintained the ISO 14001 registration of its 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.

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 met or outperformed its 2018 targets for spills, environmental infractions, carbon-14 emissions to air and tritium emissions to water. Although the internal target for tritium emissions to air was not achieved due to equipment performance issues, emissions remained very low at less than one percent of the regulatory limit. An increase in the volume of waste generated from work activities at the Darlington GS led to a higher than expected volume of L&ILW produced in 2018. There were no significant environmental events during 2018.

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. Samples were collected in publicly accessible areas outside the respective site perimeters and included air, water, soil and vegetation. Samples of food were also taken from local farms.

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 program has no material financial impact on the Company and results in lower fuel costs for some of OPG's owned and co-owned generating facilities. In February 2019, the Ontario Ministry of the Environment, Conservation and Parks (MECP) proposed industrial emission performance standards (EPS) which are intended to substitute the federal output-based pricing system. The Government of Ontario announced plans to have the EPS program in place by summer of 2019, applicable to emissions as of January 1, 2019.

OPG has developed biodiversity management plans that identify priority natural areas, conservation goals, threats and proposed actions to sustain biodiversity at the Company's operating sites. To maximize benefits and manage impacts, initiatives include biodiversity monitoring, site naturalization, habitat creation and control of invasive species.

OPG works with community partners to support regional ecosystems and biodiversity across Ontario. During 2018, OPG continued efforts to protect and restore habitat, promote biodiversity education and awareness and help the recovery of species at risk. 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.

OPG communicates its environmental performance internally to employees and to external stakeholders, including the MECP, Environment and Climate Change Canada, the CNSC and local communities. Details of OPG's environmental performance and initiatives to fulfill the Company's Environmental Policy can be found in OPG's most recent Sustainability Report and the Company's Environmental Policy, which are available on the Company's website at [www.opg.com](http://www.opg.com).

## **Climate Change**

In 2018, OPG confirmed its support of the proposals outlined by the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), encouraging the development of climate-related financial risk disclosures that are measurable and relevant to investors and other stakeholders within companies' annual filings.

### Governance and Management of Climate Change Risks and Opportunities

OPG has identified climate change as a potential risk to achieving business objectives and has taken steps to integrate climate change adaptation and mitigation into several key initiatives within the Company. The risks presented by climate change are identified and managed in a consistent manner with other identified risks, through the Company's Enterprise Risk Management (ERM) framework, as discussed in the section *Risk Management*. This includes oversight of climate-related risks and opportunities by the Board of Directors.

Additionally, the OPG pension plan's investment strategy includes provisions to address risks arising from Environmental, Social and Governance (ESG) factors, including climate change related risks. Management of these risks is performed through due diligence of external fund managers responsible for implementing the investment program and continuous monitoring and reporting from fund managers on ESG issues.

In May 2018, OPG established an Environmental, Social, Governance and Sustainability steering committee, consisting of Enterprise Leadership Team (ELT) members with expertise in the areas of finance, environment, social relations and governance. The committee provides oversight on integrating identified climate-related risks and opportunities within the Company's long-term strategy and business plan, including in areas such as capital

expenditures and allocation of capital, areas of growth and opportunity for the business, and identification of at-risk assets as a result of climate change. As OPG gains further information about the potential impacts of climate change on the Company's operations and future financial performance, the steering committee will also provide guidance on the metrics and targets determined to be most significant for measurement and disclosure to investors and other stakeholders.

#### Strategy to Address Climate Change

OPG is focused on increasing the level of awareness and understanding of climate change adaptation across the business. In recent years, Ontario and other regions in North America where OPG operates have experienced changes in climate and an increase in extreme weather events. Changes in precipitation patterns and intensity, water temperatures and ambient air temperatures all impact various aspects of OPG's operations. In addition to the potential impacts on generation at hydroelectric stations and cooling water efficiency at nuclear and thermal stations, changes in climate can also significantly affect the reliability and life expectancy of major equipment as well as electricity supply and demand profile. Initiatives are underway to incorporate consideration of changes in climate into the Company's business processes. Internal workshops have commenced across the organization to identify impacts by climate parameters, prioritize adaptation needs and increase awareness of the potential impacts of changes in climate to OPG's operations.

OPG continues to participate in industry-wide initiatives and working groups to increase the resilience of critical infrastructure. These activities include the development of a standardized process for developing climate change adaptation plans and proposed changes to the Canadian Electrical Code.

Consistent with its strategic imperatives, OPG continues to seek opportunities to invest in the generation of clean and sustainable energy. The following is a summary of recent actions taken to advance this strategy:

- In 2018, OPG continued with the largest clean air infrastructure project in Canada, the Darlington Refurbishment. Once complete, the Darlington GS will continue to provide clean, reliable and cost effective baseload generation for the people of Ontario for another 30 years.
- In June 2018, OPG issued an inaugural \$450 million green bond offering under its existing Medium Term Note Program. Over two thirds of the amounts issued were acquired by investors that are signatories to the United Nations Principles for Responsible Investment of which some investors had specific green mandates. In January 2019, a second, \$500 million green bond offering was issued under the existing Medium Term Note Program. The proceeds raised from green bonds must be used to finance or refinance eligible projects under OPG's Green Bond Framework, which adheres to the Green Bond Principles issued by the International Capital Markets Association. OPG's Green Bond Framework requires that the proceeds be utilized for investments that supply energy from renewable sources (i.e. hydroelectric, solar, wind), help reduce energy consumption or manage and store energy.
- In November 2018, OPG finalized the acquisition of Eagle Creek, an owner and operator of 63 hydroelectric generating stations across the US with further interests in 13 hydroelectric and two solar facilities, further expanding and diversifying OPG's renewable generation fleet. A significant portion of the net proceeds from the January 2019 green bond offering is to be used to finance the acquisition of Eagle Creek.

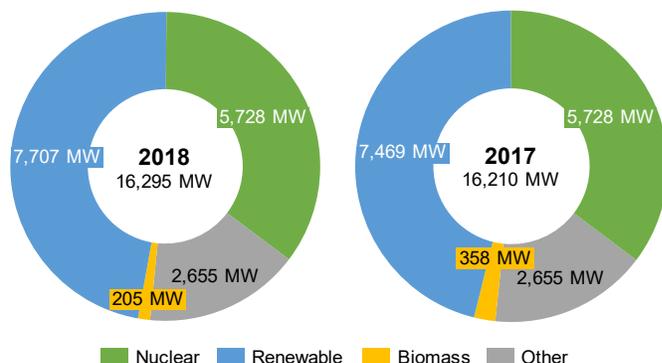
- In November 2018, OPG submitted an updated climate change framework and strategy to the Board of Directors. The new framework realigns OPG's work on climate change around the core elements recommended by the TCFD: Governance, Strategy, Risk Management and Metrics and Targets. The framework provides an integrated view of planned activities and initiatives across the Company in response to the risks and opportunities presented by a changing climate. 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 in transportation, energy storage and efficient electrification processes. OPG will continue to work to integrate climate change metrics and targets into the Company's business planning process.
- 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.
- As part of its strategy to help de-carbonize Ontario's transportation sector, 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. In addition, the Company is working with commercial fleets to provide fleet electrification solutions, helping them to 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 November 2018, OPG's leadership in decarbonizing the transportation sector with clean electricity was recognized by the Canadian Electricity Association (CEA) with the 2018 Sustainable Electricity award for Commitment to Continuous Performance Improvement.
- OPG has begun to incorporate climate-related considerations into its core investment decisions during 2018 and expects to more fully incorporate these considerations into investment decision-making processes starting in 2019. In assessing potential investments, in addition to economic value and strategic alignment, specific consideration will be given to the benefits an investment provides to the Company's climate change resilience and adaptation efforts.

#### Performance and Key Climate-Related Metrics

OPG continues to determine the most relevant climate-related impacts for the business in the context of its ESG and Sustainability framework. Currently, there are no consistently established metrics related to the impacts of climate change across the utilities industry. OPG has been actively engaged in the development of consistent industry metrics to quantify the level of achieved climate change resilience, including through industry-wide collaborative forums such as the CEA. Concurrently, OPG aims to develop internal performance and forward-looking metrics, utilizing climate models to assess the impact of changes in climate on the results of the Company's operations as well as its infrastructure. Potential performance metrics include quantification of adaptation effectiveness or avoided losses due to achieved resilience, amount of capital expenditures to be deployed in response to changes in climate, and the potential impact on OPG's financial results due to changes in the environment. OPG's timeline for development of longer-term quantitative metrics and targets is in line with industry peers.

Pending development of longer-term metrics and targets for climate change adaptation, OPG has identified certain initial current metrics that it considers relevant to external stakeholders. The initial key metrics and actual performance for the years ended December 31, 2018 and 2017 are outlined below.

### Climate change metrics



#### In-service generating capacity<sup>1</sup> by generation type (MW)

This metric identifies the in-service generating capacity available from OPG's different generation sources and tracks low-carbon energy capacity relative to other sources. Nuclear, Renewable (which includes hydroelectric, solar and wind) and Biomass generation are all considered to be low-carbon emitting sources.

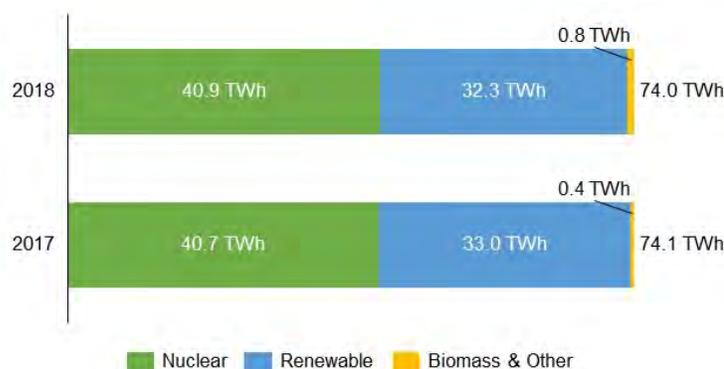
Low-carbon emitting sources continue to account for the majority of OPG's total in-service generating capacity. In 2018, total in-service generating capacity from low-carbon emitting sources increased by 85 MW in 2018, compared to 2017, mainly due to the acquisition of Eagle Creek, partially offset by the closure of the Thunder Bay GS.

<sup>1</sup> The in-service generating capacity as at December 31, 2018 and December 31, 2017 includes OPG's share of in-service generating capacity of 275 MW for PEC and 280 MW for Brighton Beach, within Other. As at December 31, 2018, the in-service generating capacity includes Eagle Creek's in-service generating capacity of approximately 226 MW, within Renewable.

#### Electricity generation by generation type (TWh)

This metric identifies electricity generated from OPG's different generation sources and tracks low-carbon energy generation relative to other sources.

Low-carbon electricity sources of Nuclear, Renewable and Biomass generation continue to supply 99 percent of OPG's total generation. Biomass and Other generation sources, which together comprise OPG's thermal operations, typically function as peaking facilities and therefore operate for limited periods as required by the IESO-administered grid to meet fluctuations in electricity demand.



#### Revenue from low-carbon generation (millions of dollars)

This metric identifies the portion of OPG's total revenue derived from low-carbon generation sources.

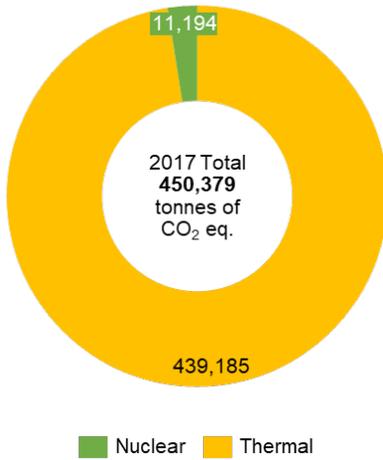
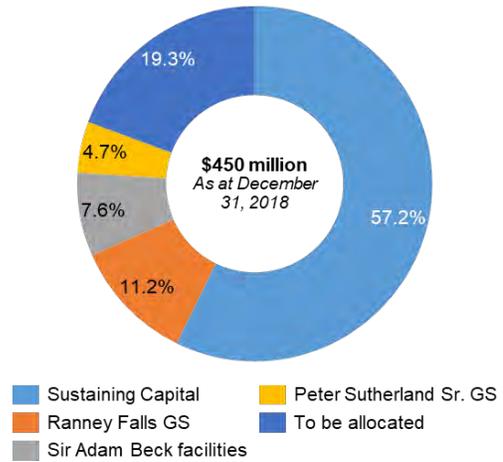
Low-carbon generation revenues comprised over 92 percent of OPG's total revenue in 2018. Low-carbon revenues increased in 2018, compared to 2017, mainly due to the impact of new regulated prices authorized by the OEB for the regulated facilities. Revenue from Other generation, which comprises oil and gas-fired generating stations, remained flat year-over-year.

## Climate change metrics

### Value and use of net proceeds from green bond offerings

This metric demonstrates the opportunity for increased investment in renewable energy and highlights the projects financed with green bond proceeds. The proceeds from the first \$450 million green bond issuance in June 2018 are to be used solely for eligible hydroelectric projects, including major development and refurbishment projects and sustaining capital investments across the fleet.

The net proceeds from the second \$500 million green bond issuance in January 2019 will be primarily allocated toward the Eagle Creek acquisition.



### Scope 1 GHG emissions – Direct (tonnes CO<sub>2</sub> eq.) and Atmospheric Emission Rates (tonnes CO<sub>2</sub> eq./GWh-net)

The Scope 1 GHG emissions metric identifies carbon dioxide (CO<sub>2</sub>) equivalent emissions from OPG's thermal and nuclear operations. For the year ended December 31, 2017, 439,185 tonnes of CO<sub>2</sub> eq. were emitted by thermal operations representing approximately 98 percent of OPG's total CO<sub>2</sub> eq. emissions, with the remainder emitted by the nuclear operations. In comparison, OPG's CO<sub>2</sub> emissions peaked at 39 million tonnes before the phase-out of coal. As a result of closing the Company's coal-fired plants, OPG has achieved a 99 percent reduction in GHG emissions.

Thermal CO<sub>2</sub> eq. emissions include those from oil, gas and biomass-fired generation and an estimate of the Company's 50 percent share of emissions from co-owned gas-fired facilities. Nuclear CO<sub>2</sub>

emissions are from routine testing of standby diesel generators to ensure their availability to provide back-up electrical power to the nuclear stations if required. OPG's nuclear stations do not emit CO<sub>2</sub> eq. as part of the power generation process.

As virtually all of OPG's electricity is generated from low-carbon sources, the Company's CO<sub>2</sub> Atmospheric Emission Rate is comparatively low. For the year ended December 31, 2017, OPG emitted CO<sub>2</sub> at an average rate of 6.1 tonnes per gigawatt hour (GWh) of total electricity generation.

Updated Scope 1 GHG emissions and Atmospheric Emission Rate information is published annually and data for 2018 will be available in June 2019.

## Workplace Safety and Public Safety

Workplace safety and public safety are fundamental core values at OPG. OPG is committed to operating all of its facilities in a safe, secure and reliable manner that reduces risks to an acceptable level. Safety is an overriding priority in all activities performed at OPG's generating and other facilities and all employees and contractors are expected to conduct themselves in a manner that ensures workplace safety and public safety in line with the Company's safety culture and the Employee Health and Safety Policy and Safe Operations Policy.

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:

<b>Safety data</b>	<b>2018</b>	<b>2017</b>
TRIF ( <i>injuries per 200,000 hours</i> )	<b>0.51</b>	0.48
ASR ( <i>days lost per 200,000 hours</i> )	<b>3.02</b>	3.57

OPG's TRIF regressed slightly in 2018 compared to 2017, whereas ASR slightly improved from prior year. 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 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 on 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 and 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.

OPG also continues to maintain a strong focus on the nuclear safety program and to invest in nuclear safety systems. 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 ( $\mu\text{Sv}$ ), 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  $\mu\text{Sv}$  and 1.8  $\mu\text{Sv}$ , respectively, which is approximately 0.1 percent and 0.2 percent of the annual legal limit of 1,000  $\mu\text{Sv}$ , 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.

The CNSC publishes an annual report on the regulatory oversight and safety performance for nuclear power generating sites. In 2018, for the first time, the CNSC's regulatory oversight report assessed the safety performance not only of Canada's nuclear power plants, but also of adjacent waste management facilities. In September 2018, the CNSC issued its 2017 annual report on the regulatory oversight and safety performance for nuclear power generating sites, 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".

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. OPG's dam safety programs encompass dam safety, emergency management and public safety around dams in line with the Safe Operations Policy. The Company's practices in these areas are routinely reviewed by an independent panel comprised of internationally recognized experts, who have concluded that OPG's dam safety program is industry leading, within Canada and internationally. 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 provincial requirements. 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.

## **People and Culture**

A well trained and engaged workforce is fundamental to the achievement of OPG's strategic imperatives. OPG 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.

The Company continues to focus on improving the capability of its workforce through leadership development, knowledge management, diversity and inclusion programs and hiring in critical areas. 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 workforce planning and resourcing strategies is to ensure that the Company has a diverse workforce with 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 take into account changes in anticipated staffing requirements leading up and subsequent to the end of planned commercial operation of the Pickering GS and the period to de-fuel, de-water and place the station in a safe storage state after shutdown. The end of commercial operation at the Pickering GS is expected to lead to a significant reduction in OPG's workforce.

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 accelerated 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.

Electricity generation involves complex technologies that require highly skilled and trained workers. 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.

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.

OPG's average number of regular employees in 2018 and 2017 were as follows:

<b>Employees by business segment</b>	<b>2018</b>	<b>2017</b>
Regulated – Nuclear Generation <sup>1</sup>	<b>7,097</b>	7,360
Regulated – Hydroelectric	<b>1,192</b>	1,125
Contracted and Other Generation <sup>2</sup>	<b>655</b>	531
Other <sup>3</sup>	<b>87</b>	96
<b>Total</b>	<b>9,031</b>	9,112

<sup>1</sup> Including employees associated with the Regulated – Nuclear Waste Management segment.

<sup>2</sup> In 2018, including average number of regular employees employed by Eagle Creek from the date of acquisition on November 27, 2018.

<sup>3</sup> As of December 31, 2017 there were three regular employees associated with the Fair Hydro Trust segment, which was established in December 2017. The average number of regular employees associated with the Fair Hydro Trust segment in 2018 was four.

## **Diversity and Inclusion**

OPG embraces diversity in its broadest sense – a mix of talents, perspectives, backgrounds and experiences that increases collective capability. OPG believes in developing a culture of inclusion in which everyone is treated fairly and respectfully and each individual is valued as an integral part of the team. OPG embraces, respects, accepts and values differences among all employees and directors.

In July 2018, the Company established a formal Board of Directors Diversity and Inclusion policy, which considers diversity essential in attracting qualified directors and maintaining a highly effective Board. The Compensation, Leadership and Governance Committee of the Board of Directors interviews a diverse candidate for every vacancy on the Board, where diversity is defined as: women, Indigenous people, visible minorities and people with disabilities. The Board of Directors has 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 at December 31, 2018, the Board of Directors met its diverse representation target of 50 percent.

A target and policy has not been established for senior management although OPG continues to track and monitor diversity succession planning metrics and strives to have a diverse candidates list for senior management positions.

OPG's Board of Directors and senior management diversity representation as at December 31, 2018 was as follows:

<b>Gender Diversity data</b> (at December 31, 2018)		Men		Women	Total
Directors of the Company	10	71%	4	29%	14
Diverse directors <sup>1</sup>					50%
Corporate officers <sup>2</sup>	9	82%	2	18%	11
Enterprise Leadership Team <sup>3</sup>	6	75%	2	25%	8
Senior Leadership Team <sup>4</sup>	28	64%	16	36%	44

<sup>1</sup> Diversity is defined in accordance with OPG's Board of Directors Diversity and Inclusion Policy and includes women, Indigenous people, visible minorities and people with disabilities.

<sup>2</sup> Corporate officers as defined by the OBCA.

<sup>3</sup> ELT comprises the President and Chief Executive Officer (CEO) and the Presidents and Senior Vice Presidents directly reporting to him.

<sup>4</sup> Senior Leadership Team is generally comprised of Vice Presidents who report directly to a member of the ELT.

### Indigenous Relations

OPG believes in building long-term, mutually beneficial working relationships with Indigenous communities, businesses and organizations across Ontario and continues to support procurement, employment and educational opportunities with Indigenous communities. OPG seeks to establish these relationships based on a foundation of respect, transparency and mutual responsibility. In 2018, OPG was designated a Silver level standing under the Canadian Council for Aboriginal Business' (CCAB) Progressive Aboriginal Relations program (PAR). The certification recognizes OPG as a national best-practices organization with a demonstrated commitment in the area of Indigenous relations.

OPG owns and operates electricity generation assets within the traditional territories of Indigenous Peoples. OPG has a formal Indigenous Relations policy that governs its relationships with Indigenous communities. The Company is committed to working with Indigenous communities, proximate to its present and future operations, to foster positive and mutually beneficial relationships that will create social and economic benefits through partnership and collaboration. OPG's operational business plans include the following areas specific to implementing its Indigenous Relations policy:

- Community Relations and Outreach;
- Capacity Building;
- Employment and Training Opportunities;
- Business and Procurement Opportunities; and
- Employee Indigenous Relations Training.

OPG's commitment in the area of Indigenous Relations includes pursuing generation-related development partnerships on the basis of long-term commercial arrangements and other joint projects. The company has partnered successfully with a number of Indigenous communities on the construction of the Peter Sutherland Sr. hydroelectric GS project, the Lower Mattagami River hydroelectric project, the Lac Seul hydroelectric GS and the Nanticoke solar project. 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.

The data in the following table measures the economic impact of OPG's generation-related development partnerships with Indigenous communities:

<b>Indigenous partnerships data</b>	<b>2018</b>	2017
In-service generation capacity of facilities constructed in partnership with Indigenous communities ( <i>MW</i> )	<b>478</b>	478
Revenues earned from facilities in partnership with Indigenous communities ( <i>millions of dollars</i> )	<b>314</b>	307

OPG has also been working with the Kiashke Zaaging Anishinaabek (KZA), also known as the Gull Bay First Nation, to construct a 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 which is expected 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 tonnes of CO<sub>2</sub>.

During 2018, OPG continued to engage with Indigenous communities regarding the Company's nuclear operations. This included regularly scheduled meetings and ongoing dialogue in connection with OPG's proposed L&LW DGR as well as engagement with the Williams 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 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.

OPG is committed to improving Indigenous access to procurement and employment opportunities, including increasing the profile of the nuclear generation industry in Indigenous communities. In 2018, this included continuing to track the implementation of the Indigenous Business Engagement (IBE) initiative launched in 2017 to increase access to procurement opportunities for Indigenous businesses interested in supplying materials and services to OPG, and continuing to identify ways to increase the Indigenous representation in OPG's workforce. In the first quarter of 2018, OPG launched the Indigenous Opportunities in Nuclear (ION) program using the Darlington Refurbishment project as a catalyst. During the year, skilled candidates from Indigenous communities were placed in OPG's nuclear operations through the ION program 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. OPG will continue to advance the IBE initiative and the ION program through 2019.

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 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.

## **BUSINESS SEGMENTS**

As at December 31, 2018, OPG has the following five reportable business segments:

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

### **Regulated – Nuclear Generation Segment**

The Regulated – Nuclear Generation business segment operates in Ontario, generating and selling electricity from the Pickering GS and the Darlington GS, both owned and operated by OPG. The business segment also includes revenue under the terms of a long-term lease arrangement and related agreements with Bruce Power related to the Bruce nuclear generating stations. This revenue includes lease revenue, fees for nuclear waste management, and revenue from heavy water sales and detritiation services. The segment also earns revenue from existing isotope sales contracts and ancillary services supplied by OPG from the nuclear stations it operates. Ancillary revenues are earned through voltage control and reactive support.

### **Regulated – Nuclear Waste Management Segment**

OPG's Regulated – Nuclear Waste Management business segment reports the results of the Company's operations associated with the management of nuclear used fuel and L&ILW, the decommissioning of OPG's nuclear generating stations including the stations on lease to Bruce Power and other facilities, the management of the Nuclear Segregated Funds and related activities including the inspection and maintenance of the waste storage facilities. Accordingly, accretion expense, which is the increase in the Nuclear Liabilities carried on the consolidated balance sheets in present value terms due to the passage of time, and earnings from the Nuclear Segregated Funds are reported under this segment.

As the nuclear generating stations operate over time, OPG incurs incremental costs related to used nuclear fuel and L&ILW, which increase the Nuclear Liabilities. OPG charges these incremental costs to current operations in the Regulated – Nuclear Generation segment to reflect the cost of producing energy from the Pickering and Darlington nuclear generating stations and earning revenue under the Bruce Power lease arrangement and related agreements. Since the incremental costs increase the Nuclear Liabilities reported in the Regulated – Nuclear Waste Management segment, OPG records an inter-segment charge between the Regulated – Nuclear Generation and the Regulated – Nuclear Waste Management segments. The impact of the inter-segment charge is eliminated in the consolidated statements of income and balance sheets.

The Regulated – Nuclear Waste Management segment is considered regulated because OPG's costs associated with the Nuclear Liabilities are included in the OEB's determination of regulated prices for production from the Pickering and Darlington nuclear generating stations.

### **Regulated – Hydroelectric Segment**

OPG's Regulated – Hydroelectric business segment operates in Ontario, generating and selling electricity from most of the Company's hydroelectric generating stations. The business segment comprises the results of 54 regulated hydroelectric generating stations located across a number of major river systems in the province. In addition, the business segment includes ancillary and other revenues from OPG's regulated hydroelectric stations. Ancillary revenues are earned through offering available generating capacity as operating reserve and through the supply of other ancillary services including voltage control and reactive support, certified black start facilities, regulation service and other services.

## **Contracted and Other Generation Segment**

The Contracted and Other Generation business segment operates in Ontario and in the US through the Company's Eagle Creek subsidiary, generating and selling electricity from the Company's generating stations that are not prescribed for rate regulation and includes supply of energy and capacity into wholesale spot electricity markets. The segment primarily includes generating facilities that are under an ESA with the IESO or other long-term power purchase agreements. The current ESAs for the thermal generating facilities are set to expire in 2022 and 2024, and for the hydroelectric facilities over the 2059 to 2067 period. Eagle Creek's long-term power purchase agreements have expiration dates ranging from 2019 to 2039.

The Contracted and Other Generation segment also includes OPG's share of equity income from its 50 percent ownership interests in the PEC and Brighton Beach stations. Brighton Beach operates under a 20-year energy conversion agreement with Shell Energy North America (Canada) Inc. expiring in 2024, and the PEC station is operated under the terms of a 20-year Accelerated Clean Energy Supply contract with the IESO expiring in 2029. OPG's share of the in-service generating capacity and generation volume from its interests in the PEC and Brighton Beach stations are reported in this segment.

The business segment also includes ancillary revenues and other revenues from the stations included in the segment, which are earned through offering available generating capacity as operating reserve, and the supply of other ancillary services including voltage control and reactive support, certified black start facilities, regulation service and other services.

## **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.

The Trust was established in December 2017 as the financing entity contemplated by the Fair Hydro Act to fund the IESO's deferral of a portion of the Global Adjustment costs under the Fair Hydro Plan introduced by the previous Government of Ontario. The Fair Hydro Act allows the IESO to transfer a portion of the deferred costs to the Trust in exchange for an irrevocable right to recover the balance and the associated financing and other costs from specified consumers in the future (Investment Interest). The majority unitholder and beneficiary of the Trust is a wholly-owned subsidiary of OPG. The Trust is structured to be bankruptcy remote and ringed fenced from OPG in order to protect the Company's assets and operations. 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.

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.

## DISCUSSION OF OPERATING RESULTS BY BUSINESS SEGMENT

### Regulated – Nuclear Generation Segment

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>3,474</b>	3,095
Fuel expense	<b>283</b>	284
Gross margin	<b>3,191</b>	2,811
Operations, maintenance and administration	<b>2,302</b>	2,293
Depreciation and amortization	<b>512</b>	431
Property taxes	<b>26</b>	26
Income before other losses, interest and income taxes	<b>351</b>	61
Other losses	-	4
<b>Income before interest and income taxes</b>	<b>351</b>	<b>57</b>

Income before interest and income taxes from the segment increased by \$294 million in 2018 compared to 2017. The increase in earnings was primarily a result of the new regulated prices approved by the OEB in its December 2017 decision and March 2018 payment amounts order with a retrospective effective date of June 1, 2017, which increased revenue by approximately \$341 million. The previous nuclear base regulated price was set by the OEB in 2014. In the fourth quarter of 2017, OPG recorded net segment revenue of approximately \$465 million in relation to the June 1, 2017 to December 31, 2017 period following the issuance of the OEB's decision on December 28, 2017, as an increase in net regulatory assets.

Higher depreciation and amortization expenses of \$48 million, excluding amortization expense related to the recovery of regulatory account balances, in 2018 compared to 2017 were mainly due to increased depreciation from new assets in service. The increase in amortization expense related to regulatory account balances was largely offset by an increase in revenue from the nuclear rate rider authorized by the OEB's March 2018 payment amounts order for the recovery of these balances.

In the fourth quarter of 2017, OPG revised the accounting end-of-life assumptions for the Pickering GS from December 31, 2020 to December 31, 2022 for Units 1 and 4 and to December 31, 2024 for Units 5 to 8, and recorded a corresponding change in the nuclear asset retirement obligation (ARO) and associated asset retirement costs capitalized as part of the carrying value of property, plant and equipment (PP&E), effective December 31, 2017. The decrease in depreciation expense during 2018 associated with this change in the end-of-life assumptions was offset by the impact of regulatory accounts, including a new deferral account authorized by the OEB effective January 1, 2018 pursuant to an accounting order application filed by OPG in December 2017.

The Unit Capability Factors for the Darlington GS and Pickering GS for 2018 and 2017 were as follows:

	<b>2018</b>	<b>2017</b>
Unit Capability Factor (%) <sup>1</sup>		
Darlington GS	<b>88.6</b>	85.2
Pickering GS	<b>79.1</b>	80.0

<sup>1</sup> The nuclear Unit Capability Factor excludes unit(s) during the period in which they are undergoing refurbishment. Accordingly, Unit 2 of the Darlington GS has been excluded from this measure since October 2016, when it was taken offline for refurbishment. The nuclear Unit Capability Factor is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

The higher Unit Capability Factor at the Darlington GS in 2018 compared to 2017 primarily reflected the lower number of planned outage days in 2018 due to the station's cyclical maintenance schedule and the favourable execution of planned outage work.

The lower Unit Capability Factor at the Pickering GS in 2018 compared to 2017 primarily reflected the higher number of planned outage days in 2018 due to the station's cyclical maintenance schedule, partially offset by the favourable execution of planned outage work.

#### Regulated – Nuclear Waste Management Segment

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>131</b>	121
Operations, maintenance and administration	<b>131</b>	129
Accretion on nuclear fixed asset removal and nuclear waste management liabilities	<b>971</b>	943
Earnings on nuclear fixed asset removal and nuclear waste management funds	<b>(854)</b>	(801)
Loss before interest and income taxes	<b>(117)</b>	(150)

The segment loss before interest and income taxes was \$117 million in 2018, compared to \$150 million in 2017, representing an increase in earnings of \$33 million. The improvement in segment earnings was primarily a result of higher earnings from the Nuclear Segregated Funds, partially offset by an increase in accretion expense on the Nuclear Liabilities.

The increase in the earnings from the Nuclear Segregated Funds was primarily due to higher earnings on the Decommissioning Segregated Fund, and a higher amount of fund earnings deferred in regulatory accounts in 2017. The Decommissioning Segregated Fund was in an overfunded position in 2017 and 2018. Therefore, the earnings on the fund during 2017 and 2018 reflected the growth rate in the present value of the underlying funding liability to which OPG limits earnings from the Decommissioning Segregated Fund when it is overfunded, as well as 50 percent of the fund surplus greater than 120 percent up to the amount, if any, by which the Used Fuel Segregated Fund was underfunded. The Used Fuel Segregated Fund was marginally underfunded at the end of 2018, resulting in an increase in earnings from the Decommissioning Segregated Fund of \$13 million. The higher amount of fund earnings deferred in regulatory accounts in 2017 was due to fund earnings not included in the nuclear base regulated price in effect prior to June 1, 2017. For further details on the accounting for the Nuclear Segregated Funds, refer to the section, *Critical Accounting Policies and Estimates*.

The higher accretion expense in the Nuclear Liabilities was mainly due to the increase in the present value of the underlying obligation to reflect the passage of time during 2018.

## Regulated – Hydroelectric Segment

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue <sup>1</sup>	<b>1,425</b>	1,436
Fuel expense	<b>334</b>	351
Gross margin	<b>1,091</b>	1,085
Operations, maintenance and administration	<b>337</b>	330
Depreciation and amortization	<b>154</b>	139
Property tax	<b>1</b>	1
Income before other losses, interest and income taxes	<b>599</b>	615
Other losses	<b>5</b>	1
<b>Income before interest and income taxes</b>	<b>594</b>	614

<sup>1</sup> During 2018 and 2017, the Regulated – Hydroelectric segment revenue included incentive payments of \$11 million and \$12 million, respectively, related to the OEB-approved hydroelectric incentive mechanism. The mechanism provides a pricing incentive to OPG to shift hydroelectric production from lower market price periods to higher market price periods, reducing the overall costs to customers. The incentive payments are reduced to remove incentive revenues arising in connection with SBG conditions.

Income before interest and income taxes from the segment decreased by \$20 million in 2018, compared to 2017. The decrease in earnings was primarily a result of higher forgone generation that is not subject to recovery through OEB-approved regulatory accounts and increased outages in 2018. The decrease in earnings from the segment was partially offset by an increase in revenue of approximately \$18 million to reflect the impact of the new base regulated prices approved by the OEB in its December 2017 decision and March 2018 payment amounts order with a retrospective effective date of June 1, 2017. The previous hydroelectric base regulated prices were set by the OEB in 2014. In the fourth quarter of 2017, OPG recorded net segment revenue of approximately \$15 million in relation to the June 1, 2017 to December 31, 2017 period following the issuance of the OEB's decision on December 28, 2017, as an increase in net regulatory assets.

The Hydroelectric Availability for the stations included in the Regulated – Hydroelectric segment was as follows:

	<b>2018</b>	<b>2017</b>
<b>Hydroelectric Availability (%) <sup>1</sup></b>	<b>86.0</b>	88.0

<sup>1</sup> The Hydroelectric Availability is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

The Hydroelectric Availability decreased in 2018, compared to 2017, primarily due to the execution of planned projects requiring additional outages at the eastern Ontario region's regulated hydroelectric stations.

## Contracted and Other Generation Segment

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>591</b>	579
Fuel expense	<b>54</b>	53
Gross margin	<b>537</b>	526
Operations, maintenance and administration	<b>180</b>	169
Depreciation and amortization	<b>83</b>	79
Accretion on fixed asset removal liabilities	<b>8</b>	9
Property taxes	<b>8</b>	7
Income from investments subject to significant influence	<b>(44)</b>	(38)
Income before other losses, interest, and income taxes	<b>302</b>	300
Other losses	<b>1</b>	-
<b>Income before interest and income taxes</b>	<b>301</b>	300

Income before interest and income taxes from the segment increased by \$1 million in 2018, compared to 2017. The increase in earnings was primarily due to higher income from investments subject to significant influence reflecting greater electricity generation at non-hydroelectric contracted facilities, the full year of revenue generated from the Peter Sutherland Sr. GS that was placed in service at the end of the first quarter of 2017, and the contribution of Eagle Creek to the segment following its acquisition in the fourth quarter of 2018. The increase was largely offset by incremental costs, including adjustments to asset carrying values, of approximately \$8 million incurred as part of the closure of the Thunder Bay GS and higher OM&A expenses incurred at the Lennox GS in 2018.

The Hydroelectric Availability and the Thermal Equivalent Forced Outage Rate (EFOR) for the assets within the Contracted and Other Generation segment operated by OPG were as follows:

	<b>2018</b>	<b>2017</b>
Hydroelectric Availability (%) <sup>1</sup>	<b>78.4</b>	74.6
Thermal EFOR (%) <sup>2</sup>	<b>2.5</b>	2.4

<sup>1</sup> 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 Hydroelectric Availability is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

<sup>2</sup> The Thermal EFOR in 2018 includes unplanned outage days at the Thunder Bay GS prior to the cessation of operations in July 2018. The Thermal EFOR is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

The Hydroelectric Availability increased in 2018, compared to 2017, primarily due to a lower number of planned outages, partially offset by a higher number of unplanned outages, at the northeastern Ontario region's contracted hydroelectric stations.

The Thermal EFOR increased slightly in 2018, compared to 2017, primarily due to a higher number of unplanned outage days at the Thunder Bay GS prior to the cessation of operations in July 2018. The increase was largely offset by a lower number of planned outage days at the Lennox and Atikokan generating stations.

## Fair Hydro Trust Segment

<i>(millions of dollars)</i>	2018	2017
Operations, maintenance and administration	1	1
Earnings from Fair Hydro Trust	(28)	(1)
Income before interest and income taxes	27	-

The Fair Hydro Trust segment was established in December 2017. In December 2017, the Trust purchased Investment Interest from the IESO in the amount of approximately \$1,179 million. During the year ended December 31, 2018, the Trust purchased Investment Interests from the IESO in the amount of \$609 million. The purchases of Investment Interest have been classified as a financing receivable on OPG's consolidated balance sheet. In order for the Trust to finance these acquisitions, it incurred senior debt from capital markets and subordinated debt from OPG. Earnings from the Fair Hydro Trust segment reflect the Company's consolidation of the financial results of the Trust and primarily comprise interest income, partially offset by interest costs incurred by OPG to fund purchases of the Trust's subordinated debt. The increase in segment earnings was primarily due to a full year of net interest income from the Fair Hydro Trust in 2018.

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 announced that all debt issued under the Fair Hydro Trust, including the subordinated debt issued to OPG, will remain outstanding. The Province stated that it intends to fund all of the Trust's obligations issued and outstanding as of the date the limited guarantee is invoked. The limited guarantee was previously provided by the Province to specified creditors of the Trust and is triggered by certain events, including through changes made to the Fair Hydro Act that would adversely affect the Trust's ability to meet its payment obligations. 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.

Refer to the section, *Liquidity and Capital Resources* under the heading, *Financing Activities* for further details on the Trust's financing arrangements.

## LIQUIDITY AND CAPITAL RESOURCES

OPG's primary sources of liquidity and capital are funds generated from operations, bank financing, credit facilities provided by the OEFC, long-term corporate debt, including public debt offerings and notes payable to the OEFC, private placement project financing and equity issuances. These sources are used for multiple purposes including: to invest in plants and technologies, undertake major projects and business acquisitions, fund long-term obligations such as contributions to the pension fund and the Nuclear Segregated Funds, make payments under the OPEB plans, fund expenditures on Nuclear Liabilities not eligible for reimbursement from the Nuclear Segregated Funds, service and repay long-term debt, and provide general working capital.

Changes in cash and cash equivalents for 2018 and 2017 were as follows:

<i>(millions of dollars)</i>	2018	2017
Cash, cash equivalents and restricted cash, beginning of period	234	186
Cash flow provided by operating activities	1,687	944
Cash flow used in investing activities	(2,504)	(2,478)
Cash flow provided by financing activities	895	1,582
Effect of exchange rate changes on cash, cash equivalents and restricted cash	1	-
Net increase in cash, cash equivalents and restricted cash	79	48
Cash and cash equivalents and restricted cash, end of period	313	234

For a discussion of cash flow provided by operating activities, refer to the details in the section, *Highlights* under the heading, *Overview of Results*.

### Investing Activities

Electricity generation is a capital-intensive business. It requires continued investment in plants and technologies to maintain and improve operating performance including asset reliability, safety and environmental performance, to increase the generating capacity of existing stations and to invest in the development of new generating stations, emerging technologies and other business growth opportunities.

Cash flow used in investing activities in 2018 increased by \$26 million compared to 2017. The increase in cash flow used in investing activities was primarily due to the acquisition of Eagle Creek in 2018, and the receipt of proceeds from the sale of OPG's head office premises and associated parking facility in 2017. The increase in cash flow used in investing activities was partially offset by higher purchases of Investment Interest from the IESO by the Trust in 2017 and the receipt of proceeds from the sale of the former Lakeview GS site in 2018.

### Financing Activities

As at December 31, 2018, long-term debt outstanding, including the Fair Hydro Trust's senior debt, was \$7,612 million, with \$368 million representing amounts due within one year. The long-term debt balance included \$1,400 million outstanding under OPG's \$2,350 million general corporate credit facility agreement with the OEFC that expired on December 31, 2018. OPG is currently working with the OEFC to establish a new general corporate credit facility agreement. The Fair Hydro Trust's long-term senior debt outstanding was \$900 million as at December 31, 2018. Short-term debt outstanding as at December 31, 2018 was \$322 million, including \$12 million for the Fair Hydro Trust's revolving warehouse facility.

### OEFC, Public Debt and Project Financing

During the first quarter of 2018, OPG issued a total of \$600 million senior notes payable to the OEFC maturing in 2048. The interest rates on these notes ranged from 3.87 percent to 4.00 percent. During 2018, \$395 million of long-term debt owing to the OEFC was repaid.

During the second quarter of 2018, OPG issued \$450 million senior notes under its Medium Term Notes Program as a green bond offering, maturing in 2048. The interest rate on these notes was 3.84 percent. In January 2019, OPG issued \$500 million senior notes under its Medium Term Notes Program as a green bond offering, maturing in 2049. The interest rate on these notes was 4.25 percent. Both offerings were issued under OPG's Green Bond Framework to provide funding for eligible investments.

Upon the acquisition of Eagle Creek in November 2018, the Company assumed \$323 million of long-term debt comprising secured notes with maturity dates ranging from 2025 to 2030. The interest rates on these notes ranged from 3.98 percent to 4.81 percent.

### Short-term Debt

OPG maintains a \$1 billion revolving committed bank credit facility, which is divided into two \$500 million multi-year term tranches. In the second quarter of 2018, OPG renewed and extended the expiration date of both tranches from May 2022 to May 2023. There were no amounts outstanding under the bank credit facility as at December 31, 2018.

Short-term debt outstanding as at December 31, 2018 included \$170 million of commercial paper outstanding under OPG's commercial paper program.

As at December 31, 2018, Lower Mattagami Energy Limited Partnership (LME) maintained a \$400 million bank credit facility to support the funding requirements for the Lower Mattagami River project including support for LME's commercial paper program. The facility consists of a \$300 million tranche maturing in August 2023 and a \$100 million tranche maturing in August 2019. As at December 31, 2018, short-term debt outstanding included \$140 million of external commercial paper outstanding under LME's commercial paper program.

As at December 31, 2018, OPG maintained \$25 million of short-term, uncommitted overdraft facilities, and a further \$476 million of short-term, uncommitted credit facilities which support the issuance of the Letters of Credit. OPG uses Letters of Credit to support its supplementary pension plans and for other general corporate purposes. As at December 31, 2018, a total of \$404 million of Letters of Credit had been issued under these facilities. This included \$364 million for the supplementary pension plans, \$39 million for general corporate purposes and \$1 million related to the operation of PEC.

The Company's short-term, uncommitted credit facilities include an agreement to sell an undivided co-ownership interest in its current and future accounts receivable to an independent trust, expiring on November 30, 2020. The maximum amount of co-ownership interest that can be sold under this agreement is \$150 million. As at December 31, 2018, there were Letters of Credit outstanding under this agreement of \$150 million, which were issued in support of OPG's supplementary pension plans.

In December 2018, OPG repaid \$79 million of Eagle Creek's unsecured borrowings that became payable following the completion of the acquisition in November 2018.

### Fair Hydro Trust

In December 2017, the Trust entered into an \$800 million two-year revolving senior warehouse facility agreement expiring in December 2019. In October 2018, the capacity of the facility was decreased to \$12 million as a result of the Province's September 2018 announcement of its intention to make future proposed legislative changes to cancel the Global Adjustment refinancing component of the Fair Hydro Plan. During 2018, \$900 million of Fair Hydro Trust

revolving warehouse facility debt was repaid. As at December 31, 2018 there were outstanding senior notes of \$12 million under this facility.

In February 2018, the Trust issued \$500 million of senior notes payable with an interest rate of 3.36 percent, payable semi-annually until maturity in May 2033. The proceeds were used to repay the majority of the outstanding balance of the revolving warehouse facility issued in December 2017.

In April 2018, the Trust issued \$400 million of senior notes payable with an interest rate of 3.52 percent, payable semi-annually until maturity in May 2038. The proceeds were used to repay the majority of the balance of the revolving warehouse facility outstanding following the Trust's acquisitions of Investment Interest from the IESO in March 2018 and April 2018.

The Province announced in September 2018 that all debt issued by the Trust, including the subordinated debt issued to OPG, will remain outstanding, and has stated that it will be responsible for making all interest and principal payments due on these bonds in the future. The Province also announced that it intends to fund all obligations of the Trust that are 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.

#### Equity Financing

In March 2018 and April 2018, OPG issued 4,627,343 and 1,498,856 non-voting Class A shares at a price of \$43.74 per share to the Province for its equity injections in OPG, generating proceeds of \$202 million and \$66 million, respectively. Further details can be found in Note 16 of OPG's 2018 audited consolidated financial statements.

#### **Contractual Obligations**

OPG's contractual obligations as at December 31, 2018 are as follows:

<i>(millions of dollars)</i>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>Thereafter</b>	<b>Total</b>
Fuel supply agreements	131	114	96	72	76	10	499
Contributions to the OPG registered pension plan <sup>1</sup>	199	203	-	-	-	-	402
Long-term debt repayment	368	663	416	177	46	5,042	6,712
Interest on long-term debt	281	259	230	215	210	3,912	5,107
Fair Hydro Trust senior debt repayment	12	-	-	-	-	900	912
Interest on Fair Hydro Trust senior debt	31	31	31	31	31	379	534
Short-term debt repayment	310	-	-	-	-	-	310
Commitments related to Darlington Refurbishment project <sup>2</sup>	378	-	-	-	-	-	378
Operating licences	43	41	42	43	44	91	304
Operating lease obligations	16	12	11	10	7	30	86
Unconditional purchase obligations	54	52	4	4	-	-	114
Accounts payable and accrued charges	892	18	-	-	-	16	926
Other	120	14	10	10	8	74	236
<b>Total</b>	<b>2,835</b>	<b>1,407</b>	<b>840</b>	<b>562</b>	<b>422</b>	<b>10,454</b>	<b>16,520</b>

<sup>1</sup> The pension contributions include ongoing funding requirements and additional funding requirements towards the deficit, in accordance with the actuarial valuation of the OPG registered pension plan as at January 1, 2018. The next actuarial valuation of the OPG registered pension plan must have an effective date no later than January 1, 2021. The pension contributions are affected by various factors including market performance, changes in actuarial assumptions, plan experience, changes in the pension regulatory environment and the timing of funding valuations. Funding requirements after 2020 are excluded due to significant variability in the assumptions required to project the timing of future cash flows. The amount of OPG's additional, voluntary contribution, if any, is revisited from time to time.

<sup>2</sup> Represents estimated currently committed costs to close the project, including accruals for completed work, demobilization of project staff and cancellation of existing contracts and material orders.

## Collective Agreements

As at December 31, 2018, OPG had approximately 9,000 regular employees, mostly in Ontario. Most of OPG's regular employees are represented by two unions:

- PWU – This union represents approximately 4,600 OPG regular employees in Ontario as at December 31, 2018. Union membership includes operators, technicians, skilled trades, clerical staff and security personnel. The governing collective agreement between OPG and the PWU expired in March 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 during the first quarter of 2019.
- Society – This union represents approximately 3,200 OPG regular employees in Ontario as at December 31, 2018. Union membership includes supervisors, professional engineers, scientists and other professionals. Following the parties' failure to reach a negotiated renewal agreement, the parties 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.

In addition to the regular workforce, construction work in Ontario is performed through 19 craft unions with established bargaining rights at OPG facilities. These bargaining rights are established either through the Electrical Power Systems Construction Association (EPSCA) or directly with OPG. Collective agreements between the Company and its construction unions are negotiated either directly or through EPSCA. 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.

## BALANCE SHEET HIGHLIGHTS

The following section provides other highlights of OPG's audited consolidated financial position using selected balance sheet data as at December 31:

<i>(millions of dollars)</i>	2018	2017
<b>Property, plant and equipment – net</b> The increase was primarily due to capital expenditures on the Darlington Refurbishment and other projects, as well as the acquisition of Eagle Creek. The increase was partially offset by depreciation expense.	22,987	21,322
<b>Nuclear fixed asset removal and nuclear waste management funds</b> <i>(current and non-current portions)</i> The increase was primarily due to earnings on the Nuclear Segregated Funds, partially offset by reimbursement of eligible expenditures on nuclear fixed asset removal and nuclear waste management activities.	17,483	16,724
<b>Long-term debt</b> <i>(current and non-current portions)</i> The increase was primarily due to the issuance of senior notes payable by the Fair Hydro Trust, senior notes payable to the OEFC and senior notes payable under the Company's Medium Term Note Program, as well as the acquisition of Eagle Creek. The increase was partially offset by debt repayments.	7,556	6,319
<b>Fixed asset removal and nuclear waste management liabilities</b> The increase was primarily a result of accretion expense, partially offset by expenditures on nuclear fixed asset removal and waste management activities.	21,225	20,421

### Off-Balance Sheet Arrangements

In the normal course of operations, OPG engages in a variety of transactions that, under US GAAP, are either not recorded in the Company's consolidated financial statements or are recorded in the Company's consolidated financial statements using amounts that differ from the full contract amounts. Principal off-balance sheet activities for OPG include guarantees and long-term contracts.

#### Guarantees

As part of normal business, OPG and certain of its subsidiaries and joint ventures enter into various agreements to provide financial or performance assurance to third parties. Such agreements include guarantees, standby Letters of Credit and surety bonds. For more details on guarantees issued by the company, refer to Note 18 of OPG's 2018 audited consolidated financial statements.

## CRITICAL ACCOUNTING POLICIES AND ESTIMATES

OPG's significant accounting policies, including the impact of major recent accounting pronouncements, are outlined in Note 3 of OPG's 2018 audited consolidated financial statements. Certain of these policies are recognized as critical accounting policies by virtue of the subjective and complex judgments and estimates required around matters that are inherently uncertain and could result in materially different amounts being reported under different conditions or assumptions. The critical accounting policies and estimates that affect OPG's US GAAP consolidated financial statements are highlighted below.

### Exemptive Relief for Reporting under US GAAP

As required by *Ontario Regulation 395/11*, as amended, under the FAA, OPG adopted US GAAP for the presentation of its consolidated financial statements, effective January 1, 2012. Since January 1, 2012, OPG also has received exemptive relief from the OSC from the requirements of section 3.2 of National Instrument 52-107 *Acceptable Accounting Policies and Auditing Standards*. The exemption allows OPG to file consolidated financial statements based on US GAAP, rather than IFRS, without becoming a Securities and Exchange Commission registrant.

In April 2018, OPG received an extension to its previous exemptive relief from the OSC. The exemption will now terminate on the earliest of the following:

- January 1, 2024;
- the financial year that commences after OPG ceases to have activities subject to rate regulation; and
- the effective date prescribed by the International Accounting Standards Board (IASB) for the mandatory application of a standard within IFRS specific to entities with rate-regulated activities.

OPG continues to monitor the IASB's current standard-setting project related to entities with rate regulated activities.

### Rate Regulated Accounting

The *Ontario Energy Board Act, 1998* and *Ontario Regulation 53/05* provide that OPG receives regulated prices for electricity generated from 54 hydroelectric generating stations and the Pickering and Darlington nuclear generating stations. OPG's regulated prices for these facilities are determined by the OEB.

The OEB is a self-funding Crown corporation. Its mandate and authority come from the *Ontario Energy Board Act, 1998*, the *Electricity Act, 1998* and a number of other provincial statutes. The OEB is an independent, quasi-judicial tribunal that reports to the Legislature of the Province through the Ontario Ministry of Energy, Northern Development and Mines. It regulates market participants in Ontario's natural gas and electricity industries. The OEB carries out its regulatory functions through public hearings and other more informal processes such as consultations.

US GAAP recognizes that rate regulation can create economic benefits and obligations that are required by the regulator to be obtained from, or settled with, the customers. When the Company assesses that there is sufficient assurance that incurred costs in respect of the regulated facilities will be recovered in the future, those costs are deferred and reported as a regulatory asset. When the Company is required to refund amounts to customers in the future in respect of the regulated facilities, including amounts related to costs that have not been incurred and for which the OEB has provided recovery through regulated prices, the Company records a regulatory liability.

Certain of the regulatory assets and regulatory liabilities recognized by the Company relate to regulatory accounts authorized by the OEB, including those authorized pursuant to *Ontario Regulation 53/05*. The measurement of these regulatory assets and regulatory liabilities is subject to certain estimates and assumptions, including assumptions made in the interpretation of *Ontario Regulation 53/05* and the OEB's decisions. The estimates and assumptions made in the interpretation of the regulation and the OEB's decisions are reviewed as part of the OEB's regulatory process.

Regulatory assets and regulatory liabilities for regulatory account balances approved by the OEB for inclusion in regulated prices are amortized based on approved recovery or repayment periods.

In addition to regulatory assets and regulatory liabilities for regulatory accounts, OPG recognizes regulatory assets and regulatory liabilities for unamortized amounts recorded in AOCI in respect of pension and OPEB obligations, deferred income taxes, and, as applicable, differences between interim regulated prices charged to customers during an interim rate period and final regulated prices authorized or to be authorized by the OEB for that period, to reflect the expected recovery or repayment of these amounts through future regulated prices to be charged to customers. There are measurement uncertainties related to these balances due to the assumptions made in the determination of pension and OPEB obligations and deferred income taxes that are attributed to the rate regulated business segments, and assumptions made with respect to final regulated prices to be authorized by the OEB for an interim rate period.

The regulatory asset recognized by the Company for unamortized pension and OPEB amounts recorded in AOCI has reflected the OEB's use, since April 1, 2008, of the accrual basis of accounting for including pension and OPEB amounts in approved regulated prices for OPG. This is also the manner in which these costs are recognized in OPG's consolidated financial statements. Therefore, unamortized amounts in respect of OPG's pension and OPEB plans recognized in AOCI generally would not be reflected in regulated prices until they have been reclassified from AOCI and recognized as amortization components of the benefit costs for these plans. The regulatory asset is reduced as underlying unamortized balances are amortized as components of the benefit cost.

Since November 1, 2014, the OEB has limited amounts for pension and OPEB costs included in the approved revenue requirements and regulated prices to the regulated business portion of the Company's cash expenditures for its pension and OPEB plans. The difference between actual pension and OPEB costs determined using the accrual method applied in OPG's audited consolidated financial statements and OPG's actual cash expenditures for these plans is captured in the OEB-authorized Pension & OPEB Cash Versus Accrual Differential Deferral Account for future consideration by the OEB.

In 2017, the OEB issued a report outlining the guiding principles and policy for recovery mechanisms of pension and OPEB costs of rate regulated utilities in the Ontario electricity and natural gas sectors. The report 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 OEB's report as well as the OEB's December 2017 decision and March 2018 payment amounts order on OPG's new regulated prices effective June 1, 2017 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 the settlement agreement reached by OPG and intervenors on OPG's August 2018 application to disposition regulatory 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.

It is the Company's position that the OEB's November 2014 and December 2017 decisions on OPG's applications for regulated prices do not constitute a change in the basis of OPG's rate recovery of pension and OPEB costs. Taking into account the basis of those decisions, the OEB's subsequent report that established the accrual basis of accounting as the default method of determining pension and OPEB amounts for rate-setting purposes, and the approvals in the OEB's February 2019 decision and order, the Company continues to believe that there is sufficient likelihood that unamortized pension and OPEB amounts that have not yet been reclassified from AOCI will be included in future regulated prices, or in an OEB-authorized regulatory account for future recovery, as they are recognized in benefit costs. Similarly, the Company continues to believe that there is sufficient likelihood that

amounts recorded in the Pension & OPEB Cash Versus Accrual Differential Account subsequent to December 31, 2017, which remain subject to future OEB approval, will be recovered. Therefore, the Company continues to recognize regulatory assets for these balances.

### **Useful Lives of Long-Lived Assets**

The accounting estimates related to end-of-life assumptions for PP&E and intangible assets require significant management judgment, including consideration of various operating, technological and economic factors. OPG reviews the estimated useful lives for its PP&E and intangible assets, including end-of-life assumptions for major generating assets, on a regular basis. Major nuclear station components are depreciated over the lesser of the station life and the life of the components.

For nuclear generating stations operated by OPG, establishing station end-of-life assumptions primarily involves an assessment of operating lives of major life-limiting components such as fuel channel assemblies, taking into account expectations of future ability to economically operate and as appropriate refurbish the station for continued use. Expected operating lives of major life-limiting components are established through technical assessments of their fitness-for-service. Expectations of future ability to operate the station may be affected by operating licence requirements, ability to recover capital, operating and decommissioning costs and government policy, among other factors.

Although there is a link between the age of a hydroelectric facility and the capital investment required to maintain that facility, age does not generally establish an overall upper limit on the expected useful life of a hydroelectric generating station. Regular maintenance and the replacement of specific components typically allow hydroelectric stations to operate for very long periods. An estimated useful life not exceeding 100 years is used by OPG to depreciate dams and other major hydroelectric station structures.

Station end-of-life assumptions for thermal generating stations are established based on operating life expectations of major station components and expectations of future ability to economically operate the station taking into consideration available revenue mechanisms.

### **Nuclear Fixed Asset Removal and Nuclear Waste Management Funds**

In accordance with the ONFA, OPG sets aside and invests funds that are held in segregated custodian and trustee accounts specifically for discharging its obligation for nuclear facilities decommissioning and long-term nuclear waste management. The Decommissioning Segregated Fund was established to fund the future costs of nuclear fixed asset removal and long-term L&ILW management, and certain costs of used fuel storage incurred after the stations are shut down. The Used Fuel Segregated Fund was established to fund the future costs of long-term nuclear used fuel management and certain costs of used fuel storage incurred after the stations are shut down. Costs for L&ILW management and used fuel storage incurred during station operation are not funded by the Nuclear Segregated Funds. Such costs are funded through the Company's operating cash flow or other sources of liquidity.

Based on the current approved ONFA reference plan, starting in 2017, OPG is not currently required to make overall contributions to the Used Fuel Segregated Fund or the Decommissioning Segregated Fund. Prior to 2017, OPG made contributions to the Used Fuel Segregated Fund quarterly, 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. 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, an agency of the Province and, taking into account asset performance and changes in underlying funding obligations over time, at the time of every subsequent approved ONFA reference plan. 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 prepared. Such may be the case as a

result of variability in asset performance due to volatility inherent in financial markets, including changes in the Ontario CPI that affect earnings on the portion of the Used Fuel Segregated Fund guaranteed by the Province. Future contribution levels also are dependent on changes in baseline cost estimates and underpinning assumptions used to establish the funding obligations in subsequent ONFA reference plans.

#### Decommissioning Segregated Fund

Upon termination of the ONFA, the Province has the sole right to any excess funds in the Decommissioning Segregated Fund. Accordingly, when the Decommissioning Segregated Fund is overfunded, OPG limits the fund earnings it recognizes in the consolidated financial statements by recording an amount due to the Province, such that the fund asset recognized on the consolidated balance sheet is equal to the cost estimate of the liability based on the most recently approved ONFA reference plan. Additionally, OPG recognizes the portion of the surplus that it may direct to the Used Fuel Segregated Fund, which is possible when the surplus is such that the underlying liabilities, as defined by the most recently approved ONFA reference plan, are at least 120 percent funded. In those circumstances, 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. Therefore, when the Decommissioning Segregated Fund is at least 120 percent funded, OPG recognizes 50 percent of the excess greater than 120 percent in income, up to the amount by which the Used Fuel Segregated Fund is underfunded.

The amount due to the Province in respect of the Decommissioning Segregated Fund could be reduced in subsequent periods in the event that the fund earns less than its target rate of return, a new ONFA reference plan is approved with a higher underlying liability, or the amount of the underfunding in the Used Fuel Segregated Fund increases.

When the Decommissioning Segregated Fund is underfunded, the earnings on the fund reflect actual fund returns based on the market value of the assets.

#### Used Fuel Segregated Fund

Under the ONFA, the Province guarantees OPG's annual return in the Used Fuel Segregated Fund at 3.25 percent plus the change in the Ontario CPI, as defined in the ONFA, for funding related to the first 2.23 million used fuel bundles (committed return). OPG recognizes the committed return on the Used Fuel Segregated Fund as earnings on the Nuclear Segregated Funds. The difference between the committed return and the actual market return determined based on the fair value of the fund's assets related to the first 2.23 million used fuel bundles is recorded as due to or due from the Province. This amount represents the amount OPG would pay to, or receive from, the Province if the committed return were to be settled as of the consolidated balance sheet date. 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 used fuel 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 used fuel bundles, upon approval of a new or amended ONFA reference plan. The 2.23 million threshold represents the estimated total life cycle fuel bundles based on the initial estimated useful lives of the nuclear stations assumed in the ONFA.

As prescribed under the ONFA, OPG's contributions attributed to the used fuel bundles in excess of the first 2.23 million are not subject to the rate of return guaranteed by the Province, and earn a return based on changes in the market value of the assets of the Used Fuel Segregated Fund.

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 committed return adjustment, the Province has the right, at any time, to access the excess amount greater than 110 percent. Upon termination of the ONFA, the Province is entitled to any surplus in the fund. Accordingly, when the Used Fuel

Segregated Fund is overfunded after taking into account the committed return adjustment, OPG limits the fund earnings it recognizes in the consolidated financial statements by recording an amount due to the Province, such that the balance of the fund is equal to the cost estimate of the liability based on the most recently approved ONFA reference plan. In accordance with the ONFA, neither OPG nor the Province have a right to direct any amounts from the Used Fuel Segregated Fund to the Decommissioning Segregated Fund.

#### Provincial Guarantee

In accordance with the *Nuclear Safety and Control Act* (Canada), 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.

#### **Pension and Other Post-Employment Benefits**

The determination of OPG's pension and OPEB costs and obligations is based on accounting policies and assumptions, as discussed below.

#### Accounting Policy

OPG's post-employment benefit programs covering eligible employees consist of a contributory defined benefit registered pension plan, a defined benefit supplementary pension plan and other post retirement benefits (OPRB) including group life insurance and health care benefits, and long-term disability (LTD) benefits. Eagle Creek sponsors a defined contribution employee savings plan for eligible employees, under a matching contribution formula. Post-employment benefit programs are also provided by the Nuclear Waste Management Organization (NWMO), which is consolidated into OPG's financial results. Unless otherwise noted, information on the Company's post-employment benefit programs is presented on a consolidated basis.

OPG recognizes the funded status of its defined benefit plans on the consolidated balance sheets. The funded status is measured as the difference between the fair value of plan assets and the benefit obligation, on a plan-by-plan basis.

OPG accrues its obligations under defined benefit pension and OPEB plans in accordance with US GAAP. The obligations for defined benefit pension and OPRB are determined using the projected benefit method pro-rated on service. The obligation for LTD benefits is determined using the projected benefit method on a terminal basis. Defined benefit pension and OPEB obligations are impacted by factors including demographic (e.g. mortality, retirement) and economic (e.g. discount rates, salary levels, inflation and health care cost escalation) assumptions, experience gains or losses, and adjustments arising from plan amendments. Defined benefit pension and OPEB costs and obligations are determined annually by independent actuaries using management's best estimate assumptions.

Pension fund assets include equity securities, corporate and government debt securities, pooled funds, real estate, infrastructure and other investments. These assets are managed by professional investment managers. The pension

fund does not invest in equity or debt securities issued by OPG. Pension fund assets are valued using market-related values for purposes of determining the amortization of actuarial gains or losses and the expected return on plan assets. The market-related value recognizes gains and losses on equity assets relative to a six percent assumed real return over a five-year period.

Defined benefit pension and OPEB costs include current service costs, interest costs on the obligations, the expected return on pension plan assets, recognition of past service costs or credits resulting from plan amendments, and recognition of actuarial gains or losses resulting from changes in assumptions and experience gains and losses. Past service costs or credits arising from pension and OPRB plan amendments are amortized on a straight-line basis over the expected average remaining service life to full eligibility of the employees covered by the corresponding plan. Past service costs or credits arising from amendments to LTD benefits are immediately recognized as OPEB costs in the period incurred. Due to the long-term nature of pension and OPRB liabilities, the excess of the net cumulative unamortized gain or loss over 10 percent of the greater of the benefit obligation and the market-related value of the plan assets (the corridor) for each plan is amortized over the expected average remaining service life of the employees covered by the plan, which represents the period during which the associated economic benefits are expected to be realized by the Company. Actuarial gains or losses for LTD benefits are immediately recognized as OPEB costs in the period incurred.

Actuarial gains or losses and past service costs or credits arising during the year that are not recognized immediately as components of benefit costs are recognized as increases or decreases in other comprehensive income (OCI), net of income taxes. These unamortized amounts in AOCI are subsequently reclassified and recognized as amortization components of pension and OPRB costs as described above.

As at December 31, 2018, the unamortized net actuarial loss and unamortized past service costs for the defined benefit pension and OPEB plans totalled \$3,791 million (2017 – \$4,148 million). Details of the unamortized net actuarial loss and unamortized past service costs as at December 31, 2018 and 2017 are as follows:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
Net actuarial loss (gain) not yet subject to amortization due to use of market-related values	180	(418)	-	-	-	-
Net actuarial loss (gain) not subject to amortization due to use of the corridor	1,707	1,735	35	36	(104)	299
Net actuarial loss subject to amortization	1,908	2,333	67	80	-	79
Unamortized net actuarial loss (gain)	3,795	3,650	102	116	(104)	378
Unamortized past service (credits) costs	-	-	-	-	(2)	4

OPG records an offsetting regulatory asset or regulatory liability for the portion of the adjustments to AOCI that is attributable to the regulated operations in order to reflect the expected recovery or refund of these amounts through future regulated prices charged to customers. For the recoverable or refundable portion attributable to regulated operations, OPG records a corresponding change in this regulatory asset or regulatory liability for the amount of the increases or decreases in OCI and for the reclassification of AOCI amounts into benefit costs during the period.

When the recognition of the transfer of employees and employee-related benefits gives rise to both a curtailment and a settlement, the curtailment is accounted for prior to the settlement. A curtailment is the loss by employees of the right to earn future benefits under the plan. A settlement is the discharge of a plan's liability.

## Accounting Assumptions

Assumptions are significant inputs to actuarial models that measure defined benefit pension and OPEB obligations and related effects on operations. Discount rate, inflation rate and changes in salary levels are three key assumptions in the determination of benefit costs and obligations. In addition, the expected long-term rate of return on plan assets is a key assumption in the determination of defined benefit registered pension plan cost and the health care cost trend rate is a key assumption in the determination of OPEB cost and obligations. These assumptions, as well as other assumptions involving demographic factors such as retirement age, mortality and employee turnover, are evaluated periodically by management in consultation with independent actuaries. During the evaluation process, the assumptions are updated to reflect past experience and expectations for the future. Actual results in any given year will often differ from actuarial assumptions because of economic and other factors giving rise to actuarial gains and losses.

The discount rates, which are representative of the AA corporate bond yields, are used to calculate the present value of the expected future cash flows on the measurement date in order to determine the projected benefit obligations for the Company's employee benefit plans. A lower discount rate increases the benefit obligations and increases benefit costs. The discount rate used to determine the projected defined benefit pension and OPEB benefit obligations as at December 31, 2018 was approximately 3.8 percent. This represents an increase compared to the discount rate of approximately 3.6 percent that was used to determine the obligations as at December 31, 2017.

OPG uses a full yield curve approach to estimate the service and interest cost components of defined benefit pension and OPEB costs, whereby specific spot rates along the yield curve are used in the determination of the projected benefit obligations are applied to the relevant projected cash flows.

The expected rate of return on plan assets is determined based on the pension fund's asset allocation and the expected return considering long-term risks and returns associated with each asset class within the plan portfolio. A lower expected rate of return on plan assets increases pension cost.

A new actuarial valuation of the OPG registered pension plan was filed with the Financial Services Commission of Ontario in September 2018 with an effective date of January 1, 2018. The annual funding requirements in accordance with the new actuarial valuation are outlined in the section, *Liquidity and Capital Resources* under the heading, *Contractual Obligations*. As part of the valuation, the plan's demographic and other assumptions were reviewed and revised, as necessary, by independent actuaries. Using updated demographic assumptions and demographic data as at January 1, 2018 consistent with the new funding valuation for the registered pension plan, OPG conducted a comprehensive actuarial valuation for accounting purposes of its defined benefit pension and OPEB plans in 2018. The results of this valuation were reflected in the 2018 year-end obligations reflecting appropriate assumptions for accounting purposes as at December 31, 2018.

The deficit for the registered pension plan, for accounting purposes, increased from \$3,081 million as at December 31, 2017 to \$3,303 million as at December 31, 2018. This increase was largely due to the excess of interest costs on the liabilities over actual returns on the pension plan assets during the year, partially offset by a re-measurement of the benefit obligation at the end of 2018 reflecting higher discount rates.

The projected benefit obligations for OPEB plans decreased from \$3,190 million as at December 31, 2017 to \$2,799 million as at December 31, 2018. This decrease was largely due to a re-measurement of the liabilities at the end of 2018 reflecting an increase in the discount rates and the updated, lower per capita health care claims costs assumptions and updated health care cost trend rate assumptions as part of the 2018 actuarial valuation.

A change in the following assumptions, holding all other assumptions constant, would increase (decrease) defined benefit pension and OPEB costs for the year ended December 31, 2018 as follows:

<i>(millions of dollars)</i>	Registered Pension Plans <sup>1</sup>	Supplementary Pension Plans <sup>1</sup>	Other Post- Employment Benefits <sup>1</sup>
Expected long-term rate of return			
0.25% increase	(34)	n/a	n/a
0.25% decrease	34	n/a	n/a
Discount rate			
0.25% increase	(58)	(1)	(9)
0.25% decrease	62	1	14
Inflation <sup>2</sup>			
0.25% increase	110	1	-
0.25% decrease	(103)	(1)	-
Salary increases			
0.25% increase	26	3	-
0.25% decrease	(25)	(3)	-
Health care cost trend rate			
1% increase	n/a	n/a	85
1% decrease	n/a	n/a	(38)

n/a – change in assumption not applicable.

<sup>1</sup> Excludes the impact of regulatory accounts.

<sup>2</sup> With a corresponding change in the salary increase assumption.

### Asset Retirement Obligation

OPG recognizes ARO for fixed asset removal and nuclear waste management liabilities, discounted for the time value of money. OPG estimates both the amount and timing of future cash expenditures based on the plans for fixed asset removal and nuclear waste management. The ARO is comprised of expected costs to be incurred up to and beyond termination of operations and the closure of nuclear and thermal generating plant facilities and other facilities. Costs are expected to be incurred for activities such as preparation for safe storage and safe storage of nuclear stations, dismantlement, demolition and disposal of facilities and equipment, remediation and restoration of sites, and the ongoing and long-term management of nuclear used fuel bundles and L&ILW material. The liabilities associated with the decommissioning of the nuclear generating stations and the long-term management of used nuclear fuel comprise the most significant amounts of the total obligation.

The nuclear decommissioning liability includes the estimated costs of closing the nuclear stations after the end of their service lives, which includes preparation and placement of the stations into a safe storage state followed by an assumed 30-year safe storage period prior to station dismantlement and site restoration. Activities associated with the placement of stations into a safe storage state include de-fuelling and de-watering of the nuclear reactors. OPG is responsible for the nuclear waste management and nuclear decommissioning obligations associated with the Bruce nuclear generating stations and includes the associated costs in its ARO. 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 are not part of OPG's ARO.

The life cycle costs of L&ILW management include the costs of processing and storage of such radioactive wastes during and following the operation of the nuclear stations, as well as the costs of the ultimate long-term management of these wastes. The current assumptions used to establish the obligation for these costs include an L&ILW DGR facility to be constructed and operated by OPG, as discussed in the section, *Core Business, Strategy and Outlook* under the heading, *Project Excellence*. To estimate the liability for nuclear used fuel management, OPG has adopted an approach consistent with the Adaptive Phased Management (APM) concept approved by the Government of

Canada. The NWMO is responsible for the design and implementation of Canada's plan for the long-term management of used nuclear fuel.

The following costs are recognized as a liability on OPG's consolidated balance sheets:

- the present value of the costs of decommissioning the nuclear and thermal production facilities and other facilities after the end of their useful lives
- the present value of the fixed cost portion of nuclear waste management programs that are required based on the total volume of waste expected to be generated over the assumed lives of the stations
- the present value of the variable cost portion of nuclear waste management programs taking into account waste volumes generated to date.

The significant assumptions underlying operational and technical factors used in the calculation of the accrued liabilities are subject to periodic review. Changes to these assumptions, including changes to assumptions on the timing of the programs including construction of assumed waste disposal facilities, station end-of-life dates, waste disposal methods, financial indicators, decommissioning strategy and the technology employed, may result in significant changes to the value of the accrued liabilities. With programs of such long-term duration and the evolving technology to handle nuclear waste, there is a significant degree of inherent uncertainty surrounding the measurement of the costs for these programs. These costs may increase or decrease over time.

The estimates for the Nuclear Liabilities are reviewed on an ongoing basis as part of the overall nuclear waste management program. A comprehensive reassessment of all underlying assumptions and baseline cost estimates is performed periodically, at least once every five years, in line with the required ONFA reference plan update process. Changes in the Nuclear Liabilities resulting from changes in assumptions or estimates that impact the amount or timing of the estimated undiscounted future cash flows are recorded as an adjustment to the liabilities. Upward revisions in the Nuclear Liabilities represent the present value of a net increase in future undiscounted cash flows determined using a current credit-adjusted risk-free rate. Downward revisions in the Nuclear Liabilities represent the present value of a net decrease in future undiscounted cash flows determined using the weighted average discount rate reflected in the existing liability. Resulting changes in the related asset retirement costs are capitalized as part of the carrying amount of nuclear fixed assets in service.

For the purposes of calculating OPG's Nuclear Liabilities, as at December 31, 2018, consistent with the current accounting end-of-life assumptions, nuclear station decommissioning activities are projected to occur over approximately the next 80 years.

The liability for nuclear fixed asset removal and nuclear waste management on a present value basis as at December 31, 2018 was \$20,922 million (2017 – \$20,077 million). As at December 31, 2018, the undiscounted cash flows of expenditures for OPG's Nuclear Liabilities in 2018 dollars are as follows:

<i>(millions of dollars)</i>	2019	2020	2021	2022	2023	Thereafter	Total
Expenditures for nuclear fixed asset removal and nuclear waste management <sup>1</sup>	335	332	319	613	793	40,965	43,357

<sup>1</sup> The majority of the expenditures are expected to be reimbursed by the Nuclear Segregated Funds established by the ONFA. Any contributions required under the ONFA are not included in these undiscounted cash flows. Accounting for the Nuclear Segregated Funds is discussed under the heading, *Nuclear Fixed Asset Removal and Nuclear Waste Management Funds*.

The liability for non-nuclear fixed asset removal was \$303 million as at December 31, 2018 (2017 – \$344 million). This liability primarily represents the present value of estimated costs of decommissioning OPG's thermal generating stations at the end of their service lives. For the former Nanticoke and Lambton generating stations, the liability reflects the estimated cost of executing current decommissioning plans.

For the purpose of measuring the non-nuclear fixed asset removal liability, thermal asset removal activities are assumed to take place approximately over the next 15 years. The amount of undiscounted estimated future cash flows associated with the thermal fixed asset removal liabilities is approximately \$360 million.

OPG has no legal obligation associated with the decommissioning of its hydroelectric generating facilities and the costs cannot be reasonably estimated because of the long service life of these assets. With either maintenance efforts or rebuilding, the water control structures are assumed to be used for the foreseeable future. Accordingly, OPG has not recognized a liability for the decommissioning of its hydroelectric generating facilities.

### **Fair Value Measurements**

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly arm's-length transaction between market participants at the measurement date. Fair value measurements are required to reflect the assumptions that market participants would use in pricing an asset or liability based on the best available information. These assumptions include the risks inherent in a particular valuation technique, such as a pricing model, and the risks inherent in the inputs to the model.

The fair value of financial assets and liabilities for which quoted prices in an active market are available, including exchange traded derivatives and other financial instruments, are determined directly from those quoted market prices.

For financial instruments for which quoted market prices are not directly available, fair values are estimated using forward price curves developed from observable market prices or rates. The estimation of fair value may include the use of valuation techniques or models, based wherever possible on assumptions supported by observable market prices or rates prevailing at the consolidated balance sheet dates. This is the case for over-the-counter derivatives and securities, which include energy commodity derivatives, foreign exchange derivatives, interest rate swap derivatives and fund investments. Pooled fund investments are valued at the unit values supplied by the pooled fund administrators. The unit values represent the underlying net assets at fair values, determined using closing market prices. Valuation models use general assumptions and market data and therefore do not reflect the specific risks and other factors that may affect a particular instrument's fair value. The methodologies used for calculating the fair value adjustments are reviewed on an ongoing basis to ensure that they remain appropriate. If the valuation technique or model is not based on observable market data, specific valuation techniques are used, primarily based on recent comparable transactions, comparable benchmark information, bid/ask spread of similar transactions and other relevant factors.

OPG's use of financial instruments exposes the Company to certain risks, including credit risk, foreign currency risk and interest rate risk. A discussion of how OPG manages these and other risks is found in the section, *Risk Management*.

## **RISK MANAGEMENT**

### **Overview**

OPG faces various risks that could significantly impact the achievement of its strategic imperatives. The objective of risk management is to identify, assess and mitigate key risks and to preserve and increase the value of the Shareholder's investment in the Company.

The Audit and Risk Committee is mandated to fulfill the oversight responsibilities of the Board of Directors for matters relating to the identification and management of the Company's key business risks. OPG's ERM framework is designed to identify and evaluate risks on the basis of their potential impact on the Company's strategic imperatives and business plan objectives. Formal risk management policies, procedures and systems are in place to identify,

assess and mitigate risks to the Company. Senior management also establishes set limits for market risk, credit risk and energy trading activities of the Company.

The key risks to OPG's strategic imperatives are briefly described below. These are key risks that management believes could materially affect the Company's business, revenues, net income, assets or capital resources. 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.

### **Risks to Achieving Operational Excellence**

OPG is exposed to variable output from its existing generating stations that could adversely impact its financial performance. The operational risks of a station are generally a function of its age, human performance, regulatory requirements and the technology used.

#### Asset Conditions and Generation Variability

The uncertainty associated with electricity production by OPG's generating units is primarily driven by the condition of station components and systems, which are subject to the effects of aging and the manner in which the units operate. To safely operate the units to meet electricity system requirements, a unit could be derated resulting in reduced generation. The primary implications of these risks may include additional safety requirements, lower than expected generation and revenues and higher than expected operating or capital costs. To respond to this risk, OPG continues to:

- make improvements to the asset management program;
- monitor performance and implement inspection and maintenance programs;
- identify future work required to sustain and, as appropriate, upgrade station equipment; and
- undertake projects required to reliably operate within design and operating parameters.

#### Extension of Pickering Commercial Operation to 2024

Inability to extend Pickering operations to 2024 as planned would result in a reduction of OPG's future generation revenue and cash flows and lead to the advancement of station shutdown and decommissioning expenditures. This would include the advancement of a significant reduction in OPG's workforce.

Risk factors for extended operations include discovery of unexpected conditions, equipment failures, the state of critical plant components that are reaching end-of-life and a requirement for significant plant modifications. To mitigate these risks, OPG has implemented actions recommended by technical assessments into the station's outage work program. OPG has also incorporated these actions into the comprehensive inspection and maintenance program as part of the station's life cycle management plans.

#### Supply Chain

OPG's ability to operate effectively is in part dependent upon timely access to equipment, materials and service suppliers. Loss of key equipment, materials and service suppliers, particularly for the nuclear business, and the reputational and financial risk exposures of key vendors could affect OPG's operations and execution of major capital projects. OPG mitigates these risks, to the extent possible, through contract negotiations, contract terms, vendor monitoring, diversification of supplier base and business continuity plans.

#### Cyber Security

OPG's operations depend, in part, on the efficient operation and management of the Company's complex information technology and operational systems in a secure, vigilant and resilient manner that minimizes cyber risks. Cyber security incidents may have an adverse impact on OPG's reputation, energy production and public and employee safety.

Cyber security incidents have been on the rise globally over the last several years and this trend is expected to intensify as global reliance on technology increases. OPG has strategies in place to prepare for, respond to and recover from cyber security incidents. OPG continuously monitors, assesses and improves the effectiveness of its strategies and programs considering leading industry practices and remains proactive in information and intelligence sharing to learn from, and adapt to the changing cyber environment.

In today's environment, there are complex nation-state threat campaigns targeted at users and enterprise systems worldwide. These campaigns are driven by many objectives, from profit-motivated cybercrime to political subversion, surveillance and espionage. The rogue elements behind those campaigns take advantage of technical developments and tactics, seeking to outmaneuver modern defences. OPG responds timely to cyber incidents, with an objective of ensuring no or low operational impact to the Company. OPG also performs periodic assessments of its cyber risk profile and effectiveness of controls. In addition, OPG secured cyber insurance coverage effective January 1, 2019 in order to mitigate the potential financial impacts of cyber risks.

OPG's operations in Ontario must comply with reliability standards that apply to the Bulk Electric System elements specified under North American Electric Reliability Corporation and the relevant Bulk Power System facilities as determined by the Northeast Power Coordinating Council. A subset of these standards establishes the reliability requirements that relate to cyber security. OPG's Eagle Creek operations in the US must comply with applicable cyber security requirements as set out by the FERC. In addition, OPG's nuclear cyber assets are subject to CNSC licensing conditions and regulatory requirements. For other cyber assets not subject to applicable regulatory requirements, OPG has adopted a risk-based approach based on the National Institute of Standards and Technology cyber security framework to manage its cyber security.

The Company has policies and programs in place to manage cyber risks; these programs are subject to oversight by management and the Board of Directors. OPG's current cyber programs primarily focus on the following:

- protection of the Company's assets from cyber attacks and safeguarding sensitive information;
- improving cyber security protection, detection, incident response and recovery capabilities to reduce known or potential vulnerabilities;
- adopting industry leading practices to reduce third-party cyber security risks by introducing cyber security requirements into commercial agreements and improving the related governance; and
- increasing the cyber security awareness and training level of the workforce through mandatory annual cyber security awareness training.

### Human Resources

The development of new leaders and attraction and retention of staff in critical roles are key factors to OPG's success. The risk associated with the alignment and availability of skilled and experienced resources continues to exist for OPG in specific areas, including leadership and project management positions. To mitigate this risk, OPG continues to focus on succession planning, leadership development and knowledge management programs to improve the capability of its workforce. OPG expects to meet the human resource needs of the business by developing existing employees and hiring in specific areas, while continuing to leverage attrition through realignment of work and streamlining of processes, where appropriate.

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 introduced in 2016, 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.

## Labour Relations

As of December 31, 2018, approximately 88 percent of OPG's regular labour force in Ontario was represented by a union. A renewal collective agreement with the PWU is expected to be achieved during the first quarter of 2019 through a mediation/arbitration process. A process for the renewal of the collective agreement with the Society is expected to commence during 2019. There is a risk that renewal of collective agreements may include terms that will unfavourably impact OPG's costs and ability to efficiently run its operations.

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.

## Health and Safety

OPG's operations involve inherent occupational safety risks and hazards that could impact the achievement of the Company's health and safety goals. OPG is committed to continuous improvement and achievement of its ultimate goal of zero injuries through its safety management systems and by continuing to foster a strong health and safety culture among its employees and contractors. The safety management systems serve to focus the Company on proactively managing safety risks and hazard exposures to employees and contractors. OPG also strategically engages with external parties for benchmarking and auditing. This ensures that the safety management systems achieve the intended results and maximize the opportunity to incorporate program improvements.

## Regulatory Compliance

OPG is subject to extensive legislation and regulations by various entities in the jurisdictions in which it operates, such as the CNSC, the OEB, the IESO and the FERC.

The uncertainty associated with nuclear regulatory compliance is driven by plant aging, changes to technical codes, and challenges raised by members of the public at regulatory hearings, particularly in the areas of safety, environment and emergency preparedness. Addressing these requirements could add incremental cost to operations, including replacement or modification of station components or additional requirements for waste management. In some instances, there may be additional requirements resulting from changes in the interpretation of technical solutions or from emergent conditions that may result in increased effort on the part of the Company.

The operation of most of OPG's hydroelectric facilities in the US is authorized by the FERC, which includes the issuance of licenses for larger facilities with terms ranging 30 to 50 years. There are several OPG facilities that are in various stages of the relicensing process. There is a risk that in issuing a new license the FERC will impose new conditions that either restrict operations or require incremental expenditures related to environmental, recreational or other infrastructure at the facilities.

The risks related to other regulatory bodies are discussed under the headings, *Risks to Maintaining Financial Strength – Rate Regulation*, *Risks to Maintaining Financial Strength – Electricity Markets* and *Risks to Maintaining Financial Strength – Government Legislation and Regulation Changes*.

## Nuclear Waste Management

The handling, storage and disposal of nuclear waste exposes OPG to various risks that it manages in accordance with the applicable regulatory requirements. Additionally, the interim storage of nuclear waste is subject to rigorous oversight and monitoring.

Currently, there are no licensed facilities in Canada for the permanent disposal of used nuclear fuel or L&ILW. The risks to OPG's proposed L&ILW DGR for the safe long-term management of L&ILW are discussed below under the heading, *Risks to Achieving Project Excellence – Deep Geologic Repository for Low and Intermediate Level Waste*.

The NWMO has developed a process for moving forward with APM as the long-term solution for Canada's nuclear fuel waste. The APM plan contemplates the eventual long-term permanent disposal of radioactive nuclear fuel waste in a DGR. The NWMO is in the process of undertaking a multi-year site selection process for the used fuel DGR.

### Hydroelectric Generating Stations

OPG's hydroelectric generation is exposed to risks associated with water flows and Ontario SBG conditions.

The extent to which OPG can operate its hydroelectric generation facilities depends upon the availability of water. Significant variability in weather, including impacts of climate change and the extreme weather associated with it, could affect water flows. Longer term changes in precipitation patterns and amounts, water temperatures and ambient air temperatures can impact the availability of water resources and resulting electricity production at OPG's hydroelectric stations. OPG is monitoring developments in climate science and adaptation activities, and continues to participate in climate change adaptation initiatives with all levels of government in Canada. For OPG's regulated hydroelectric generation, the financial impact of variability in electricity production due to differences between the forecast water conditions underpinning the hydroelectric regulated prices and the actual water conditions are captured in an OEB-approved regulatory account.

SBG continues to be an issue in Ontario when electricity supply exceeds demand. To manage SBG conditions, the IESO may require OPG to reduce hydroelectric generation. A regulatory account authorized by the OEB helps to mitigate the financial impact of electricity production forgone due to SBG conditions at OPG's regulated hydroelectric generating stations. Subject to variability in water flows that can contribute to near-term fluctuations in SBG, the Company anticipates a declining trend in SBG conditions in Ontario due to reduced nuclear availability resulting from the refurbishment of subsequent units at the Darlington GS, future refurbishment of the Bruce generating stations and the shutdown of the Pickering GS.

### Environment

OPG's operations and facilities are subject to environmental compliance obligations in the jurisdictions in which they operate. These obligations include protection of land, water, air, living organisms and natural systems. Failure to comply with applicable environmental laws and regulations may result in enforcement actions, remediation actions or restrictions to operations. Changes in compliance obligations can result in new requirements and increased costs.

OPG has an ISO 14001-registered EMS to manage its environmental responsibilities in Ontario. For further information, see discussion in the section, *Environmental, Social, Governance and Sustainability*.

### Climate Resilience

OPG recognizes that efforts are required to prepare for the impacts of climate change and has identified climate change adaptation as a strategic priority. OPG monitors developments in climate science, adaptation activities, and potential changes to policy and regulatory requirements. A risk-based approach is used to determine the extent of adaptation needed to mitigate the impacts of climate change. Work with stakeholders to define adaptation requirements continues through analysis and by understanding the impacts on watersheds, assets, operations and the electricity market. OPG also collaborates with all levels of Canadian government, local communities and industry with the goal of increasing the resiliency of electricity sector and other critical infrastructure. For further information, see discussion in the section, *Environmental, Social, Governance and Sustainability*.

### Business Continuity and Emergency Management

OPG may be exposed to natural, technological or human-caused hazards including significant events against which it is not fully insured or indemnified. These hazards have the potential to disrupt operations resulting in decreased generation revenue or additional costs to repair damages and restore operations.

OPG's business continuity programs provide a framework to build resilience into critical business processes to ensure continued operation of critical business functions. OPG's emergency management programs are designed to ensure that the Company can resolve an emergency in a timely and effective manner. OPG's plans and implementation procedures identify immediate response actions to be taken to protect the health and safety of workers and the public, and to limit the impact of the incident on site security, production capability and the environment. The program elements are designed to meet legal and regulatory requirements.

### **Risks to Achieving Project Excellence**

OPG is undertaking several capital intensive projects with significant investments. There may be an adverse effect on the Company if it is unable to: obtain necessary approvals; raise the necessary funds; effectively manage the projects on time and on budget; or fully recover capital costs and earn an appropriate return on investment. These projects may also have significant impacts on OPG's borrowing capacity and credit rating. Some projects may be ultimately reassessed as being uneconomic. Risks associated with certain current major projects are described below.

#### Darlington Refurbishment

There are financial and reputational risk exposures for OPG if actual costs for the Darlington Refurbishment project exceed the budget or if OPG does not meet the project schedule. In addition, failure to achieve the objectives of the project may result in future forced outages and more complex planned outages, potentially impacting the post-refurbishment performance or useful life of the units. Failure to carry out unit refurbishments as planned may result in the Province cancelling subsequent refurbishment activities. OPG continues to apply lessons learned through the execution of Unit 2 refurbishment into the planning of future units.

OPG is leveraging robust risk management practices to manage a number of risks related to the Darlington Refurbishment project, including vendor performance risks, delay and productivity risks, financial risks related to escalation of costs, technical risks such as equipment conditions resulting in additional scope, quality risks, execution risks, and risks associated with returning the units to service following their refurbishment.

A large portion of the work for the Darlington Refurbishment project is being performed by contractors and suppliers, including vendors that engineer, procure and construct components of the project. There are a limited number of qualified vendors that can compete for nuclear-based work. Whether contracted individually, or through joint venture partnerships with other vendors, the ability of these suppliers to meet their contracted deliverables over the life of the project may impact project performance. Risks related to vendors include, but are not limited to, risks impacting vendors' reputation, and the potential shortage of skilled tradespeople hired by the vendors. There is also a risk of contractor initiated safety events, which may impact OPG's reputation. OPG's risk management strategy aims to ensure that contractors operate safely and are held accountable with appropriate incentives and disincentives. Mitigating actions include:

- collaborative training and planning with vendors on executing work safely;
- an enhanced human performance program;
- increased field presence by supervisory staff;
- collaboration with Bruce Power to streamline processes and reduce burden on vendors; and
- collaboration with Bruce Power, relevant unions, educational institutions and other stakeholders to address potential shortfalls in the availability of skilled trades.

OPG is also managing other ongoing risks that could potentially impact the project, including those related to continuity of skilled leaders within OPG and its vendor partners to support the project through execution.

Both the Company's management and Board of Directors have engaged independent, third-party oversight for the execution of the project.

### Deep Geologic Repository for Low and Intermediate Level Waste

OPG, with the support of Bruce County municipalities, is proposing to construct and operate a DGR for the safe long-term management of L&ILW in Ontario. While broad local community support for the proposed L&ILW DGR is stable, OPG continues its engagement with the SON towards securing support for the project and to formulate a response to the August 2017 request of the federal MOECC to update the Company's analysis of potential cumulative effects of the project on the SON's physical and cultural heritage, including a description of the potential effects of the project on the SON's spiritual and cultural connection to the land. The timing and outcome of the SON community engagement process is uncertain.

### **Risks to Maintaining Financial Strength**

Risks related to rate regulation, financial markets and long-term obligations could significantly impact OPG's financial performance. The Company is also exposed to risks such as weak electricity demand, changes in market prices of electricity, displacement of generation by competitors and financial risk associated with energy trading.

#### Rate Regulation

There is an inherent risk that regulated prices established by the OEB may not provide for the recovery of actual costs incurred by OPG's regulated operations or allow the regulated operations to earn an appropriate rate of return. This could occur if, in setting regulated prices, the OEB makes adjustments to forecasts submitted by OPG, if actual production and costs significantly differ from the forecasts approved by the OEB or if OPG is unable to achieve cost-reductions in line with OEB-approved stretch factors included in regulated prices under incentive ratemaking. Differences between OPG's actual and forecast production and costs could be due to factors such as unplanned outages or project execution risks. In providing evidence in support of its applications for regulated prices, OPG aims to clearly demonstrate to the OEB that the costs for the regulated operations are reasonable, prudently incurred and should be fully recovered from customers.

Certain differences between elements of OEB-approved revenue requirements and OPG's actual results are recorded in OEB-authorized regulatory accounts for future review by the OEB. A number of these accounts may be subject to an OEB prudence review. There is uncertainty associated with the outcomes of future proceedings for the recovery or refund of these balances.

#### Nuclear Liabilities and Nuclear Segregated Funds

As required by the CNSC, OPG is responsible for the management of used nuclear fuel and L&ILW and the decommissioning of its nuclear stations and waste management facilities. The cost estimates for OPG's nuclear waste management and nuclear decommissioning obligations are based on multiple underlying assumptions and estimates that are inherently uncertain and may evolve over time. The assumptions include station end-of-life dates, waste volumes, waste disposal methods, the timing of construction of assumed waste disposal facilities, waste packaging systems, decommissioning strategy and financial indicators. To address the inherent uncertainty, OPG performs a comprehensive review of the underlying assumptions and baseline cost estimates at least once every five years, in line with the required reference plan update process under the ONFA.

The most recent comprehensive update of the nuclear waste management and nuclear decommissioning obligations was approved by the Province in December 2016 as part the 2017 ONFA Reference Plan. An approved ONFA reference plan determines OPG's contributions to the Nuclear Segregated Funds. Based on the 2017 ONFA Reference Plan, OPG is not currently required to make overall contributions to the Nuclear Segregated Funds. Contributions may be required in the future should the Nuclear Segregated Funds be in an underfunded position at the time of the next ONFA reference plan update, which is scheduled to be completed by the end of 2021.

Nuclear Segregated Funds are segregated under the ONFA in order to fund the long-term waste management, used fuel management and decommissioning expenditures. These funds are managed to achieve, in the long term, the

target rate of return based on the discount rate specified in the ONFA. Investments in the Nuclear Segregated Funds are allocated to certain asset classes including fixed income securities, domestic and international equity securities, pooled funds, infrastructure, agriculture and timberland, and real estate. The rates of return earned on these segregated funds may vary depending on current and future financial market conditions. The asset mix of the funds is determined jointly by OPG and the Province in accordance with the ONFA.

Under ONFA, OPG bears the market risk related to the portion of the Nuclear Segregated Funds set aside for:

- decommissioning of the nuclear generating stations; and
- long-term management of the irradiated used fuel bundles in excess of the first 2.23 million bundles and L&ILW after the respective nuclear generating stations are shut down.

In accordance with the OEB-approved cost recovery methodology, the performance of the portion of the Nuclear Segregated Funds attributed to the Bruce nuclear generating stations is subject to the Bruce Lease Net Revenues Variance Account. Subject to the funded status of the funds discussed below, under the OEB-approved cost recovery methodology, OPG's net income is exposed to the rate of return risk related to the portion of the Nuclear Segregated Funds attributed to the Pickering and Darlington nuclear generating stations.

OPG limits the amount of Nuclear Segregated Funds assets reported on the balance sheet to the present value of the underlying life cycle funding liabilities per the most recently approved ONFA reference plan, as OPG does not have the right to withdraw surplus amounts from the Nuclear Segregated Funds. A reduction in the Nuclear Segregated Funds due to market conditions would first reduce the surplus in the respective funds before impacting OPG's net income. As such, the income statement impact of the rate of return risk is reduced when the Nuclear Segregated Funds are in a fully funded or overfunded position.

#### Post-Employment Benefit Obligations

OPG's post-employment benefit obligations include defined benefit pension, group life insurance, health care benefits and LTD benefits for eligible employees. OPG's post-employment benefit obligations and costs and pension plan contributions could be materially affected in the future by numerous factors including: changes in discount rates, inflation rates and other actuarial assumptions; future investment returns; experience gains and losses; the funded status of the pension plans; changes in benefits; changes in the regulatory environment including potential changes to the *Pension Benefits Act* (Ontario); changes in OPG's operations; and the measurement uncertainty incorporated into the actuarial valuation process.

The OPG registered pension plan, which covers most of OPG's employees and retirees, is a contributory defined benefit plan that is indexed to inflation up to a certain maximum. Contributions to the OPG registered pension plan are determined by actuarial valuations, which are filed with the appropriate regulatory authorities at least every three years. OPG will be required to file actuarial valuations on an annual basis if the solvency funded status of the plan declines below the threshold specified in the regulations of the *Pension Benefits Act* (Ontario). Future actuarial valuations could increase OPG's funding requirements due to market and economic-related conditions. OPG continues to assess the requirements for contributions to the registered pension plan, including the timing of future actuarial valuations. OPG's OPEB obligations are not funded and the associated employee benefits are paid from cash flows provided by operating activities or other sources of liquidity.

#### Contracted Generation

The Company's generating stations that operate under ESAs with the IESO or other long-term contracts are subject to several obligations, including but not limited to availability targets and must-offer obligations committing units to the market during specific hours, as specified in the respective contracts. OPG could incur penalties up to and including termination of the respective contract if these facilities fail to meet their contractual obligations. This risk is mitigated through implementation of maintenance, capital investment and other programs, and internal processes to communicate, educate, address and monitor contractual obligations and milestones.

While OPG expects that the stations operating under ESAs with the IESO or other long-term agreements will continue to provide energy and capacity to the market over the term of the respective agreements, there is a risk that, upon expiry of the current agreements, subsequent contracts for the stations may not be available or may not be financially viable.

### Electricity Markets

OPG's revenue can be impacted by external factors related to the electricity market including: the entrance of new participants into the markets; the competitive actions of market participants; electricity demand; changes in the regulatory environment; and wholesale electricity prices in the interconnected markets.

Some of OPG's hydroelectric facilities in the US sell energy and capacity into wholesale spot electricity markets and therefore are subject to volatility of wholesale spot electricity market pricing. While revenue from these facilities represents a small proportion of OPG's total revenue, the Company may enter into hedging arrangements from time to time to further mitigate this risk.

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.

### Ownership by the Province

The Province owns all of OPG's issued and outstanding common shares and Class A shares. Accordingly, the Province, as represented by the Ontario Ministry of Energy, Northern Development and Mines, has the authority to make appointments to OPG's Board of Directors. OPG could be subject to Shareholder direction under Section 108 of the OBCA that can directly influence major decisions. These directions could include those related to project development, applications for regulated prices, asset acquisitions and divestitures, financing and capital structure. As a result, OPG could be required to undertake activities that result in increased expenditures, or that reduce revenues or cash flows relative to the business activities or strategies that would have otherwise been undertaken. In addition, the obligation of OPG's Shareholder to respond to a broad range of matters in its role as the Government of Ontario may compete with OPG's commitment to maximize the return on the Shareholder's investment in the Company. This includes, but is not limited to, the Province's response to mitigate the impact of electricity prices on Ontario consumers.

### Acquisition and Growth Strategy

As outlined in the section, *Core Business, Strategy and Outlook* under the heading, *Financial Strength – Building Our Business*, OPG's strategy to grow the business primarily focuses on renewal and expansion of the Company's generating portfolio. Executing this strategy depends on identifying potential investment opportunities, screening and pursuing those opportunities that are a strategic fit and obtaining regulatory approvals. The financial valuation of an acquisition or other investment is predominantly based on long-term cash flow projections. There is a risk that changes in key assumptions underlying the valuation, such as the amount of electricity generation, energy market prices, capital and operating expenses and interest rates can cause realized economic value in acquisitions or other investments to differ from the baseline projections. OPG mitigates these risks by conducting detailed due diligence and focusing on investments in which the Company has significant operational experience and a strong understanding of underlying market fundamentals.

## Liquidity

OPG operates in a capital intensive business. Significant financial resources are required to fund major development and other capital improvement projects, including the Darlington Refurbishment project. In addition, the Company has other significant disbursement requirements including pension contributions, payments towards OPEB and other benefit plans, funding ongoing operations, debt maturities, and investments in new generating capacity and other business development opportunities. OPG must ensure that it has the financial capacity and sufficient access to cost effective financing sources to fund its capital requirements and other disbursements. In support of this objective, OPG utilizes multiple sources and forecasts availability of funds, actively monitors funding requirements and is focused on maintaining its investment grade credit rating. The Company's ability to arrange sufficient and cost-effective debt financing could be adversely affected by a number of factors, including financial market and general economic conditions, the regulatory environment, the Company's results of operations and financial conditions and the ratings assigned to the Company by credit rating agencies.

A discussion of corporate liquidity is included in the section, *Liquidity and Capital Resources*.

## Commodity Markets

Changes in the market price of fuels used to produce electricity can adversely impact OPG's earnings and cash flow from operations.

To manage the risk of unpredictable increases in the price of fuels, the Company has fuel hedging programs, which include using fixed price and indexed contracts.

The percentages hedged of OPG's fuel requirements are shown in the following table. These amounts are based on yearly forecasts of generation and supply mix and, as such, are subject to change as these forecasts are updated.

	2019	2020	2021
Estimated fuel requirements hedged <sup>1</sup>	74%	75%	66%

<sup>1</sup> Represents the approximate portion of megawatt-hours of expected generation production (and year-end inventory targets) from each type of OPG-operated facility (nuclear, hydroelectric and thermal) for which the Company has entered into contractual arrangements or obligations in order to secure the price of fuel, or which is subject to rate regulation. In the case of hydroelectric generation in Ontario, this represents the gross revenue charge and water rental charges. Excess fuel inventories (nuclear and thermal) in a given year are attributed to the next year for the purpose of measuring hedge ratios.

## Foreign Exchange

OPG's financial results are exposed to volatility in the Canadian/US foreign exchange rate as fuels and certain supplies and services purchased for generating stations and major development projects are primarily denominated in or tied to US dollars. In addition, volatility in the Canadian/US foreign exchange rate also impacts OPG's financial results from its Eagle Creek subsidiary, whose operations are based exclusively in the US.

To manage this risk, OPG employs various financial instruments such as forwards and other derivative contracts, in accordance with approved risk management policies.

## Interest Rates

Interest rate risk is the risk that the value of assets and liabilities can change due to movements in related interest rates. Interest rate risk for OPG arises with the need to refinance existing debt and/or undertake new financing. The management of these risks includes using derivatives to hedge the exposure in accordance with corporate risk management policies. OPG periodically uses interest rate swap agreements to mitigate elements of interest rate risk exposure associated with anticipated financing.

## Trading

OPG's financial performance can be affected by its trading activities. OPG's electricity trading operations are closely monitored, with total exposures measured and reported to senior management on a daily basis. The main metric used to measure the financial risk of trading activity is Value at Risk (VaR). VaR is defined as a probabilistic maximum potential future loss expressed in monetary terms for a portfolio based on normal market conditions over a set period of time. During 2018, the VaR utilization ranged between nil and \$0.9 million, compared to between \$0.1 million and \$0.4 million in 2017.

## Credit

The Company's credit risk exposure is a function of its electricity sales, trading and hedging activities, treasury activities including investing and commercial transactions with various suppliers of goods and services. OPG's credit risk exposure relating to electricity sales is considered low as the majority of sales are through the IESO-administered spot market in Ontario. The IESO oversees the credit worthiness of all market participants. In accordance with the IESO's prudential support requirements, market participants are required to provide collateral to cover funds that they might owe to the market.

The following table summarizes OPG's credit exposure to all counterparties from electricity transactions and trading as at December 31, 2018:

<b>Credit Rating</b> <sup>1</sup>	<b>All Counterparties</b>		<b>Largest Counterparties</b>	
	<b>Number of Counterparties</b> <sup>2</sup>	<b>Potential Exposure</b> <sup>3</sup> (millions of dollars)	<b>Number of Counterparties</b>	<b>Potential Exposure</b> (millions of dollars)
Investment grade	49	19	15	17
IESO <sup>4</sup>	1	478	1	478
Other	17	2	4	2
<b>Total</b>	<b>67</b>	<b>499</b>	<b>20</b>	<b>497</b>

<sup>1</sup> Credit ratings are based on OPG's own analysis, taking into consideration external rating agency analysis where available, as well as recognizing explicit credit support provided through parental guarantees, Letters of Credit or other forms of security. Other category represents counterparties for which the credit rating has not been analyzed by OPG.

<sup>2</sup> OPG's counterparties are defined on the basis of individual master agreements.

<sup>3</sup> Potential exposure is OPG's statistical assessment of maximum exposure over the life of each transaction at a 95 percent confidence interval.

<sup>4</sup> Credit exposure is an estimate of the short-term receivable amount arising from OPG's electricity sales into the IESO market. The credit exposure and associated receivable vary each month based on electricity sales. The monthly receivable from the IESO is typically paid to OPG in the subsequent month as per the IESO payment schedule.

Other major components of OPG's credit risk exposure include those associated with vendors that are contracted to provide services or products. OPG manages its exposure to various suppliers or counterparties by evaluating their financial condition and ensuring that the Company holds appropriate collateral or other forms of security.

## Government Legislation and Regulation Changes

OPG's core business and strategy may be impacted by changes to legislation and regulations in the jurisdictions in which it operates. Matters that are subject to regulation include, among others, rate regulation, electricity generating operations, nuclear waste management and nuclear decommissioning, the electricity market, the environment and taxation. Regulatory bodies may change or enact regulations or rules that could increase OPG's costs, decrease OPG's revenue or limit the Company's ability to recover appropriate costs or earn a return on the assets.

The Ontario provincial general election took place in June 2018 and resulted in a change in governing party. There may be significant legislative and regulatory changes enacted by the new provincial government that could impact

Ontario's electricity industry. The Company has actively engaged with the new provincial government to brief on the role of OPG in Ontario's electricity market and the Company's contribution to the Shareholder.

The next Canadian federal election is set to take place in October 2019. Depending on the outcome of the election, there may be significant legislative changes that could impact OPG. The Company has actively engaged with all major political parties at the federal level on a variety of initiatives.

To mitigate legislative risks, where possible, OPG monitors and actively engages with all levels of government in order to determine if future legislation will impact the Company.

#### Litigation

OPG or its subsidiaries are involved in various legal proceedings covering a range of matters arising out of their business activities. Each of these matters is subject to various uncertainties and some of these matters may be resolved unfavourably. It is the Company's belief that the resolution of these matters is not likely to have a material adverse impact on its financial position. Refer to Note 18 of OPG's 2018 audited consolidated financial statements under the heading, *Litigation* for further details.

#### **Risks to Maintaining Social Licence**

OPG is exposed to risks associated with its social licence and public profile due to changes in the opinions of various stakeholders, including electricity customers, local communities and government agencies, and partners, such as Indigenous communities.

Maintaining public trust and meeting stakeholders and Indigenous communities' expectations are critical to OPG's success. OPG focuses on building and maintaining its social licence and corporate reputation through safe, reliable, environmentally-responsible operations as well as corporate citizenship initiatives. The inability to maintain safe, reliable operations could negatively impact OPG's reputation and result in a loss of public support.

#### Indigenous Communities

The quality of OPG's relationships and the outcome of negotiations with Indigenous communities may impact OPG's project and financial performance, as well as its social licence to operate.

OPG may be subject to claims by Indigenous communities. These claims stem from projects and generation development related to the operations of OPG and historic operations of OPG's predecessor companies, which may have impacted the Aboriginal and/or Treaty rights of Indigenous communities.

OPG has an Indigenous Relations Policy, which sets out the Company's commitment to proactively build and maintain positive relationships with Indigenous communities. OPG has been successful in working collaboratively with Indigenous communities to resolve a number of past grievances. However, the outcome of ongoing and any future negotiations depends on a number of factors, including legislation, regulations and precedents created by court rulings, which are subject to change over time.

#### Ontario's Fair Hydro Plan

The Fair Hydro Act and associated regulations are expected to be amended or repealed during the first half of 2019. During that process, OPG's involvement in the Fair Hydro Plan may affect its reputation.

## RELATED PARTY TRANSACTIONS

Given that the Province owns all of the shares of OPG, related parties include the Province and other entities controlled by the Province.

The related party transactions summarized below include transactions with the Province and the principal successors to the former Ontario Hydro's integrated electricity business, including Hydro One, the IESO and the OEFC. The transactions between OPG and the related parties are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties. As one of several wholly-owned government business enterprises of the Province, OPG also has transactions in the normal course of business with various government ministries and organizations in Ontario that fall under the purview of the Province.

The related party transactions for the years ended December 31 are summarized below:

<i>(millions of dollars)</i>	2018		2017	
	Income	Expense	Income	Expense
Hydro One				
Electricity sales	11	-	8	-
Services	-	7	1	10
Dividends	7	-	7	-
Province of Ontario				
Change in Decommissioning Segregated Fund amount due to Province <sup>1</sup>	-	(419)	-	456
Change in Used Fuel Segregated Fund amount due to Province <sup>1</sup>	-	(547)	-	591
Hydroelectric gross revenue charge	-	108	-	110
ONFA guarantee fee	-	-	-	8
Other	-	-	-	2
OEFC				
Hydroelectric gross revenue charge	-	219	-	216
Interest expense on long-term notes	-	149	-	158
Income taxes	-	267	-	246
IESO				
Electricity related revenue	5,068	-	4,802	-
Earnings from Fair Hydro Trust	63	-	1	-
	<b>5,149</b>	<b>(216)</b>	4,819	1,797

<sup>1</sup> The Nuclear Segregated Funds are reported on the consolidated balance sheets net of amounts recognized as due to the Province in respect of any excess funding and, for the Used Fuel Segregated Fund, the Province's rate of return guarantee. As at December 31, 2018 and December 31, 2017, the Nuclear Segregated Funds were reported net of amounts due to the Province of \$3,496 million and \$4,462 million, respectively.

The receivables, financing receivables, equity securities, payables and long-term debt balances between OPG and its related parties are summarized below:

<i>(millions of dollars)</i>	December 31	
	2018	2017
Receivables from related parties		
Hydro One	1	1
IESO – Electricity related receivables	478	354
IESO – Fair Hydro Trust <sup>1</sup>	2	7
PEC	2	4
Province of Ontario	-	3
Financing receivables		
IESO – Fair Hydro Trust	1,788	1,179
Equity Securities		
Hydro One shares	153	188
Accounts payable and accrued charges		
Hydro One	4	1
OEFC	50	52
Province of Ontario	8	9
IESO – Electricity related payables	8	11
IESO – Fair Hydro Trust	13	3
Long-term debt (including current portion)		
Notes payable to OEFC	3,400	3,195

<sup>1</sup> Balance consists of unbilled revenue.

OPG may hold Province of Ontario bonds and treasury bills in the Nuclear Segregated Funds and the OPG registered pension fund. As at December 31, 2018, the Nuclear Segregated Funds held \$1,399 million of Province of Ontario bonds (2017 – \$1,502 million) and \$2 million of Province of Ontario treasury bills (2017 – \$9 million). As of December 31, 2018, the registered pension fund held \$41 million of Province of Ontario bonds (2017 – nil) and no Province of Ontario treasury bills (2017 – \$1 million). These Province of Ontario bonds and treasury bills are publicly traded securities and are measured at fair value. OPG jointly oversees the investment management of the Nuclear Segregated Funds with the Province.

During 2018, the Fair Hydro Trust purchased Investment Interest from the IESO for exchange amounts totalling of \$609 million (2017 – \$1,179 million), which has been classified as a financing receivable on OPG's consolidated balance sheet. The transactions were settled in cash using proceeds from the Trust's issuance of senior debt to third parties and subordinated debt to OPG. Pursuant to the general regulation of the Fair Hydro Act, the IESO is required to pay and remit carrying costs of the Trust, excluding repayment of principal on any debt obligations, up to July 31, 2021. Commencing May 1, 2021, specified consumers are to be invoiced by their local distribution company for the Clean Energy Adjustment, if any, to pay the carrying costs of the Trust. These funds are to be remitted to the Trust through the IESO and are to be used to settle all funding and other related expenses of the Trust that underlie the financing receivable.

As at December 31, 2018, OPG's consolidated balance sheet included approximately \$2 million of unbilled cost recovery revenue from the IESO (2017 – \$7 million), primarily for OPG's general fee as the Financial Services Manager under the Fair Hydro Act relating to management fees, incurred third-party costs, and certain direct labour costs.

The Province has provided a limited guarantee to specified creditors of the Fair Hydro 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.

## **INTERNAL CONTROL OVER FINANCIAL REPORTING AND DISCLOSURE CONTROLS**

Management, including the President and CEO and the Chief Financial Officer (CFO), are responsible for maintaining Disclosure Controls and Procedures (DC&P) and Internal Control over Financial Reporting (ICOFR). DC&P is designed to provide reasonable assurance that all relevant information is gathered and reported to senior management, including the President and CEO and the CFO, on a timely basis so that appropriate decisions can be made regarding public disclosure. ICOFR is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the financial statements in accordance with US GAAP.

There were no changes in OPG's ICOFR during the year ended December 31, 2018 that have materially affected or are reasonably likely to materially affect OPG's financial reports.

Management, including the President and CEO and the CFO, concluded that, as of December 31, 2018, OPG's DC&P and ICOFR (as defined in National Instrument 52-109 – *Certification of Disclosure in Issuers' Annual and Interim Filings*) were effective.

## FOURTH QUARTER

### Discussion of Results

<i>(millions of dollars)</i> (unaudited)	Three Months Ended December 31	
	2018	2017
Revenue	1,475	1,619
Fuel expense	175	171
Operations, maintenance and administration	722	770
Depreciation and amortization	200	162
Other (gains) expenses, net	(5)	30
Income before interest and income taxes	383	486
Net interest expense	21	39
Income tax expense	97	81
Net income	265	366
Net income attributable to the Shareholder	260	362
Net income attributable to non-controlling interest <sup>1</sup>	5	4

<sup>1</sup> Relates to the 25 percent interest of Amisk-oo-Skow Finance Corporation, a corporation wholly-owned by the Moose Cree First Nation, in Lower Mattagami Limited Partnership, the 33 percent interest of CRP, a corporation wholly-owned by the Taykwa Tagamou Nation, in PSS and the 10 percent interest of a corporation wholly-owned by Six Nations of Grand River Development Corporation in Nanticoke Solar LP.

Net income attributable to the Shareholder for the fourth quarter was \$260 million, compared to \$362 million for the same quarter in 2017.

Income before interest and income taxes was \$383 million for the fourth quarter of 2018, representing a decrease of \$103 million compared to the same quarter in 2017. The following summarizes the significant factors which contributed to the variance:

*Significant factors that decreased income before interest and income taxes:*

- Lower revenue from the Regulated – Nuclear Generation and Regulated – Hydroelectric segments of approximately \$249 million, reflecting the impact of the OEB's December 2017 decision on OPG's application for new regulated prices recognized in the fourth quarter of 2017 for the period of June 1, 2017 to December 31, 2017.
- Higher depreciation and amortization expenses of \$21 million, excluding amortization expense related to the recovery of regulatory accounts balances, in the fourth quarter of 2018, mainly due to the reversal of regulatory liabilities in the fourth quarter of 2017 related to reductions in depreciation expense previously recognized as a credit to customers since June 1, 2017, and depreciation on new assets in service. The reversal of the regulatory liabilities in the fourth quarter of 2017 was based on the issuance of the OEB's December 2017 decision that included these credits in the new regulated prices as a reduction of revenue. The increase in amortization expense related to regulatory account balances in the fourth quarter of 2018 was largely offset by an increase in revenue from the rate riders authorized by the OEB's March 2018 payment amounts order for the recovery of these balances.

*Significant factors that increased income before interest and income taxes:*

- Higher electricity generation of 1.2 TWh from the Regulated – Nuclear Generation segment, resulting in higher revenue from base regulated prices of approximately \$70 million. The higher electricity generation from the segment primarily reflected a lower number of outage days at the Pickering GS in the fourth quarter of 2018.
- Lower OM&A expenses of \$48 million, mainly in the Regulated – Nuclear Generation segment, reflecting lower nuclear project expenses, lower labour and purchased services costs to meet operational and maintenance requirements at the nuclear stations, and a lower number of outage days at the Pickering GS resulting in lower outage costs.
- A pre-tax gain of \$16 million from the sale of a non-core real estate asset of the business recognized in net income in the fourth quarter of 2018.

Net interest expense decreased by \$18 million during the fourth quarter of 2018, compared to the same quarter in 2017. The decrease was primarily due to a higher amount of interest costs capitalized related to the Darlington Refurbishment project expenditures and a higher amount of interest costs deferred in regulatory accounts.

Income tax expense increased by \$16 million during the fourth quarter of 2018, compared to the same quarter in 2017. The increase was primarily due to a lower amount of income tax expense deferred as regulatory assets and the impact of the equity accounted investments tax adjustment in the fourth quarter of 2018, partially offset by the impact of lower income before income taxes.

#### **Average Sales Prices**

The average sales price for the Regulated – Nuclear Generation segment during the fourth quarter of 2018 was 7.9 ¢/kWh, compared to 11.0 ¢/kWh during the same quarter in 2017. The decrease in the average sales price for the quarter reflected the impact of the OEB's December 2017 decision recognized in the fourth quarter of 2017 for the period of June 1, 2017 to December 31, 2017 based on OPG's submission of a draft payment amounts order to the OEB in January 2018.

The average sales price for the Regulated – Hydroelectric segment during the fourth quarters of 2018 and 2017 was 4.3 ¢/kWh.

#### **Electricity Generation**

OPG's electricity generation for the three months ended December 31, 2018 and 2017 was as follows:

<i>(TWh)</i>	<b>Three Months Ended December 31</b>	
	<b>2018</b>	<b>2017</b>
Regulated – Nuclear Generation	<b>11.3</b>	10.1
Regulated – Hydroelectric	<b>7.5</b>	7.2
Contracted and Other Generation <sup>1</sup>	<b>0.9</b>	0.8
Total OPG electricity generation	<b>19.7</b>	18.1
Total electricity generation by all other generators in Ontario <sup>2</sup>	<b>17.9</b>	18.8

<sup>1</sup> Includes OPG's share of generation from its 50 percent ownership interests in PEC and Brighton Beach. For the three months ended December 31, 2018, includes generation from Eagle Creek's facilities from November 27, 2018 to December 31, 2018 of 0.1 TWh.

<sup>2</sup> Non-OPG generation is calculated as the Ontario electricity demand plus net exports, as published by the IESO, minus OPG electricity generation in Ontario.

The increase in OPG's electricity generation of 1.6 TWh during the fourth quarter of 2018 compared to the same quarter in 2017 was mainly due to the higher electricity generation of 1.2 TWh from the Regulated – Nuclear Generation segment. The increase in electricity generation from the Regulated – Nuclear Generation segment was primarily due to a decrease in outage days at the Pickering GS in the fourth quarter of 2018.

Ontario's electricity demand as reported by the IESO was 34.0 TWh during the fourth quarter of 2018, compared to 33.6 TWh during the fourth quarter of 2017. Ontario's electricity demand excludes electricity exports out of the province.

### **Liquidity and Capital Resources**

Cash flow provided by operating activities during the three months ended December 31, 2018 was \$524 million, compared to \$228 million for the same period in 2017. The increase in cash flow provided by operating activities was primarily due to higher cash receipts from generation revenue reflecting the impact of the new regulated prices implemented following the issuance of the OEB's March 2018 payment amounts order and higher electricity generation.

Cash flow used in investing activities during the three months ended December 31, 2018 was \$872 million, compared to \$1,740 million during the same period in 2017. Cash flow used in investing activities was comparatively higher in the three months ended December 31, 2017, primarily due to the Fair Hydro Trust's purchase of Investment Interest from the IESO in December 2017, partially offset by the acquisition of Eagle Creek in November 2018.

Cash flow provided by financing activities during the three months ended December 31, 2018 was \$139 million, compared to \$1,466 million for the same period in 2017. Cash flow provided by financing activities was comparatively higher in the three months ended December 31, 2017 due to the issuances of Fair Hydro Trust senior notes, Class A shares and long-term corporate debt in the fourth quarter of 2017, partially offset by higher repayments of long-term debt in the fourth quarter of 2017 and the issuance of short-term corporate debt in the fourth quarter of 2018.

## QUARTERLY FINANCIAL HIGHLIGHTS

The following tables set out selected annual financial information for the last three years and financial information for each of the eight most recently completed quarters. This information is derived from OPG's unaudited interim consolidated financial statements and the audited annual consolidated financial statements, and has been prepared in accordance with US GAAP.

### Annual Financial Information

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>	<b>2016</b>
Revenue	<b>5,537</b>	5,158	5,653
Net income attributable to the Shareholder	<b>1,195</b>	860	436
Earnings per share, attributable to the Shareholder <i>(dollars)</i>	<b>\$4.37</b>	\$3.35	\$1.70
Total assets	<b>52,252</b>	48,822	44,372
Total long-term liabilities	<b>37,192</b>	34,933	31,460
Weighted average shares outstanding <i>(millions)</i>	<b>273.2</b>	256.7	256.3

### Quarterly Financial Information

<i>(millions of dollars – except where noted) (unaudited)</i>	<b>2018 Quarters Ended</b>				
	<b>December 31</b>	<b>September 30</b>	<b>June 30</b>	<b>March 31</b>	<b>Total</b>
Revenue	<b>1,475</b>	<b>1,373</b>	<b>1,282</b>	<b>1,407</b>	<b>5,537</b>
Net income	<b>265</b>	<b>283</b>	<b>126</b>	<b>539</b>	<b>1,213</b>
Less: Net income attributable to non-controlling interest	<b>5</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>18</b>
Net income attributable to the Shareholder	<b>260</b>	<b>279</b>	<b>121</b>	<b>535</b>	<b>1,195</b>
<b>Earnings per share, attributable to the Shareholder <i>(dollars)</i></b>	<b>\$0.95</b>	<b>\$1.02</b>	<b>\$0.44</b>	<b>\$1.99</b>	<b>\$4.37</b>

### Quarterly Financial Information

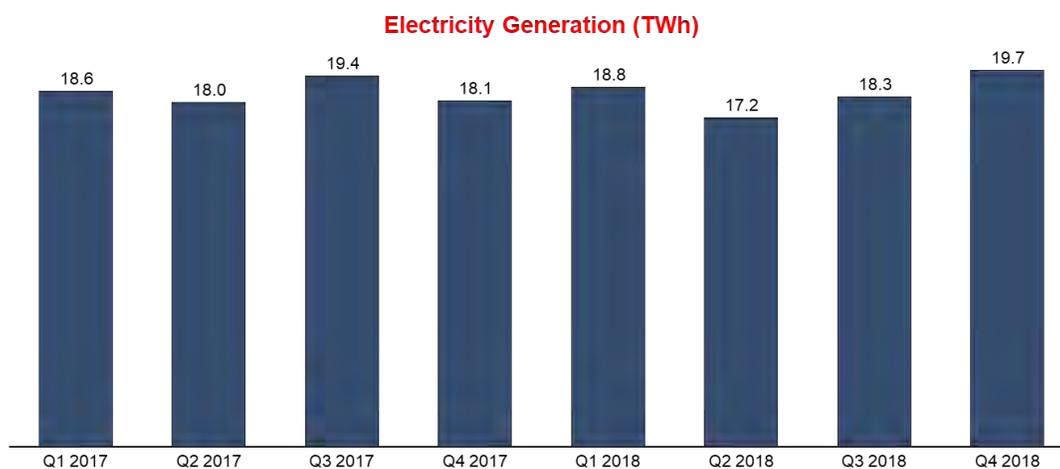
<i>(millions of dollars – except where noted) (unaudited)</i>	<b>2017 Quarters Ended</b>				
	<b>December 31</b>	<b>September 30</b>	<b>June 30</b>	<b>March 31</b>	<b>Total</b>
Revenue	1,619	1,217	1,146	1,176	5,158
Net income	366	140	307	68	881
Less: Net income attributable to non-controlling interest	4	9	4	4	21
Net income attributable to the Shareholder	362	131	303	64	860
<b>Earnings per share, attributable to the Shareholder <i>(dollars)</i></b>	<b>\$1.41</b>	<b>\$0.51</b>	<b>\$1.18</b>	<b>\$0.25</b>	<b>\$3.35</b>

## Trends

OPG's quarterly results are affected by changes in grid-supplied electricity demand, primarily resulting from variations in seasonal weather conditions, changes in economic conditions, the impact of small scale generation embedded in distribution networks and the impact of conservation efforts. Weather conditions affect water flows, electricity demand and prevalence of SBG conditions. Historically, OPG's revenues have been higher in the first quarter of a fiscal year as a result of winter heating demands and in the third quarter due to air conditioning and cooling demands. The financial impact of forgone production due to SBG conditions at the regulated hydroelectric stations and the financial impact of differences between forecast water flows reflected in OEB-approved regulated prices and the actual water flows are mitigated by the OEB-authorized regulatory accounts.

The outage cycle at each of OPG's nuclear generating stations determines the number and frequency of planned outages in a particular year. The outage cycle is designed to ensure the continued safe and reliable long-term operations of the plant and its compliance with CNSC regulatory requirements. The frequency of planned outages under the outage cycle may result in year-over-year variability in OPG's operating results, including the impact on revenue and OM&A expenses. In addition, the timing of planned outages at a nuclear generating station during the year can cause variability in year-over-year operating results for partial periods of a fiscal year. The Unit 2 refurbishment outage at the Darlington GS, which began in October 2016 and is continuing, has reduced electricity generation starting in the fourth quarter of 2016.

OPG's financial results are also affected by earnings on the Nuclear Segregated Funds, net of the impact of the Bruce Lease Net Revenues Variance Account. The volatility of earnings on the Nuclear Segregated Funds is mitigated by their funded status.



## KEY OPERATING PERFORMANCE INDICATORS AND NON-GAAP FINANCIAL MEASURES

### Key Operating Performance Measures

OPG evaluates the performance of its generating stations using a number of key indicators. Key operating performance indicators aligned with corporate strategic imperatives are measures of production reliability, cost effectiveness, environmental performance and safety performance. Certain of the measures used vary depending on the generating technology.

#### Nuclear Unit Capability Factor

OPG's nuclear stations are baseload facilities that are not designed for fluctuating production levels to meet peaking demand. The nuclear Unit Capability Factor is a key measure of nuclear station performance. It measures the amount of energy that the unit(s) generated over a period of time, adjusted for externally imposed constraints such as transmission or demand limitations, as a percentage of the amount of energy that would have been produced over the same period had the unit(s) produced maximum generation. Capability factors are primarily affected by planned and unplanned outages. By industry definition, capability factors exclude production losses beyond plant management's control, such as grid-related unavailability. The nuclear Unit Capability Factor also excludes unit(s) during the period in which they are undergoing refurbishment. Accordingly, Unit 2 of the Darlington GS is excluded from the measure effective October 15, 2016, when the unit was taken offline as part of the Darlington Refurbishment project.

#### Hydroelectric Availability

OPG's hydroelectric stations operate as baseload, intermediate or peaking stations. Hydroelectric Availability represents 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.

#### Thermal Equivalent Forced Outage Rate

EFOR is an index of the reliability of a generating unit at OPG's thermal stations. It 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.

#### Other Key Indicators

In addition to production reliability, cost effectiveness and financial performance indicators, OPG has identified certain environmental and safety performance measures. These measures are discussed in the section, *Core Business, Strategy and Outlook*.

### Non-GAAP Financial Performance Measures

In addition to providing net income and other financial information in accordance with US GAAP, certain non-GAAP financial measures are also presented in OPG's MD&A. These non-GAAP measures do not have any standardized meaning prescribed by US GAAP and, therefore, may not be comparable to similar measures presented by other issuers. OPG utilizes these measures to make operating decisions and assess performance. Readers of the MD&A would utilize these measures in assessing the Company's financial performance from ongoing operations. The Company believes that these indicators are important since they provide additional information about OPG's performance, facilitate comparison of results over different periods and present measures consistent with the Company's strategies to provide value to the Shareholder, improve cost performance and ensure availability of cost effective funding. These non-GAAP financial measures have not been presented as an alternative to net income, cash flow provided by operating activities or any other measure in accordance with US GAAP, but as indicators of operating performance.

The definitions of the non-GAAP financial measures are as follows:

**(1) ROE Excluding AOCI** is an indicator of OPG's financial performance consistent with its objective to deliver value to the Shareholder. It is defined as net income attributable to the Shareholder divided by average equity attributable to the Shareholder excluding AOCI, for the period.

ROE Excluding AOCI is measured over a 12-month period and is calculated as follows for the period ended December 31:

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>
ROE Excluding AOCI		
Net income attributable to the Shareholder	<b>1,195</b>	860
Divided by: Average equity attributable to the Shareholder, excluding AOCI	<b>12,623</b>	11,351
<b>ROE Excluding AOCI (percent)</b>	<b>9.5</b>	7.6

**(2) Enterprise Total Generating Cost per MWh** is used to measure the overall cost performance of OPG's generating operations in Ontario. Enterprise TGC per MWh is defined as OM&A expenses (excluding the Darlington Refurbishment project, other generation development project and business development costs, Eagle Creek, the impact of regulatory accounts, the Fair Hydro Trust segment and expenses ancillary to OPG's electricity generation business), fuel expense for OPG-operated stations including hydroelectric gross revenue charge and water rental payments (excluding the impact of regulatory accounts) and capital expenditures (excluding the Darlington Refurbishment project, other generation development projects and Eagle Creek) incurred during the period, divided by total electricity generation from OPG-operated generating stations in Ontario plus electricity generation forgone due to SBG conditions in Ontario during the period.

Enterprise TGC per MWh is calculated as follows for the year ended December 31:

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>
Enterprise TGC		
Total OM&A expenses	<b>2,825</b>	2,824
Total fuel expense	<b>671</b>	689
Total capital expenditures	<b>1,859</b>	1,926
Less: Darlington Refurbishment capital and OM&A costs	<b>(1,111)</b>	(1,285)
Less: Other generation development project and business development capital and OM&A costs	<b>(152)</b>	(65)
Add (Less): OM&A and fuel expenses deferred in (refundable through) regulatory accounts	<b>47</b>	(1)
Less: Nuclear fuel expense for non OPG-operated stations	<b>(64)</b>	(57)
Add: Hydroelectric gross revenue charge and water rental payments for electricity generation forgone due to SBG conditions	<b>42</b>	69
Less: OM&A expenses ancillary to electricity generation business	<b>(17)</b>	(18)
Less: OM&A expenses related to Fair Hydro Trust	<b>(1)</b>	-
Less: OM&A expenses and capital expenditures related to Eagle Creek	<b>(5)</b>	-
Other adjustments	<b>(10)</b>	(43)
	<b>4,084</b>	4,039
Adjusted electricity generation ( <i>TWh</i> )		
Total OPG electricity generation	<b>74.0</b>	74.1
Adjust for electricity generation forgone due to SBG conditions, OPG's share of electricity generation from co-owned facilities and Eagle Creek	<b>2.7</b>	5.6
	<b>76.7</b>	79.7
<b>Enterprise TGC per MWh (\$/MWh) <sup>1</sup></b>	<b>53.24</b>	<b>50.66</b>

<sup>1</sup> Amounts may not calculate due to rounding.

**(3) Nuclear Total Generating Cost per MWh** is used to measure the cost performance of OPG's nuclear generating assets in Ontario. Nuclear TGC per MWh is defined as OM&A expenses of the Regulated – Nuclear Generation segment (excluding the Darlington Refurbishment project costs, the impact of regulatory accounts and expenses ancillary to the nuclear electricity generation business), nuclear fuel expense for OPG-operated stations (excluding the impact of regulatory accounts) and capital expenditures of the Regulated – Nuclear Generation segment (excluding the Darlington Refurbishment project costs) incurred during the period, divided by nuclear electricity generation for the period.

Nuclear TGC per MWh is calculated as follows for the year ended December 31:

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>
Nuclear TGC		
Regulated – Nuclear Generation OM&A expenses	<b>2,302</b>	2,293
Regulated – Nuclear Generation fuel expense	<b>283</b>	284
Regulated – Nuclear Generation capital expenditures	<b>1,492</b>	1,631
Less: Darlington Refurbishment capital and OM&A costs	<b>(1,111)</b>	(1,285)
Add: Regulated – Nuclear Generation OM&A and fuel expenses deferred in regulatory accounts	<b>59</b>	35
Less: Nuclear fuel expense for non OPG-operated stations	<b>(64)</b>	(57)
Less: Regulated – Nuclear Generation OM&A expenses ancillary to electricity generation business	<b>(7)</b>	(6)
Other adjustments	<b>(11)</b>	(10)
	<b>2,943</b>	2,885
Nuclear electricity generation (TWh)	<b>40.9</b>	40.7
<b>Nuclear TGC per MWh (\$/MWh) <sup>1</sup></b>	<b>72.00</b>	70.95

<sup>1</sup> Amounts may not calculate due to rounding.

**(4) Hydroelectric Total Generating Cost per MWh** is used to measure the cost performance of OPG's hydroelectric generating assets in Ontario. Hydroelectric TGC per MWh is defined as OM&A expenses of the Regulated – Hydroelectric segment and the hydroelectric facilities included in the Contracted and Other Generation segment (excluding Eagle Creek and generation development project costs, the impact of regulatory accounts and expenses ancillary to the hydroelectric electricity generation business), hydroelectric gross revenue charge and water rental payments (excluding the impact of regulatory accounts) and capital expenditures of the Regulated – Hydroelectric segment and the hydroelectric facilities included in the Contracted and Other Generation segment (excluding expenditures related to Eagle Creek and generation development projects) incurred during the period, divided by OPG's total hydroelectric electricity generation in Ontario plus hydroelectric electricity generation forgone due to SBG conditions in Ontario during the period. OPG reports hydroelectric gross revenue charge and water rental payments as fuel expense.

Hydroelectric TGC per MWh is calculated as follows for the year ended December 31:

<i>(millions of dollars – except where noted)</i>	<b>2018</b>	<b>2017</b>
Hydroelectric TGC		
Regulated – Hydroelectric OM&A expenses	<b>337</b>	330
Regulated – Hydroelectric fuel expense	<b>334</b>	351
Contracted and Other Generation OM&A expenses	<b>180</b>	169
Contracted and Other Generation fuel expense	<b>54</b>	53
Regulated – Hydroelectric and Contracted and Other Generation capital expenditures	<b>302</b>	221
Less: Regulated – Hydroelectric and Contracted and Other Generation generation development project capital and OM&A costs (excluding Eagle Creek)	<b>(141)</b>	(63)
Less: Thermal OM&A and fuel expenses and capital expenditures in the Contracted and Other Generation	<b>(167)</b>	(166)
Less: Regulated – Hydroelectric OM&A and fuel expenses refundable through regulatory accounts	<b>(12)</b>	(36)
Add: Hydroelectric gross revenue charge and water rental payments for electricity generation forgone due to SBG conditions	<b>42</b>	69
Less: OM&A expenses and capital expenditures related to Eagle Creek	<b>(5)</b>	-
Other adjustments	<b>-</b>	(1)
	<b>924</b>	927
Adjusted hydroelectric electricity generation ( <i>TWh</i> )		
Regulated – Hydroelectric electricity generation	<b>29.8</b>	30.7
Contracted and Other Generation electricity generation	<b>3.3</b>	2.7
Adjust for hydroelectric electricity generation forgone due to SBG conditions, and Eagle Creek and non-hydroelectric electricity generation of Contracted and Other Generation, including OPG's share of electricity generation from co-owned facilities	<b>2.7</b>	5.5
	<b>35.8</b>	38.9
<b>Hydroelectric TGC per MWh (\$/MWh) <sup>1</sup></b>	<b>25.88</b>	23.79

<sup>1</sup> Amounts may not calculate due to rounding.

**(5) Gross margin** is defined as revenue less fuel expense.

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# STATEMENT OF MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

Ontario Power Generation Inc.'s (OPG) management and Board of Directors is responsible for the presentation and preparation of the annual consolidated financial statements.

The consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles (US GAAP). The consolidated financial statements necessarily include amounts based on informed judgments and estimates of the expected effects of current events and transactions with appropriate consideration to materiality. Something is considered material if it is reasonably expected to have a significant impact on the Company's earnings, cash flow, value of an asset or liability or reputation.

The Company maintains and relies on a system of internal controls to ensure, on a reasonable and cost effective basis, reliability of the financial information. These controls are designed to provide the Company with reasonable assurance that the financial records are reliable for preparing consolidated financial statements and other financial information, assets are safeguarded against unauthorized use or disposition, that liabilities are recognized and compliance with all regulatory requirements is achieved.

The consolidated financial statements have been audited by Ernst & Young LLP, independent external auditors appointed by the Board of Directors. Their Independent Auditor's Report outlines the auditors' responsibilities and the scope of their examination and their opinion on OPG's consolidated financial statements. The independent external auditors, as confirmed by the Audit and Risk Committee, had direct and full access to the Audit and Risk Committee, with and without the presence of management, to discuss their audit and their findings therefrom, as to the integrity of OPG's financial reporting and the effectiveness of the system of internal controls.



**Jeff Lyash**  
*President and Chief Executive Officer*



**Ken Hartwick**  
*Chief Financial Officer and Senior Vice  
President – Finance*

March 7, 2019

# INDEPENDENT AUDITOR'S REPORT

To the Shareholder of Ontario Power Generation Inc.

## Opinion

We have audited the consolidated financial statements of Ontario Power Generation Inc. (the Company), which comprise the consolidated balance sheets as at December 31, 2018 and 2017, and the consolidated statements of income, consolidated statements of comprehensive income, consolidated statements of changes in shareholder's equity and consolidated statements of cash flows for the years then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as at December 31, 2018 and 2017, and the consolidated results of its operations and its consolidated cash flows for the years then ended in accordance with United States generally accepted accounting principles.

## Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Consolidated Financial Statements* section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

## Other Information

Management is responsible for the other information. The other information comprises:

- Management's Discussion and Analysis
- The information, other than the consolidated financial statements and our auditor's report thereon, in the Annual Report

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information, and in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

We obtained Management's Discussion & Analysis prior to the date of this auditor's report. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

The Annual Report is expected to be made available to us after the date of the auditor's report. If based on the work we will perform on this other information, we conclude there is a material misstatement of other information, we are required to report that fact to those charged with governance.

## **Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements**

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with United States generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

## **Auditor's Responsibilities for the Audit of the Consolidated Financial Statements**

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

The engagement partner on the audit resulting in this independent auditor's report is Tracy Brennan.

Toronto, Canada

March 7, 2019

# CONSOLIDATED STATEMENTS OF INCOME

Years Ended December 31 <i>(millions of dollars except where noted)</i>	2018	2017
<b>Revenue</b>	<b>5,537</b>	5,158
Fuel expense	671	689
<b>Gross margin</b>	<b>4,866</b>	4,469
Operations, maintenance and administration	2,825	2,824
Depreciation and amortization <i>(Note 6)</i>	784	679
Accretion on fixed asset removal and nuclear waste management liabilities <i>(Note 10)</i>	985	960
Earnings on nuclear fixed asset removal and nuclear waste management funds <i>(Note 10)</i>	<b>(854)</b>	(801)
Earnings from Fair Hydro Trust <i>(Note 19)</i>	<b>(28)</b>	(1)
Property taxes	37	40
Income from investments subject to significant influence	<b>(44)</b>	(38)
	<b>3,705</b>	3,663
<b>Income before other gains, interest and income taxes</b>	<b>1,161</b>	806
Other gains <i>(Note 22)</i>	<b>(270)</b>	(379)
<b>Income before interest and income taxes</b>	<b>1,431</b>	1,185
Net interest expense <i>(Note 8)</i>	77	95
<b>Income before income taxes</b>	<b>1,354</b>	1,090
Income tax expense <i>(Note 11)</i>	<b>141</b>	209
<b>Net income</b>	<b>1,213</b>	881
<b>Net income attributable to the Shareholder</b>	<b>1,195</b>	860
Net income attributable to non-controlling interest	18	21
<b>Basic and diluted earnings per share <i>(dollars)</i> <i>(Note 17)</i></b>	<b>4.37</b>	3.35

See accompanying notes to the consolidated financial statements

# CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Years Ended December 31 (millions of dollars)	2018	2017
<b>Net income</b>	<b>1,213</b>	<b>881</b>
<b>Other comprehensive income (loss), net of income taxes (Note 12)</b>		
Actuarial gain (loss) on remeasurement of liabilities for pension and other post-employment benefits <sup>1</sup>	<b>1</b>	(23)
Reclassification to income of amounts related to pension and other post-employment benefits <sup>2</sup>	<b>11</b>	10
Net gain on derivatives designated as cash flow hedges <sup>3</sup>	<b>1</b>	-
Reclassification to income of losses on derivatives designated as cash flow hedges <sup>4</sup>	<b>17</b>	18
Unrealized loss on equity securities <sup>5</sup>	-	(8)
Currency translation adjustment <sup>6</sup>	<b>13</b>	-
Other comprehensive income (loss) for the year	<b>43</b>	(3)
<b>Comprehensive income</b>	<b>1,256</b>	<b>878</b>
<b>Comprehensive income attributable to the Shareholder</b>	<b>1,238</b>	<b>857</b>
Comprehensive income attributable to non-controlling interest	<b>18</b>	<b>21</b>

<sup>1</sup> Net of income tax expenses of nil and income tax recoveries of \$7 million for 2018 and 2017, respectively.

<sup>2</sup> Net of income tax expenses of \$4 million and \$3 million for 2018 and 2017, respectively.

<sup>3</sup> Net of income tax expenses of nil for each of 2018 and 2017.

<sup>4</sup> Net of income tax expenses of \$2 million for each of 2018 and 2017.

<sup>5</sup> Net of income tax recoveries of nil and \$2 million for 2018 and 2017, respectively.

<sup>6</sup> Net of income tax expenses of nil for each of 2018 and 2017.

See accompanying notes to the consolidated financial statements.

# CONSOLIDATED STATEMENTS OF CASH FLOWS

Years Ended December 31 (millions of dollars)	2018	2017
<b>Operating activities</b>		
Net income	1,213	881
Adjust for non-cash items:		
Depreciation and amortization (Note 6)	784	679
Accretion on fixed asset removal and nuclear waste management liabilities	985	960
Earnings on nuclear fixed asset removal and nuclear waste management funds	(854)	(801)
Pension and other post-employment benefit costs (Note 13)	397	412
Deferred income taxes	(21)	19
Regulatory assets and regulatory liabilities	(51)	(558)
Other gains	(263)	(371)
Other	(23)	1
Expenditures on fixed asset removal and nuclear waste management	(307)	(313)
Reimbursement of eligible expenditures on nuclear fixed asset removal and nuclear waste management	97	79
Contributions to pension funds and expenditures on other post-employment benefits and supplementary pension plans	(308)	(322)
Distributions received from investments subject to significant influence	49	50
Net changes to other long-term assets and long-term liabilities	149	148
Net changes to non-cash working capital balances (Note 20)	(160)	80
<b>Cash flow provided by operating activities</b>	<b>1,687</b>	<b>944</b>
<b>Investing activities</b>		
Investment in property, plant and equipment and intangible assets	(1,826)	(1,853)
Acquisition of Eagle Creek Renewable Energy, net of cash acquired	(358)	-
Net proceeds from sale of property, plant and equipment	289	484
Acquisition of Fair Hydro Trust financing receivables	(609)	(1,179)
Proceeds from deposit note	-	70
<b>Cash flow used in investing activities</b>	<b>(2,504)</b>	<b>(2,478)</b>
<b>Financing activities</b>		
Issuance of Class A shares (Note 16)	268	519
Net proceeds from issuance of OPG long-term debt (Note 8)	1,049	1,301
Repayment of OPG long-term debt	(398)	(1,103)
Net proceeds from issuance of Fair Hydro Trust long-term debt (Note 8)	1,206	601
Repayment of Fair Hydro Trust revolving warehouse debt	(900)	-
Distribution to non-controlling interest	(18)	(15)
Contribution from non-controlling interest	-	19
Dividend to the Province's Consolidated Revenue Fund (Note 21)	(283)	-
Issuance of short-term debt	3,922	1,960
Repayment of short-term debt	(3,951)	(1,700)
<b>Cash flow provided by financing activities</b>	<b>895</b>	<b>1,582</b>
Effect of exchange rate changes on cash, cash equivalents and restricted cash	1	-
Net increase in cash, cash equivalents and restricted cash	79	48
<b>Cash, cash equivalents and restricted cash, beginning of year</b>	<b>234</b>	<b>186</b>
<b>Cash, cash equivalents and restricted cash, end of year</b>	<b>313</b>	<b>234</b>

See accompanying notes to the consolidated financial statements

# CONSOLIDATED BALANCE SHEETS

<b>As at December 31</b> <i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
<b>Assets</b>		
<b>Current assets</b>		
Cash, cash equivalents and restricted cash <i>(Note 5)</i>	313	234
Equity securities	153	188
Receivables from related parties <i>(Note 23)</i>	483	369
Nuclear fixed asset removal and nuclear waste management funds	19	23
Fuel inventory	294	309
Materials and supplies	103	103
Regulatory assets <i>(Note 7)</i>	490	-
Prepaid expenses	116	192
Other current assets	167	146
	<b>2,138</b>	<b>1,564</b>
<b>Property, plant and equipment</b> <i>(Note 6)</i>	<b>32,209</b>	<b>29,950</b>
Less: accumulated depreciation	<b>9,222</b>	<b>8,628</b>
	<b>22,987</b>	<b>21,322</b>
<b>Intangible assets</b> <i>(Note 6)</i>	<b>467</b>	<b>565</b>
Less: accumulated amortization	<b>211</b>	<b>432</b>
	<b>256</b>	<b>133</b>
<b>Goodwill</b> <i>(Note 4)</i>	<b>107</b>	<b>-</b>
<b>Other assets</b>		
Nuclear fixed asset removal and nuclear waste management funds <i>(Note 10)</i>	<b>17,464</b>	<b>16,701</b>
Financing receivables <i>(Note 23)</i>	<b>1,788</b>	<b>1,179</b>
Long-term materials and supplies	<b>347</b>	<b>355</b>
Regulatory assets <i>(Note 7)</i>	<b>6,769</b>	<b>7,231</b>
Investments subject to significant influence <i>(Note 24)</i>	<b>339</b>	<b>309</b>
Other long-term assets	<b>57</b>	<b>28</b>
	<b>26,764</b>	<b>25,803</b>
	<b>52,252</b>	<b>48,822</b>

See accompanying notes to the consolidated financial statements

# CONSOLIDATED BALANCE SHEETS

<b>As at December 31</b> <i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
<b>Liabilities</b>		
<b>Current liabilities</b>		
Accounts payable and accrued charges	1,161	1,228
Short-term debt <i>(Note 9)</i>	322	260
Deferred revenue due within one year	9	12
Long-term debt due within one year <i>(Note 8)</i>	368	398
Income taxes payable	37	80
Regulatory liabilities <i>(Note 7)</i>	36	-
	<b>1,933</b>	<b>1,978</b>
<b>Long-term debt <i>(Note 8)</i></b>	<b>7,188</b>	<b>5,921</b>
<b>Other liabilities</b>		
Fixed asset removal and nuclear waste management liabilities <i>(Note 10)</i>	21,225	20,421
Pension liabilities <i>(Note 13)</i>	3,642	3,423
Other post-employment benefit liabilities <i>(Note 13)</i>	2,697	3,092
Long-term accounts payable and accrued charges	250	252
Deferred revenue	410	351
Deferred income taxes <i>(Note 11)</i>	1,018	879
Regulatory liabilities <i>(Note 7)</i>	762	594
	<b>30,004</b>	<b>29,012</b>
<b>Equity</b>		
Common shares <sup>1</sup> <i>(Note 16)</i>	5,126	5,126
Class A shares <sup>2</sup> <i>(Note 16)</i>	787	519
Retained earnings	7,292	6,396
Accumulated other comprehensive loss <i>(Note 12)</i>	(243)	(295)
<b>Equity attributable to the Shareholder</b>	<b>12,962</b>	<b>11,746</b>
Equity attributable to non-controlling interest <i>(Note 26)</i>	165	165
<b>Total equity</b>	<b>13,127</b>	<b>11,911</b>
	<b>52,252</b>	<b>48,822</b>

<sup>1</sup> 256,300,010 common shares outstanding at a stated value of \$5,126 million as at December 31, 2018 and December 31, 2017.

<sup>2</sup> 18,343,815 Class A shares outstanding at a stated value of \$787 million as at December 31, 2018 (December 31, 2017 – 12,217,616 Class A shares outstanding at a stated value of \$519 million).

Commitments and Contingencies *(Notes 8, 11, 13 and 18)*

See accompanying notes to the consolidated financial statements

On behalf of the Board of Directors:

**Bernard Lord**  
Board Chair

**M. George Lewis**  
Director

# CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDER'S EQUITY

Years Ended December 31 (millions of dollars)	2018	2017
<b>Common shares (Note 16)</b>	<b>5,126</b>	5,126
<b>Class A shares (Note 16)</b>		
Balance at beginning of year	519	-
Issuance of Class A shares	268	519
Balance at end of year	787	519
<b>Retained earnings</b>		
Balance at beginning of year	6,396	5,534
Reclassification of cumulative unrealized losses on equity securities to opening retained earnings (Note 3)	(9)	-
Adjustment to recognize income tax effects of intercompany transfer of assets to opening retained earnings (Note 3)	(7)	-
	<b>6,380</b>	5,534
Net income attributable to the Shareholder	1,195	860
Dividend to the Province's Consolidated Revenue Fund (Note 21)	(283)	-
Reclassification of non-controlling interest on change in ownership interest (Note 26)	-	2
Balance at end of year	7,292	6,396
<b>Accumulated other comprehensive loss, net of income taxes</b>		
Balance at beginning of year	(295)	(295)
Reclassification of cumulative unrealized losses on equity securities to opening retained earnings (Note 3)	9	-
Reclassification of non-controlling interest on change in ownership interest (Note 26)	-	3
	<b>(286)</b>	(292)
Other comprehensive income (loss)	43	(3)
Balance at end of year	(243)	(295)
<b>Equity attributable to the Shareholder</b>	<b>12,962</b>	11,746
<b>Equity attributable to non-controlling interest</b>		
Balance at beginning of year	165	143
Income attributable to non-controlling interest	18	21
Distribution to non-controlling interest	(18)	(15)
Equity contribution from non-controlling interest (Note 26)	-	21
Reclassification of non-controlling interest on change in ownership interest (Note 26)	-	(5)
Balance at end of year	165	165
<b>Total equity</b>	<b>13,127</b>	11,911

See accompanying notes to the consolidated financial statements

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

For the years ended December 31, 2018 and 2017

## 1. DESCRIPTION OF BUSINESS

Ontario Power Generation Inc. (OPG or the Company) was incorporated on December 1, 1998 pursuant to the *Business Corporations Act* (Ontario) and is wholly-owned by the Province of Ontario (the Province or the Shareholder). OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity.

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, Canada. In November 2018, OPG acquired 100 percent ownership interest of Eagle Creek Renewable Energy, LLC (Eagle Creek), an owner and operator of hydroelectric facilities in the United States (US). Upon the acquisition of Eagle Creek, OPG owns 63 hydroelectric generating stations and has minority shareholdings in 13 hydroelectric generating stations and two solar facilities in 13 states across the US.

## 2. BASIS OF PRESENTATION

These consolidated financial statements have been prepared and presented in accordance with United States generally accepted accounting principles (US GAAP).

As required by *Ontario Regulation 395/11*, as amended, under the *Financial Administration Act (Ontario)*, OPG adopted US GAAP for the presentation of its consolidated financial statements, effective January 1, 2012. Since January 1, 2012, OPG also has received exemptive relief from the Ontario Securities Commission (OSC) from the requirements of section 3.2 of National Instrument 52-107, *Acceptable Accounting Policies and Auditing Standards*. The exemption allows OPG to file consolidated financial statements based on US GAAP, rather than International Financial Reporting Standards (IFRS), without becoming a US Securities and Exchange Commission registrant.

In April 2018, OPG received an extension to its previous exemptive relief from the OSC. The exemptive relief will now terminate on the earliest of the following:

- January 1, 2024;
- The financial year that commences after OPG ceases to have activities subject to rate regulation; or
- The effective date prescribed by the International Accounting Standards Board for the mandatory application of a standard within IFRS specific to entities with rate regulated activities.

All dollar amounts are presented in Canadian dollars, unless otherwise noted. Certain 2017 comparative amounts have been reclassified from financial statements previously presented to conform to the 2018 consolidated financial statement presentation.

### 3. SIGNIFICANT ACCOUNTING POLICIES AND ESTIMATES

#### a) New Accounting Standards Effective in 2018

##### i) Revenue from Contracts with Customers

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers* (Topic 606), which superseded nearly all existing revenue recognition guidance, including industry-specific guidance, under US GAAP. The core principle of Topic 606 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration to which an entity expects to be entitled for those goods or services.

Effective January 1, 2018, OPG adopted Topic 606 for all contracts not completed as at this date of initial application, including relevant practical expedients, utilizing the modified retrospective approach to implement the transition. No differences in the timing or amount of revenue recognition were identified as a result of the adoption of the new standard. The adoption of Topic 606 has required OPG to amend its accounting policy with respect to revenue recognition, as described below:

##### *a) Revenue from Contracts with Customers – Regulated Generation*

Provided OPG maintains a valid generation licence from the Ontario Energy Board (OEB), and continues to remain in compliance with the Independent Electricity System Operator's (IESO) Market Rules, its regulated nuclear and regulated hydroelectric generating facilities can continue to offer electricity into the market. OPG's current generation licence is valid to October 2023. Energy revenue generated from OPG's regulated facilities is based on regulated prices determined by the OEB that include base regulated prices and, as applicable, rate riders for the recovery or repayment of approved deferral and variance account (regulatory account) balances. The revenue from the regulated hydroelectric facilities is also subject to the OEB-approved hydroelectric incentive mechanism that provides a pricing incentive to OPG to shift hydroelectric production from lower market price periods to higher market price periods, reducing the overall costs to customers.

The majority of OPG's electricity generation is offered into Ontario's real-time energy spot market administered by the IESO. For electricity generated from its regulated nuclear and regulated hydroelectric facilities, OPG receives payment from the IESO on a monthly basis based on regulated prices authorized by the OEB. OPG's performance obligation with respect to regulated generation is to supply electricity generated from its regulated facilities to the wholesale electricity market in Ontario. The Company has determined that this performance obligation is satisfied over time; OPG utilizes the output method under Topic 606 to recognize revenue by applying the relevant base regulated price and rate riders as applicable to each unit of electricity generated and metered to the IESO. This methodology reflects the real-time nature of electricity generation and the underlying performance obligation, of which no portion remains unsatisfied at the end of the applicable reporting period. During any interim rate periods authorized by the OEB, revenue is recognized on the basis of interim regulated prices set by the OEB. In instances where a subsequent OEB decision results in a difference between final regulated prices retroactively effective for the interim period and the interim regulated prices, OPG records the resulting adjustment to revenue in connection with that period based on the OEB's decision as a regulatory asset or regulatory liability. Any resulting revenue shortfall in connection with the interim rate period is collected prospectively from the IESO in the manner authorized by the OEB. OPG's receivables in connection with electricity generated from its regulated nuclear and regulated hydroelectric facilities are part of the Company's electricity-related receivables from the IESO, representing OPG's unconditional right to payment for satisfying its performance obligation wherein only the passage of time is required before payment is received.

Base regulated prices currently in effect for OPG's regulated nuclear and regulated hydroelectric generation were established by the OEB's December 2017 decision and March 2018 payment amounts order on OPG's 2016 application for new regulated prices for the 2017-2021 period. Pursuant to the decision, the base regulated prices are

determined on an incentive ratemaking methodology for the hydroelectric facilities and under a custom incentive regulation framework for the nuclear facilities. For the hydroelectric facilities, the base regulated prices are determined by annually escalating the previously approved base regulated prices, with some adjustments, using an approved formula equal to an industry-specific weighted inflation factor based on indices published annually by the OEB, less a stretch factor adjustment.

For the nuclear facilities, the base regulated prices have been set for the period to December 31, 2021, under a rate smoothing approach that defers a portion of the approved nuclear revenue requirement for future collection in the Rate Smoothing Deferral Account authorized by the OEB pursuant to *Ontario Regulation 53/05*, with the objective of making changes in OPG's overall production-weighted average regulated price more stable year over year. The nuclear revenue requirement for each of the years is based on the OEB-allowed level of operating costs including depreciation and amortization expenses and a return on rate base, less a stretch factor adjustment. Rate base is a regulatory construct that, for OPG, represents the average net level of investment in regulated fixed and intangible assets in-service and an allowance for working capital. The difference between the non-deferred portion of the annual nuclear revenue requirement, calculated by multiplying the nuclear base 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 in the Rate Smoothing Deferral Account. See Note 7 for further information on the March 2018 payment amounts order and the Rate Smoothing Deferral Account.

*b) Revenue from Contracts with Customers – Non-regulated Generation and Other Revenue*

Electricity generation from non-regulated assets in Ontario receives the Ontario electricity spot market price, except where an energy supply agreement (ESA) or another contractual arrangement exists. Most of OPG's non-regulated generating assets in Ontario are subject to an ESA. The IESO is the counterparty to all ESAs and other contractual arrangements that are currently in effect for OPG's non-regulated generation based in Ontario. As permitted by the practical expedient within Topic 606, revenue from the generating stations subject to an ESA is recognized in the amount that OPG has a right to invoice on a monthly basis to the IESO as the Company satisfies its performance obligation in accordance with the terms of the agreement to supply energy and capacity from the applicable facilities to Ontario's wholesale energy market. No portion of OPG's performance obligation remains unsatisfied at the end of any applicable reporting period. OPG estimates revenues for variable or conditional amounts under each ESA using a most likely amount approach on a contract-by-contract basis. Variable consideration under each ESA is included in revenue only to the extent that it is probable that the amount will not be subject to significant reversal when the underlying uncertainty is resolved. OPG's receivables in connection with electricity generated from its non-regulated assets in Ontario are part of the Company's electricity-related receivables from the IESO, representing OPG's unconditional right to payment for satisfying its performance obligation wherein only the passage of time is required before payment is received.

OPG's electricity generation in the US is currently either subject to power purchase agreements (PPAs) for the supply of energy and capacity into the respective market, or receives the spot market price. The counterparties to PPAs currently in effect are primarily local electric utilities based in the US. Depending on the contractual terms in each PPA, the performance obligation is to either supply energy, capacity, renewable energy certificates (RECs) or a combination thereof. The performance obligation(s) to supply energy and capacity is satisfied over time, with revenue recognized in the amount the Company has a right to invoice on a monthly basis to the applicable counterparty, as permitted by the practical expedient within Topic 606. The performance obligation to supply RECs is satisfied at a point in time, with revenue recognized when the certificates related to the respective RECs are delivered.

OPG also sells into, and purchases from, interconnected electricity markets in other Canadian provinces and the northeast and mid-west regions of the US. Under these arrangements, OPG's performance obligation is to either physically supply energy, settle financially, or provide capacity, depending on the contract, to a counterparty in a control area outside of Ontario. Gains and losses on energy trading contracts (including those to be physically

settled) are recorded on a net basis in the consolidated statements of income. Accordingly, power purchases of \$40 million were netted against revenue in 2018 (2017 – \$15 million).

OPG also derives non-energy revenue under the terms of a lease arrangement and associated non-lease agreements with Bruce Power L.P. (Bruce Power) related to the Bruce nuclear generating stations. The associated agreements include revenue from heavy water sales, detritiation services and nuclear waste management services. Revenues under these associated agreements are recognized as services are provided or when products are delivered, therein satisfying OPG's performance obligation.

In addition, non-energy revenue includes isotope sales and other service revenues. Revenues from these activities are recognized as the respective performance obligations are satisfied, in accordance with the terms stipulated in the respective contracts.

#### *c) Revenue Recognition – Leasing Revenue*

The minimum lease payments stemming from OPG's lease arrangement with Bruce Power related to the Bruce nuclear generating stations are recognized in revenue on a straight-line basis over the term of the lease. Similarly, revenue from real estate leasing arrangements is recognized on a straight-line basis over the term of the lease as the Company renders the requisite services outlined in the respective contracts.

#### ii) Recognition and Measurement of Financial Assets and Financial Liabilities

In January 2016, the FASB issued ASU No. 2016-01, *Financial Instruments – Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*. Under the updated guidance, entities are required to measure equity investments at fair value and recognize any changes in fair value in net income. The update is effective for OPG's 2018 fiscal year, including interim periods. As a result of this update, effective January 1, 2018, the available-for-sale (AFS) classification for securities is no longer available. Effective January 1, 2018, any unrealized gains and losses related to equity securities are recognized in net income instead of other comprehensive income (OCI).

As a result of the adoption of the new guidance, the unrealized cumulative after-tax loss of \$9 million on AFS securities reported in accumulated other comprehensive loss (AOCL) as at December 31, 2017 was reclassified to opening retained earnings as of January 1, 2018. There were no other impacts on OPG's consolidated financial statements upon adoption of the new guidance, other than to replace the accounting policy for AFS securities with a new policy for holdings of equity securities as described under the heading, *Equity Securities*.

#### iii) Intra-entity Transfers of Assets Other than Inventory

In October 2016, the FASB issued ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other than Inventory*, to amend existing guidance with respect to accounting for the income tax effects of intra-entity asset transfers within the consolidated group. Effective January 1, 2018, entities are required to recognize the income tax effects of all intra-entity asset transfers, with the exception of inventory, as soon as the transfer occurs. Previously, entities were required to defer recognition of such income tax effects until the asset was sold to a third party.

The update is effective for OPG beginning January 1, 2018 and is required to be applied on a modified retrospective basis. On adoption of the update, the Company recorded an adjustment reducing opening retained earnings by \$7 million to reflect the associated deferred income tax liability resulting from the cumulative effect of OPG's transfer of assets, other than inventory, to the UMH Energy Partnership (UMH) and the Lower Mattagami Energy Limited Partnership (LME) in prior years. Adoption of this update did not otherwise impact the Company's consolidated financial statements, other than through an addition to OPG's accounting policy for income taxes as described under the heading, *Income Taxes and Investment Tax Credits*.

#### iv) Restricted Cash Disclosures

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash (a consensus of the FASB Emerging Issues Task Force)*, which clarifies how entities should present restricted cash and restricted cash equivalents in the statement of cash flows. The guidance is effective for OPG's 2018 fiscal year, including interim periods, and is applied retrospectively. The changes in disclosures required under this update are reflected in the consolidated statements of cash flows and Note 5.

#### v) Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost

In March 2017, the FASB issued ASU No. 2017-07, *Compensation – Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Under the new guidance, employers that sponsor defined benefit plans for pensions and/or other postretirement benefits are required to present the service cost component of net periodic benefit cost in the same statement of income line item as other employee compensation costs arising from services rendered during the period. The other components of the net periodic benefit cost are to be presented separately from the line item that includes the service cost and outside of any subtotal of income from operations, if such a subtotal is presented. In addition, the new guidance requires that only the service cost component of net benefit cost be eligible for capitalization.

Effective January 1, 2018, OPG adopted the new provisions of Topic 715. Adoption of these provisions did not impact OPG's consolidated financial statements, as OPG capitalized only the service cost component of postretirement benefits costs prior to the adoption of the new guidance. Additionally, OPG previously included the service cost component of postretirement benefit costs with other compensation costs within operations, maintenance and administration (OM&A) expenses in the consolidated statements of income and did not show a subtotal of income from operations prior to the adoption of the new guidance. As such, the new guidance did not affect the presentation of OPG's consolidated financial statements or result in changes in OPG's accounting policies.

#### vi) Intangibles – Goodwill and Other

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles – Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*. Pursuant to Topic 350, goodwill must be tested for impairment at least annually at the reporting unit level. This update eliminated the second step of the goodwill impairment test, no longer requiring calculation of the implied fair value of goodwill in determining impairment. Under the updated guidance, any loss on impairment will be the excess of the reporting unit's carrying amount over its fair value, to the extent that the impairment charge is limited to the total amount of goodwill allocated to the reporting unit. This modified calculation of impairment loss also applies to any reporting units with a negative carrying amount. This update is effective for annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2020 on a prospective basis, with early adoption permitted on testing dates after January 1, 2017. The Company adopted this pronouncement for its fiscal year beginning January 1, 2018, with no impact to the Company's financial results for the year.

### **b) Basis of Consolidation**

The consolidated financial statements of the Company include the accounts of OPG and its majority-owned subsidiaries and variable interest entities (VIEs) where OPG is the primary beneficiary. All intercompany balances and intercompany transactions have been eliminated on consolidation.

Where OPG does not control an investment but has significant influence over operating and financing policies of the investee, the investment is accounted for under the equity method. OPG co-owns the Portlands Energy Centre (PEC) gas-fired combined cycle generating station (GS) with TransCanada Energy Ltd. and co-owns the Brighton Beach gas-fired combined cycle GS (Brighton Beach) with ATCO Power Canada Ltd. In addition, following the acquisition of

Eagle Creek, OPG has minority interests in 12 entities within the US, engaged in the operation of hydroelectric or solar facilities.

Outlined below is information related to OPG's investments which are accounted for under the equity method:

Entity	Place of Business	Entity Type	Ownership Interest
Portlands Energy Centre L.P.	Canada	Limited Partnership	50.00%
Brighton Beach Power L.P.	Canada	Limited Partnership	50.00%
Concord Hydro Associates	United States	Limited Partnership	26.94%
New Hampshire Hydro Associates	United States	Partnership	27.08%
North Hartland, LLC	United States	Limited Liability Company	26.80%
Dodge Falls Associates, L.P.	United States	Limited Partnership	26.80%
Mesalonskee Stream Hydro, LLC	United States	Limited Liability Company	26.80%
HCE-Dodge Falls, Inc.	United States	Corporation	26.94%
Benton Falls Associates	United States	Partnership	27.08%
HMG, LLC	United States	Limited Liability Company	33.00%
Boltonville Hydro Associates	United States	Partnership	11.25%
Briar Hydro Associates	United States	Partnership	27.08%
Brassua TIC	United States	Tenancy-in-Common	24.19%
Kennebec Water Power Company	United States	Corporation	50.20%

### c) Variable Interest Entities

OPG performs ongoing analysis to assess whether it holds any VIEs. VIEs of which OPG is deemed to be the primary beneficiary are consolidated. The primary beneficiary of a VIE has both the power to direct the activities of the entity that most significantly impact its economic performance and the obligation to absorb losses of the entity that could potentially be significant to the Company. In circumstances where OPG is not deemed to be the primary beneficiary, the VIE is not recorded in OPG's consolidated financial statements. VIEs are deconsolidated when facts and circumstances arise which indicate that OPG is no longer deemed to be the primary beneficiary.

On this basis, OPG has consolidated two VIEs, the Nuclear Waste Management Organization (NWMO) and the Fair Hydro Trust (the Trust).

#### i) Nuclear Waste Management Organization

In 2002, OPG and other Canadian nuclear waste producers established a separately incorporated NWMO in accordance with the *Nuclear Fuel Waste Act* (Canada) (NFWA). The primary long-term mandate of the NWMO is to implement an approach to address the long-term management of used nuclear fuel in Canada. OPG has the majority of voting rights at the NWMO Board of Directors' and members' level. The NFWA requires the nuclear fuel waste owners to establish and make payments into trust funds for the purpose of funding the implementation of the long-term nuclear used fuel management plan in accordance with the NFWA. OPG provides over 90 percent of the NWMO's funding, primarily towards the design and implementation of Canada's Adaptive Phased Management (APM) plan for the long-term management of nuclear used fuel. As a result, OPG is expected to absorb a majority of the NWMO's expected losses through future funding in the event of any shortfall. Therefore, OPG holds a variable interest in the NWMO, of which it is the primary beneficiary. Accordingly, the applicable amounts in the accounts of the NWMO, after elimination of intercompany transactions, are consolidated.

## ii) Fair Hydro Trust

In 2017, the previous Government of Ontario introduced Ontario's Fair Hydro Plan (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, *Ontario Fair Hydro Plan Act, 2017* (the Fair Hydro Act or the Act) received Royal Assent and the associated general regulation came into force in June 2017. 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.

In December 2017, the Trust was established as a separate entity to be the financing entity contemplated by the Fair Hydro Act. The majority unitholder and beneficiary of the Trust is a wholly-owned subsidiary of OPG and the Trust's financial position and results are consolidated into OPG's financial results. As a legal matter, the assets and liabilities of the Trust do not form part of the assets and liabilities of OPG, and vice versa, pursuant to section 53.1(1.4) of the *Electricity Act, 1998* (Ontario). Immediately after the Trust's establishment, OPG entered into a management agreement with the Trust which provides OPG with the powers and duties of managing the Trust, including determining whether to acquire Investment Interest from the IESO, negotiating and executing all agreements, fulfilling all reporting requirements and administering all of the Trust's day-to-day activities.

In order for the Trust to finance the acquisition of Investment Interest from the IESO, it incurred senior debt from capital markets and subordinated debt from OPG. The Trust's investment attracts financing amounts and other related fees. The Trust has minimal equity at risk to finance its activities.

OPG exercises control over the key activities of the Trust. Management has concluded that OPG holds a variable interest in the Trust, of which OPG is the primary beneficiary, due to the obligation to absorb losses through ownership of the Trust's subordinated debt. Accordingly, the applicable amounts in the accounts of the Trust, after elimination of intercompany transactions, are consolidated.

## **d) Use of Management Estimates**

The preparation of consolidated financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the end of the reporting period, and the reported amounts of revenues and expenses for the reporting periods. Management evaluates these estimates on an ongoing basis based upon historical experience, current conditions and assumptions believed to be reasonable at the time the estimate is made, with any adjustments recognized in the period incurred. Significant estimates are included in the determination of pension and other post-employment benefit (OPEB) balances, asset retirement obligations (AROs) and associated asset retirement costs capitalized as part of property, plant and equipment (PP&E), income taxes (including deferred income taxes), contingencies, regulatory assets and regulatory liabilities, goodwill and intangible assets, valuation of investments in segregated funds, depreciation and amortization expenses and inventories. Actual results may differ significantly from these estimates.

## **e) Business Combinations and Goodwill**

The Company accounts for acquisitions of entities or assets that meet the definition of a business as business combinations. Business combinations are accounted for using the acquisition method. Assets acquired and liabilities assumed in business combinations are measured at their fair value at the acquisition date. Acquisition costs incurred in connection with business combinations are expensed in the period incurred. When a set of activities acquired does

not represent a business, the transaction is accounted for as an asset acquisition and includes acquisition costs.

Intangible assets acquired in business combinations are recognized separately at fair value if they arise from contractual or other legal rights or are separable.

Goodwill represents the excess of the purchase price of an acquired business over the fair value of the net assets acquired.

The Company allocates goodwill to operating segments that are expected to benefit from the goodwill recognized. At least once a year, the Company assesses qualitative and quantitative factors to determine whether it is more likely than not that the fair value of a reporting unit to which goodwill is attributed is less than its carrying amount. If it is more likely than not that a reporting unit's fair value is less than its carrying amount or if a quantitative assessment is elected, the Company calculates the fair value of the reporting unit. The carrying amount of a reporting unit's goodwill is considered not recoverable if the carrying amount of the reporting unit exceeds its fair value. Any impairment charge represents the excess of the reporting unit's carrying amount over its fair value, to the extent that the impairment charge is limited to the total amount of goodwill allocated to the reporting unit. Goodwill is tested for impairment between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount.

#### **f) Cash, Cash Equivalents, Restricted Cash and Short-Term Investments**

Cash and cash equivalents include cash on deposit and money market securities with a maturity of less than 90 days on the date of purchase. Restricted cash primarily includes amounts set aside pursuant to requirements of various debt and financing agreements. All other money market securities with a maturity on the date of purchase that is greater than 90 days, but less than one year, are recorded as short-term investments and classified as current assets. These securities are valued at the lower of cost and market value.

#### **g) Inventories**

Inventories, consisting of fuel and materials and supplies, are measured at the lower of cost and net realizable value. Cost is determined as weighted average cost for fuel inventory and average cost for materials and supplies.

#### **h) Intangible Assets**

Intangible assets are recorded at cost. Intangible assets that are not considered to have an indefinite life are amortized using an amortization method that reflects the pattern in which their economic benefits are consumed or on a straight-line basis if that pattern is not readily determinable. Amortization of intangible assets is reflected in the depreciation and amortization expenses on the consolidated statement of income. Intangible assets are subject to impairment testing and if impaired, the carrying value is accordingly reduced.

As at December 31, 2018, the amortization periods of intangible assets are as follows:

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Power purchase agreements	2 to 20 years
Operating licenses – Federal Energy Regulatory Commission	10 to 40 years
Major application and computer software	3 to 5 years

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PPA's are amortized on a straight-line basis over the remaining terms of the respective contracts. Operating licenses are amortized on a straight-line basis over the remaining terms of the respective licenses.

#### **i) Property, Plant and Equipment and Depreciation**

PP&E is recorded at cost. Interest costs incurred during construction are capitalized as part of the cost of the asset based on the interest rates on OPG's long-term debt. Expenditures for replacements of major components are

capitalized. Asset removal costs that have not been specifically provided for in current or previous periods are charged to OM&A expenses when incurred. Repairs and maintenance costs are expensed when incurred.

Depreciation rates for the various classes of assets are based on their estimated service lives. PP&E are depreciated on a straight-line basis, except for computers, which are depreciated on a declining balance basis.

As at December 31, 2018, the depreciation periods of PP&E are as follows:

Nuclear generating stations and major components	5 to 74 years <sup>1</sup>
Hydroelectric generating stations and major components	3 to 100 years
Thermal generating stations and major components	5 to 50 years
Administration and service facilities	3 to 60 years
Computers	12% to 40% per year
Service equipment	3 to 10 years

<sup>1</sup> As at December 31, 2018, the end of station life for depreciation purposes for the Darlington, Pickering, Bruce A and Bruce B nuclear generating stations ranged between 2022 and 2061. Major components are depreciated over the lesser of the station life and the life of the components.

The accounting estimates related to end-of-life assumptions for PP&E require significant management judgment, including consideration of various operating, technological and economic factors. OPG reviews the estimated useful lives for its PP&E, including end-of-life assumptions for major generating assets, on a regular basis.

For nuclear generating stations operated by OPG, establishing station end-of-life assumptions primarily involves an assessment of operating lives of major life-limiting components such as fuel channel assemblies, taking into account expectations of future ability to economically operate and, as appropriate, refurbish the station for continued use. Expected operating lives of major life-limiting components are established through technical assessments of their fitness-for-service. Expectations of future ability to operate the station may be affected by operating licence requirements, ability to recover capital, operating and decommissioning costs and government policy, among other factors.

Although there is a link between the age of a hydroelectric facility and the capital investment required to maintain that facility, age does not generally establish an overall upper limit on the expected useful life of a hydroelectric generating station. Regular maintenance and the replacement of specific components typically allow hydroelectric stations to operate for very long periods. An estimated useful life not exceeding 100 years is used by OPG to depreciate dams and other major hydroelectric station structures.

Station end-of-life assumptions for thermal generating stations are established based on operating life expectations of major station components and expectations of future ability to economically operate the station taking into consideration available revenue mechanisms.

## **j) Asset Impairment**

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The review is based on the presence of impairment indicators such as the future economic benefit of the assets and external market conditions. The net carrying amount of assets is considered impaired if it exceeds the sum of the estimated undiscounted cash flows expected to result from the asset's use and eventual disposition. In cases where the sum of the undiscounted expected future cash flows is less than the carrying amount, an impairment loss is recognized. This loss equals the amount by which the carrying amount exceeds the fair value. Fair value is determined using expected discounted cash flows when quoted market prices are not available. The impairment is recognized in income in the period in which it is identified.

The carrying values of investments accounted for under the equity method are reviewed annually for the presence of any indicators of impairment. If an impairment exists and is determined to be other-than-temporary, an impairment charge is recognized. This charge equals the amount by which the carrying value exceeds the investment's fair value.

## **k) Rate Regulated Accounting**

The *Ontario Energy Board Act, 1998* and *Ontario Regulation 53/05* provide that OPG receives regulated prices for electricity generated from 54 hydroelectric generating stations in Ontario and the Pickering and Darlington nuclear generating stations (collectively, prescribed facilities or regulated facilities). OPG's regulated prices for these facilities are determined by the OEB.

The OEB is a self-funding Crown corporation. Its mandate and authority come from the *Ontario Energy Board Act, 1998*, the *Electricity Act, 1998* and a number of other provincial statutes. The OEB is an independent, quasi-judicial tribunal that reports to the Legislature of the Province through the Ontario Ministry of Energy, Northern Development and Mines. It regulates market participants in Ontario's natural gas and electricity industries. The OEB carries out its regulatory functions through public hearings and other more informal processes such as consultations.

US GAAP recognizes that rate regulation can create economic benefits and obligations that are required by the regulator to be obtained from, or settled with, the customers. When the Company assesses that there is sufficient assurance that incurred costs in respect of the regulated facilities will be recovered in the future, those costs are deferred and reported as a regulatory asset. When the Company is required to refund amounts to customers in the future in respect of the regulated facilities, including amounts related to costs that have not been incurred and for which the OEB has provided recovery through regulated prices, the Company records a regulatory liability.

Certain of the regulatory assets and regulatory liabilities recognized by the Company relate to variance and deferral accounts (regulatory accounts) authorized by the OEB, including those authorized pursuant to *Ontario Regulation 53/05*. The measurement of these regulatory assets and regulatory liabilities is subject to certain estimates and assumptions, including assumptions made in the interpretation of *Ontario Regulation 53/05* and the OEB's decisions. The estimates and assumptions made in the interpretation of the regulation and the OEB's decisions are reviewed as part of the OEB's regulatory process.

Regulatory assets and regulatory liabilities for regulatory account balances approved by the OEB for inclusion in regulated prices are amortized based on approved recovery or repayment periods.

In addition to regulatory assets and regulatory liabilities for regulatory accounts, OPG recognizes regulatory assets and regulatory liabilities for unamortized amounts recorded in AOCL in respect of pension and OPEB obligations, deferred income taxes, and, as applicable, differences between interim regulated prices charged to customers during an interim rate period and final regulated prices authorized or to be authorized by the OEB for that period, to reflect the expected recovery or repayment of these amounts through future regulated prices to be charged to customers. There are measurement uncertainties related to these balances due to the assumptions made in the determination of pension and OPEB obligations and deferred income taxes that are attributed to the rate regulated business segments, and assumptions made with respect to final regulated prices to be authorized by the OEB for an interim rate period.

The regulatory asset recognized by the Company for unamortized pension and OPEB amounts recorded in AOCL has reflected the OEB's use, since April 1, 2008, of the accrual basis of accounting for including pension and OPEB amounts in approved regulated prices for OPG. This is also the manner in which these costs are recognized in OPG's consolidated financial statements. Therefore, unamortized amounts in respect of OPG's pension and OPEB plans recognized in AOCL generally would not be reflected in regulated prices until they have been reclassified from AOCL and recognized as amortization components of the benefit costs for these plans. The regulatory asset is reduced as underlying unamortized balances are amortized as components of the benefit cost.

Since November 1, 2014, the OEB has limited amounts for pension and OPEB costs included in the approved revenue requirements and regulated prices to the regulated business portion of the Company's cash expenditures for its pension and OPEB plans. The difference between actual pension and OPEB costs determined using the accrual method applied in OPG's audited consolidated financial statements and OPG's actual cash expenditures for these

plans is captured in the OEB-authorized Pension & OPEB Cash Versus Accrual Differential Deferral Account for future consideration by the OEB.

In 2017, the OEB issued a report outlining the guiding principles and policy for recovery mechanisms of pension and OPEB costs of rate regulated utilities in the Ontario electricity and natural gas sectors. The report 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 OEB's report as well as the OEB's December 2017 decision and March 2018 payment amounts order on OPG's new regulated prices effective June 1, 2017 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 the settlement agreement reached by OPG and intervenors on OPG's August 2018 application to disposition regulatory 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.

It is the Company's position that the OEB's November 2014 and December 2017 decisions on OPG's applications for regulated prices do not constitute a change in the basis of OPG's rate recovery of pension and OPEB costs. Taking into account the basis of those decisions, the OEB's subsequent report that established the accrual basis of accounting as the default method of determining pension and OPEB amounts for rate-setting purposes, and the approvals in the OEB's February 2019 decision and order, the Company continues to believe that there is sufficient likelihood that unamortized pension and OPEB amounts that have not yet been reclassified from AOCL will be included in future regulated prices, or in an OEB-authorized regulatory account for future recovery, as they are recognized in benefit costs. Similarly, the Company continues to believe that there is sufficient likelihood that amounts recorded in the Pension & OPEB Cash Versus Accrual Differential Account subsequent to December 31, 2017, which remain subject to future OEB approval, will be recovered. Therefore, the Company continues to recognize regulatory assets for these balances.

The OEB's decision and order on OPG's August 2018 application and the Pension & OPEB Cash Versus Accrual Differential Deferral Account are discussed further in Note 7.

#### **I) Fixed Asset Removal and Nuclear Waste Management Liabilities**

OPG recognizes AROs for fixed asset removal and nuclear waste management, discounted for the time value of money. OPG estimates both the amount and timing of future cash expenditures based on the plans for fixed asset removal and nuclear waste management. The liabilities are initially recorded at their estimated fair value, which is based on a discounted value of the expected costs to be paid.

On an ongoing basis, the liabilities for nuclear fixed asset removal and nuclear waste management (Nuclear Liabilities) are increased by the present value of the incremental (variable) cost portion for the nuclear waste generated each year, with the corresponding amounts charged to OM&A expenses. Variable expenses relating to low and intermediate level radioactive waste (L&ILW) are charged to OM&A expenses. Variable expenses relating to the management and storage of nuclear used fuel are charged to fuel expense. The liabilities may also be adjusted due to changes in the estimated amount or timing of the underlying future cash flows, with resulting changes in the related asset retirement costs capitalized as part of the carrying amount of the related fixed assets in service. A comprehensive reassessment of all underlying assumptions and baseline cost estimates for the Nuclear Liabilities is performed periodically. Changes in the Nuclear Liabilities resulting from changes in assumptions or estimates that impact the amount or timing of the originally estimated undiscounted future cash flows are recorded as an adjustment to the liabilities. Upward revisions in the Nuclear Liabilities represent the present value of increases in future

undiscounted cash flows determined using a current credit-adjusted risk-free rate. Downward revisions in the Nuclear Liabilities represent the present value of decreases in future undiscounted cash flows determined using the weighted average discount rate reflected in the existing liability. Upon settlement of the liabilities, a gain or loss would be recorded.

Accretion arises because the fixed asset removal and nuclear waste management liabilities are reported on a present value basis. Accretion expense is the increase in the carrying amount of the liabilities due to the passage of time.

The asset retirement cost is capitalized by increasing the carrying value of the related fixed assets in service. The capitalized cost is depreciated over the remaining service life of the related fixed assets and is included in depreciation and amortization expenses.

OPG has no legal obligation associated with the decommissioning of its hydroelectric generating facilities and the costs cannot be reasonably estimated because of the long service life of these assets. With either maintenance efforts or rebuilding, the water control structures are assumed to be used for the foreseeable future. Accordingly, OPG has not recognized a liability for the decommissioning of its hydroelectric generating facilities.

#### **m) Nuclear Fixed Asset Removal and Nuclear Waste Management Funds**

Pursuant to the Ontario Nuclear Funds Agreement (ONFA) between OPG and the Province, OPG has established and sets aside funds in a Used Fuel Segregated Fund and a Decommissioning Segregated Fund (together the Nuclear Segregated Funds). The Used Fuel Segregated Fund is intended to fund expenditures associated with the long-term management of radioactive used nuclear fuel bundles and certain costs of used fuel storage incurred after the nuclear stations are shut down, while the Decommissioning Segregated Fund was established to fund the costs of nuclear fixed asset removal and long-term L&ILW management, and certain costs of used fuel storage incurred after the nuclear stations are shut down. OPG's funding obligations and resulting contributions to the Nuclear Segregated Funds are determined based on periodically updated reference plans approved by the Province under the ONFA. OPG maintains the Nuclear Segregated Funds in third-party custodial and trust accounts that are segregated from the rest of OPG's assets.

OPG's investments in the Nuclear Segregated Funds and the corresponding amounts payable to/receivable from the Province are classified as held-for-trading. The Nuclear Segregated Funds are measured at fair value based on the bid prices of the underlying equity and fixed income securities, and, in the case of the real assets portfolio, using appropriate valuation techniques as outlined in Note 15, with realized and unrealized gains and losses recognized in OPG's consolidated statements of income.

#### **n) Financing Receivables**

OPG's financing receivables consist of the current and irrevocable right of the Fair Hydro Trust to collect payments from specified consumers in the future in accordance with the Fair Hydro Act and associated general regulation. These amounts are measured at the transaction price entered into with the IESO on market terms upon acquisition and subsequently measured on an amortized cost basis. The basis of amortization follows the effective interest method.

#### **o) Derivatives**

All derivatives, including embedded derivatives that must be separately accounted for, generally are classified as held-for-trading and recorded at fair value in the consolidated balance sheets. Transaction costs are expensed as incurred for financial instruments classified or designated as held-for-trading.

Derivatives qualify for hedge accounting if they meet relevant hedging documentation requirements, and if the derivative instrument that is designated as a hedge is expected to effectively hedge the identified risk throughout the life of the hedged item. At the inception of a hedging relationship, OPG documents the relationship between the hedging instrument and the hedged item, its risk management objective and its strategy for undertaking the hedge. A

documented assessment is made, both at the inception of a hedge and on an ongoing basis, of whether or not the derivatives that are used in hedging transactions are highly effective in offsetting the changes attributable to the hedged risks in the fair values or cash flows of the hedged items.

All derivative contracts not designated as hedges are recorded as derivative assets or liabilities at fair value, with changes in the fair value recorded in the consolidated statements of income. Refer to Note 14 for a discussion of OPG's risk exposures and the derivative instruments used to manage these risks.

#### **p) Fair Value Measurements**

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly arm's-length transaction between market participants at the measurement date. Fair value measurements are required to reflect the assumptions that market participants would use in pricing an asset or liability based on the best available information. These assumptions include the risks inherent in a particular valuation technique, such as a pricing model, and the risks inherent in the inputs to the model. OPG uses a fair value hierarchy, grouping assets and liabilities into three levels based on the relative objectivity of the inputs used to measure fair value, with Level 1 representing the most objective. Refer to Note 15 for a discussion of fair value measurements and the fair value hierarchy.

#### **q) Equity Securities**

Equity securities held by OPG are measured at fair value, with gains and losses due to changes in fair value recognized within other gains and losses in the consolidated statements of income. Related transaction costs are expensed as incurred, and dividend income is included in net income in the period in which dividends are declared. Equity securities are initially measured at the transaction price.

#### **r) Foreign Currency Translation**

The functional currency of all of OPG's significant subsidiaries is the Canadian dollar, except for Eagle Creek and its subsidiaries, whose functional currency is the US dollar (USD). The functional currency of the Company's subsidiaries is the currency of the primary economic environment in which they operate.

Transactions in currencies other than the functional currency are translated into the functional currency at the rate of exchange prevailing at the date of the transaction. Monetary assets and monetary liabilities denominated in foreign currencies are retranslated at the functional currency rate of exchange prevailing at the consolidated balance sheet dates. Exchange gains and losses on settlement of transactions and the translation of monetary assets and monetary liabilities are recorded in the consolidated statements of income.

The results and financial position of all of the Company's subsidiaries that have a US dollar functional currency are translated into the presentation currency at the closing rate at the consolidated balance sheet dates for assets and liabilities and at the average exchange rate for the period for items of income and expenses. Unrealized gains or losses arising as a result of the translation of the financial information of these entities are reported as component of OCI and are accumulated in AOCL on the consolidated balance sheets, and are not recorded in net income or retained earnings unless there is a complete or substantially complete sale or liquidation of the investment.

#### **s) Research and Development**

Research and development costs are expensed as incurred. Research and development costs incurred to discharge long-term obligations for which specific provisions have already been made, such as the Nuclear Liabilities, are charged to the related liability.

## **t) Leases**

Leases are evaluated and classified as either operating or capital leases for financial reporting purposes. Capital leases, which transfer substantially all of the risks and benefits incidental to ownership of the leased item, are capitalized at the inception of the lease at the fair value of the leased property or, if lower, at the present value of the minimum lease payments. Capital leases are depreciated over the shorter of the estimated useful life of the asset and the lease term.

Leases where the lessor retains substantially all the risks and benefits incidental to ownership of the asset are classified as operating leases. Operating lease payments, other than contingent rentals, are recognized as an expense in the consolidated statements of income on a straight-line basis over the lease term. Where the amount of rent expense recognized is different from the actual operating lease payment, other than contingent rentals, the difference is deferred and included as assets or liabilities on the consolidated balance sheets.

## **u) Pension and Other Post-Employment Benefits**

OPG's post-employment benefit programs covering most of the regular employees consist of a contributory defined benefit registered pension plan, a defined benefit supplementary pension plan, and other post retirement benefits (OPRB) including group life insurance and health care benefits and long-term disability (LTD) benefits. Eagle Creek sponsors a defined contribution employee savings plan for eligible employees, under a matching contribution formula. Post-employment benefit programs are also provided by the NWMO, which is consolidated into OPG's financial results. Unless otherwise noted, information on the Company's post-employment benefit programs is presented on a consolidated basis.

OPG recognizes the funded status of its defined benefit plans on the consolidated balance sheets. The funded status is measured as the difference between the fair value of plan assets and the benefit obligation, on a plan-by-plan basis.

The obligations for defined benefit pension and OPRB are determined using the projected benefit method pro-rated on service. The obligation for LTD benefits is determined using the projected benefit method on a terminal basis. Defined benefit pension and OPEB obligations are impacted by factors including demographic (e.g. mortality, retirement) and economic (e.g. discount rates, salary levels, inflation and health care cost escalation) assumptions, experience gains or losses, and adjustments arising from plan amendments. Defined benefit pension and OPEB costs and obligations are determined annually by independent actuaries using management's best estimate assumptions.

Assumptions are significant inputs to actuarial models that measure defined benefit pension and OPEB obligations and related effects on operations. Discount rate, inflation rate and changes in salary levels are three key assumptions in the determination of benefit costs and obligations. In addition, the expected long-term rate of return on plan assets is a key assumption in the determination of defined benefit registered pension plan cost and the health care cost trend rate is a key assumption in the determination of OPEB cost and obligations. These assumptions, as well as other assumptions involving demographic factors such as retirement age, mortality and employee turnover, are evaluated periodically by management in consultation with independent actuaries. During the evaluation process, the assumptions are updated to reflect past experience and expectations for the future. Actual results in any given year will often differ from actuarial assumptions because of economic and other factors giving rise to actuarial gains and losses. In accordance with US GAAP, for pension and OPRB, the impact of these updates and differences on the respective benefit obligations is accumulated and amortized over future periods. For LTD benefits, the impact of these updates and differences is immediately recognized as OPEB costs in the period incurred.

The discount rates, which are representative of AA corporate bond yields, are used to calculate the present value of the expected future cash flows on the measurement date in order to determine the projected benefit obligations for the Company's employee benefit plans. A lower discount rate increases the benefit obligations and increases benefit

costs. OPG uses a full yield curve approach to estimate the service and interest cost components of defined benefit pension and OPEB costs, whereby specific spot rates along the yield curve are used in the determination of the projected benefit obligations are applied to the relevant projected cash flows. The expected rate of return on plan assets is based on the pension fund's asset allocation and the expected return considering long-term risks and returns associated with each asset class within the plan portfolio. A lower expected rate of return on plan assets increases pension cost.

Pension fund assets include equity securities, corporate and government debt securities, pooled funds, real estate, infrastructure and other investments. These assets are managed by professional investment managers. The pension fund does not invest in equity or debt securities issued by OPG. Pension fund assets are valued using market-related values for purposes of determining the amortization of actuarial gains or losses and the expected return on plan assets. The market-related value recognizes gains and losses on equity assets relative to a six percent assumed real return over a five-year period.

Defined benefit pension and OPEB costs include current service costs, interest costs on the obligations, the expected return on pension plan assets, recognition of past service costs or credits and recognition of actuarial gains or losses, which result from changes in assumptions and experience gains and losses. Past service costs or credits arising from pension and OPRB plan amendments are amortized on a straight-line basis over the expected average remaining service life to full eligibility of the employees covered by the corresponding plan. Past service costs or credits arising from amendments to LTD benefits are immediately recognized as OPEB costs in the period incurred.

Due to the long-term nature of pension and OPRB liabilities, the excess of the net cumulative unamortized gain or loss, over 10 percent of the greater of the benefit obligation and the market-related value of the plan assets (the corridor), for each plan is amortized over the expected average remaining service life of the employees covered by the plan, which represents the period during which the associated economic benefits are expected to be realized by the Company. Actuarial gains or losses for LTD benefits are immediately recognized as OPEB costs in the period incurred.

Actuarial gains or losses and past service costs or credits arising during the year that are not recognized immediately as components of benefit costs are recognized as increases or decreases in OCI, net of income taxes. These unamortized amounts in AOCL are subsequently reclassified and recognized as components of pension and OPRB costs as described above.

OPG records an offsetting regulatory asset or regulatory liability for the portion of the adjustments to AOCL that is attributable to the regulated operations in order to reflect the expected recovery or refund of these amounts through future regulated prices charged to customers. For the recoverable or refundable portion attributable to regulated operations, OPG records a corresponding change in this regulatory asset or regulatory liability for the amount of the increases or decreases in OCI and for the reclassification of AOCL amounts into benefit costs during the period.

When the recognition of the transfer of employees and employee-related benefits gives rise to both a curtailment and a settlement, the curtailment is accounted for prior to the settlement. A curtailment is the loss by employees of the right to earn future benefits under the plan. A settlement is the discharge of a plan's liability.

#### **v) Income Taxes and Investment Tax Credits**

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 Ontario Electricity Financial Corporation (OEFCC). 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's US subsidiaries related to Eagle Creek operations are subject to US federal and state income taxes under the US *Internal Revenue Code* and state income tax codes. These subsidiaries file tax returns and pay taxes in the applicable jurisdictions as required under these codes.

OPG's operations are complex and the computation of the provision for income taxes involves interpretation of the various tax statutes and regulations. OPG has taken certain filing positions in calculating the amount of its income tax provision. These filing positions may be challenged on audit, including by the Ontario Ministry of Finance, and some of them possibly disallowed, resulting in a potential significant change in OPG's tax provision upon reassessment. A change in the tax provision upon reassessment impacting regulated operations may be recoverable from or refundable to customers through the Income and Other Taxes Variance Account and the SR&ED ITC Variance Account authorized by the OEB.

OPG follows the liability method of accounting for income taxes. Under the liability method, deferred income tax assets and liabilities are determined based on differences between the accounting and tax bases of assets and liabilities. Deferred amounts are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The effect of a change in tax rates on deferred income tax assets and liabilities is included in income in the period the change is enacted.

If management determines that it is more likely than not that some, or all, of a deferred income tax asset will not be realized, a valuation allowance is recorded to report the balance at the amount expected to be realized.

OPG recognizes deferred income taxes associated with its regulated operations and records an offsetting regulatory asset or liability for the deferred income taxes that are expected to be recovered or refunded through future regulated prices charged to customers.

Tax benefits associated with income tax positions taken, or expected to be taken, in a tax return and investment tax credits are recorded only when the more likely than not recognition threshold is satisfied. Tax benefits and investment tax credits recognized are measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon settlement.

Investment tax credits are recorded as a reduction to income tax expense. OPG classifies interest and penalties associated with unrecognized income tax benefits as income tax expense.

The income tax impact of any intra-entity transfers of non-inventory assets is recognized upon the occurrence of the transfer.

## **w) Recent Accounting Pronouncements Not Yet Adopted**

### **i) Lease Accounting**

In February 2016, the FASB issued ASU No. 2016-02, *Leases* (Topic 842) to replace existing lease accounting guidance under *Leases* (Topic 840). The update includes comprehensive changes to existing guidance, particularly for lessees, and aims to increase transparency and comparability among organizations by requiring the recognition of right-of-use assets under leasing arrangements and lease liabilities on the balance sheet. The standard is effective for annual periods beginning after December 15, 2018, including interim periods within that year.

Under the guidance related to the new leasing standard, entities are required to use a modified retrospective approach for leases that exist, or are entered into, after the beginning of the earliest comparative period presented in the financial statements of the period of adoption. Under this method, Topic 842 would effectively be implemented by recognizing any adjustments stemming from the transition as of the beginning of the earliest comparative period presented in the entity's financial statements. Full retrospective application is prohibited. In July 2018, the FASB issued ASU No. 2018-11, *Leases* (Topic 842) – *Targeted Improvements* wherein entities can utilize an additional optional transition method to apply the new lease accounting standard at the effective date of January 1, 2019. The

cumulative impact from adopting the new standard would be recognized as an adjustment to opening balances in the initial period of adoption, with comparative periods continuing to be presented in accordance with Topic 840, including disclosures. The Company will apply this transition method in the implementation of Topic 842.

The FASB also issued ASU No. 2018-01, *Land Easement Practical Expedient for Transition to Topic 842* in January 2018. The amendments therein allow an entity to choose not to evaluate under Topic 842 land easements that exist or have expired before the entity's adoption of the new leasing standard and that were not previously accounted for as leases under Topic 840. The Company will apply this practical expedient in the implementation of Topic 842.

OPG will also adopt the package of practical expedients as part of implementing Topic 842, wherein the Company is not required to reassess whether existing or expired contracts contain leases, the lease classification therein and the current accounting treatment of any related initial direct costs. Additionally, the Company will combine the lease and non-lease components in all leasing arrangements and account for them as a single lease cost, regardless of whether OPG is the lessee or the lessor in the contract, permitted as a practical expedient in implementing the transition guidance within Topic 842. Finally, OPG will also adopt the short-term lease exception, with no lease liability or right-of-use asset recognized for arrangements with a term of 12 months or less, provided they contain no option to purchase the underlying asset that the Company, as the lessee, is reasonably certain not to exercise.

The Company has implemented a comprehensive project governance framework to oversee the transition to the new leasing guidance, comprised of a Steering Committee, Implementation and Stakeholder Committee, Project Management Office and various working groups in order to evaluate and implement the new standard. The working groups are represented by cross-functional finance and non-finance stakeholders, who are supporting the financial and operational implementation of the standard. Management has performed procedures to determine the completeness of leasing arrangements entered into by the Company and has substantially completed the quantification of the expected impact of adopting the new standard effective January 1, 2019. Management continues to assess the effect of its acquisition of Eagle Creek on the transition to Topic 842 but has substantially quantified the estimated impact from the leasing arrangements therein. Inclusive of Eagle Creek, the Company anticipates recording total lease liabilities and right-of-use assets ranging from approximately \$80 million to \$110 million as part of its transition to Topic 842, with no expected adjustment required to opening retained earnings.

OPG will apply the new lease standard in its 2019 first quarter interim consolidated financial statements and is in the process of evaluating the additional disclosures required under the new standard.

#### ii) Changes to Disclosure Requirements for Defined Benefit Plans

In August 2018, the FASB issued ASU No. 2018-14, *Compensation – Retirement Benefits – Defined Benefit Plans – General (Subtopic 715-20): Disclosure Framework – Changes to the Disclosure Requirements for Defined Benefit Plans* as part of its ongoing efforts to improve the effectiveness of disclosures in notes to financial statements for stakeholders. As part of this update, entities will be required to include additional disclosures such as narrative descriptions of the reasons for significant gains and losses related to changes in the benefit obligations for the period. The update also removed guidance that currently requires disclosures on the amounts in AOCL expected to be recognized as components of net periodic benefit cost over the next fiscal year, and for public entities, the effects of a one percent change in assumed health care trend rates on the net periodic benefit costs and benefit obligation for OPEB. Changes instituted by this update are effective retrospectively for all periods presented for fiscal years ending after December 15, 2020 with early adoption permitted. OPG is in the process of evaluating the impact from this update on the Company's disclosures for its post-employment benefit programs.

#### iii) Changes to Disclosure Requirements for Fair Value Measurement

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework – Changes to Disclosure Requirements for Fair Value Measurement* to continue to improve the effectiveness of disclosures in financial statements for users. Under the new guidance prescribed in this update, entities must disclose

additional information regarding Level 3 fair value measurements held at the end of the reporting period. This amendment also clarified existing guidance around measurement uncertainty and investments in entities that calculate net asset value (NAV). This update is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019 with early adoption permitted. Additional disclosures stemming from this update will be applied prospectively. OPG is assessing its current fair value measurements to determine the impact from the changes in this update.

#### 4. ACQUISITION OF EAGLE CREEK RENEWABLE ENERGY, LLC

On November 27, 2018, OPG acquired 100 percent ownership interest of Eagle Creek Renewable Energy, LLC for a total cash purchase price of approximately US\$298 million (C\$386 million), subject to customary working capital and other adjustments. Transaction costs related to the acquisition were expensed in the consolidated statements of income in 2018.

Eagle Creek is a hydropower platform with interests in 76 hydroelectric facilities and two solar facilities throughout the US. The majority of facilities within Eagle Creek's fleet operate in the New England, Midwest and New York power market areas. The acquisition of Eagle Creek represents an opportunity to expand OPG's renewable generation portfolio to new geographies, with additional clean energy generation aligning to OPG's strategic imperatives. Eagle Creek generates revenue from supplying electricity under long-term energy and capacity supply contracts and by offering energy and capacity into wholesale spot electricity markets.

The preliminary purchase price allocation of the Eagle Creek acquisition is estimated as follows, using the exchange rate on the acquisition date of \$1.00 USD = \$1.3289 CAD:

*(millions of Canadian dollars)*

Current assets	<b>39</b>
Property, plant and equipment	<b>500</b>
Intangible assets	<b>109</b>
Goodwill	<b>104</b>
Other long-term assets	<b>36</b>
<b>Total assets</b>	<b>788</b>
Current liabilities	<b>92</b>
Long-term debt	<b>284</b>
Deferred tax liability	<b>23</b>
Other long-term liabilities	<b>3</b>
<b>Total liabilities</b>	<b>402</b>
<b>Total purchase price</b>	<b>386</b>
Cash acquired with Eagle Creek	<b>(28)</b>
<b>Total purchase price, net of cash acquired</b>	<b>358</b>

The determination of the fair value of assets acquired and liabilities assumed is based upon management's preliminary estimates and assumptions and reflects the fair value of consideration paid, which is subject to customary working capital and other adjustments. The parties to the acquisition are in the process of finalizing the working capital adjustments. The Company will continue to review information and perform further analysis prior to finalizing the fair value of the assets acquired and the liabilities assumed within the permitted period of 12 months from the date of acquisition in accordance with US GAAP, including finalizing the componentization of fair value measurements to the individual assets acquired within PP&E.

Goodwill represents the excess of the purchase price over the aggregate fair value of net assets acquired. Contributing factors to the amount recorded as goodwill include synergies to be realized from a complementary hydroelectric generation fleet, the potential of using Eagle Creek as a vehicle for future growth of the business in the US, geographic diversification of operations, and access to an experienced senior management team. Goodwill recognized as a result of the acquisition is reported within the Contracted and Other Generation segment.

For the year ended December 31, 2018, \$7 million of revenue and nil net income from Eagle Creek are included in OPG's consolidated statements of income. The table below presents the consolidated pro forma revenue and net income for the years ended December 31, 2018 and 2017, assuming the acquisition of Eagle Creek had occurred and had been financed on January 1, 2017. Pro forma net income includes the impact of fair value adjustments arising from the preliminary purchase price allocation above and adjustments necessary to reflect financing costs as if the acquisition had been financed on January 1, 2017. Non-recurring acquisition-related expenses are excluded from pro-forma net income.

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>5,595</b>	5,207
Net income attributable to the Shareholder	<b>1,163</b>	845

This pro forma information does not purport to represent what the actual results of operations of the Company would have been had the acquisition occurred on January 1, 2017, nor does it purport to predict the results of operations for future periods.

## **5. CASH, CASH EQUIVALENTS AND RESTRICTED CASH**

Cash, cash equivalents and restricted cash as at December 31 consist of the following:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Cash and cash equivalents	<b>196</b>	230
Restricted cash	<b>117</b>	4
Total cash, cash equivalents and restricted cash	<b>313</b>	234

Proceeds from OPG's green bond issuances are restricted in purpose and are to be used solely to finance eligible investments that offer tangible environmental benefits, as defined in OPG's Green Bond Framework. The net proceeds from the first green bond issuance of \$450 million in June 2018 are to be used to finance eligible hydroelectric projects and are held in a segregated account. During 2018, approximately \$363 million was released from the segregated account, representing funds invested in eligible hydroelectric projects from the second half of 2016 to the third quarter of 2018. In February 2019, \$36 million was released from the segregated account, representing funds invested in eligible hydroelectric projects in the fourth quarter of 2018. As of December 31, 2018, the restricted cash balance related to the green bond issuance is \$84 million (December 31, 2017 – nil). Further details on the green bond issuance can be found in Note 8.

Certain cash accounts held within Eagle Creek are restricted for prescribed purposes, including debt service, insurance, and general collateral purposes in accordance with applicable contractual arrangements. As of December 31, 2018, the restricted cash balance held within Eagle Creek is \$17 million.

Cash on deposit held by the Trust is subject to contractual restrictions of the Trust's Master Trust Indenture. All of the Trust's bank accounts are under the name and exclusive control of its indenture trustee. Amounts on deposit are restricted in purpose and the distribution of use is subject to the order of payment priority outlined in the Trust's Master Trust Indenture. As of December 31, 2018, the restricted cash balance related to the Trust is \$16 million (December 31, 2017 – \$4 million).

## 6. PROPERTY, PLANT AND EQUIPMENT, INTANGIBLE ASSETS AND DEPRECIATION AND AMORTIZATION

PP&E as at December 31 consist of the following:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Nuclear generating stations	<b>12,437</b>	11,985
Regulated hydroelectric generating stations	<b>9,702</b>	9,566
Contracted and other generating stations	<b>4,527</b>	3,935
Other property, plant and equipment	<b>355</b>	372
Construction in progress	<b>5,188</b>	4,092
	<b>32,209</b>	29,950
Less: accumulated depreciation		
Generating stations	<b>9,069</b>	8,480
Other property, plant and equipment	<b>153</b>	148
	<b>9,222</b>	8,628
	<b>22,987</b>	21,322

Construction in progress as at December 31 consists of the following:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Darlington Refurbishment	<b>4,552</b>	3,507
Other	<b>636</b>	585
	<b>5,188</b>	4,092

Interest capitalized to construction in progress during 2018 was \$191 million (2017 – \$162 million), at an average rate of five percent (2017 – five percent).

Intangible assets as at December 31 consist of the following:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Nuclear generating stations	<b>28</b>	122
Regulated hydroelectric generating stations	<b>7</b>	6
Contracted and other generating stations	<b>119</b>	5
Computer software and other intangible assets	<b>263</b>	393
Development in progress	<b>50</b>	39
	<b>467</b>	565
Less: accumulated amortization		
Generating stations	<b>28</b>	123
Computer software and other intangible assets	<b>183</b>	309
	<b>211</b>	432
	<b>256</b>	133

Depreciation and amortization expenses, including amounts recognized in regulatory accounts authorized by the OEB, for the years ended December 31 consist of the following:

<i>(millions of dollars)</i>	2018	2017
Depreciation	617	649
Amortization of intangible assets	35	30
Amounts recognized in regulatory and deferral variance accounts	86	-
Amortization of regulatory assets and regulatory liabilities (Note 7)	46	-
	<b>784</b>	679

## 7. REGULATORY ASSETS AND REGULATORY LIABILITIES

The regulatory assets and regulatory liabilities recorded as at December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Regulatory assets		
<i>Variance and deferral accounts authorized by the OEB</i>		
Pension & OPEB Cash Versus Accrual Differential Deferral Account	783	614
Pension and OPEB Cost Variance Account	673	716
Hydroelectric Surplus Baseload Generation Variance Account	449	360
Bruce Lease Net Revenues Variance Account	141	121
Other variance and deferral accounts	118	124
	<b>2,164</b>	1,935
Interim Period Revenue Shortfall	519	544
Pension and OPEB Regulatory Asset (Note 13)	3,514	3,855
Deferred Income Taxes	1,062	897
Total regulatory assets	<b>7,259</b>	7,231
Less: current portion	490	-
Non-current regulatory assets	<b>6,769</b>	7,231
Regulatory liabilities		
<i>Variance and deferral accounts authorized by the OEB</i>		
Pension & OPEB Cash Payment Variance Account	220	140
Hydroelectric Water Conditions Variance Account	191	150
Impact Resulting from Changes to Pickering Station End-of-Life Dates (December 31, 2017) Deferral Account	124	-
Changes in Station End-of-Life Dates (December 31, 2015) Deferral Account	103	103
Other variance and deferral accounts	160	201
Total regulatory liabilities	<b>798</b>	594
Less: current portion	36	-
Non-current regulatory liabilities	<b>762</b>	594

Through its March 2017 approval of a partial settlement agreement reached by OPG and intervenors on a limited set of issues in OPG's May 2016 application for new regulated prices for the 2017-2021 period and its December 2017 decision and March 2018 payment amounts order on the application, the OEB approved OPG's request to recover an amount totalling \$305 million related to previously recorded variance and deferral account balances, without adjustments. With the exception of the Pension & OPEB Cash Versus Accrual Differential Deferral Account and the Pension and OPEB Cost Variance Account, the approved amount of \$305 million provided for the recovery of the December 31, 2015 balances in all of the Company's regulatory accounts, less amounts previously approved for recovery or repayment for these accounts in 2016, over a 34-month period from March 1, 2018 to December 31,

2020. The recovery of the Pension & OPEB Cash Versus Accrual Differential Deferral Account was not considered in the May 2016 application. The recovery of the Pension and OPEB Cost Variance Account included in the \$305 million approved amount was based on recovery periods as previously authorized by the OEB, being recovery of 10/12 of the account balance as at December 31, 2012 over a 144-month period to December 31, 2024 and recovery of amounts recorded in the account in 2013 and 2014 over a 72-month period to June 30, 2021.

The March 2018 payment amounts order authorized OPG to collect 15 percent of the \$305 million amount between March 1, 2018 and December 31, 2018, 50 percent between January 1, 2019 and December 31, 2019 and 35 percent between January 1, 2020 and December 31, 2020, through rate riders on nuclear and regulated hydroelectric production. Any shortfall or over-recovery of the approved balance due to differences between actual and forecast production is recorded in the Nuclear Deferral and Variance Over/Under Recovery Variance Account and the Hydroelectric Deferral and Variance Over/Under Recovery Variance Account authorized by the OEB.

Amortization of regulatory assets and regulatory liabilities for regulatory account balances approved for disposition in the OEB's March 2018 payment amounts order is recorded on a straight-line basis, effective March 1, 2018, based on the portion of the balances authorized to be collected during the applicable period. During the period January 1, 2017 to February 28, 2018, OPG did not recover or repay any variance and deferral account balances and did not record any amortization related to regulatory assets and regulatory liabilities for these accounts.

The OEB's approval of the partial settlement agreement on OPG's May 2016 application and the OEB's December 2017 decision and March 2018 payment amounts order provided for the continuation of all applicable previously existing variance and deferral accounts effective June 1, 2017. For the period from June 1, 2017 to December 31, 2018, OPG recognized regulatory assets and regulatory liabilities for additions recorded in the regulatory accounts consistent with these decisions and order, relative to amounts reflected in the regulated prices in effect since June 1, 2017. For the period from January 1, 2017 to May 31, 2017, OPG recognized regulatory assets and regulatory liabilities for additions recorded in the regulatory accounts consistent with the OEB's previous decision and orders, relative to amounts reflected in regulated prices in effect prior to June 1, 2017.

Where authorized by the OEB, OPG recorded interest on unamortized balances in the regulatory accounts at the OEB-prescribed interest rate ranging from 1.50 to 2.17 percent per annum during the year ended December 31, 2018 (year ended December 31, 2017 – 1.10 to 1.50 percent per annum).

In August 2018, consistent with the OEB's December 2017 decision, OPG filed an application with the OEB requesting disposition of the Pension & OPEB Cash Versus 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. On February 21, 2019, the OEB issued a decision and order that approved a 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 \$1,322 million recorded in these accounts and \$204 million in associated income tax impacts, without adjustments. These income tax impacts were previously recorded as part of the regulatory asset for deferred income taxes.

The approvals in the OEB's February 2019 decision and order include:

- Recovery of \$307 million in the Pension & OPEB Cash Versus Accrual Differential Deferral Account related to post-employment benefit plan costs other than the registered pension plan and \$102 million in associated income tax impacts over six years from January 1, 2019 to December 31, 2024;
- Recovery of \$433 million in the Pension and OPEB Cost Variance Account over periods to December 31, 2024 as previously authorized by the OEB, which are set out above;
- Recovery of \$168 million in the Bruce Lease Net Revenues Variance Account over eight years from January 1, 2019 to December 31, 2026;

- Recovery of \$307 million in the Pension & OPEB Cash Versus Accrual Differential Deferral Account related to registered pension plan costs and \$102 million in associated income tax impacts, which has been deferred to OPG's next application for regulated prices; and
- Recovery of other regulatory account balances over three years from January 1, 2019 to December 31, 2021.

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 changes in the regulatory assets and liabilities during 2018 and 2017 are as follows:

	Pension & OPEB Cash Versus Accrual Differential	Pension and OPEB Cost Variance	Hydro-electric Surplus Baseload Generation Variance	Bruce Lease Revenues Variance	Pension & OPEB Cash Payment Variance	Hydro-electric Water Conditions Variance	Changes to Station End-of-Life Dates Deferral	Changes in Station End-of-Life Dates Deferral	Other Variance and Deferral (net)	Interim Period Revenue Shortfall	Pension and OPEB Regulatory Asset	Deferred Income Taxes	Total
Net regulatory assets (liabilities) January 1, 2017	497	716	210	95	(58)	(51)	-	(71)	(23)	-	3,392	838	5,545
Increase (decrease) Interest	117	-	146	25	(81)	(98)	-	(32)	(52)	544	463	59	1,091
	-	-	4	1	(1)	(1)	-	-	(2)	-	-	-	1
Net regulatory assets (liabilities) December 31, 2017	614	716	360	121	(140)	(150)	-	(103)	(77)	544	3,855	897	6,637
Increase (decrease) Interest	169	-	94	12	(73)	(40)	(124)	-	30	(25)	(341)	165	(133)
Amortization	-	-	7	1	(3)	(3)	-	-	1	-	-	-	3
	-	(43)	(12)	7	(4)	2	-	-	4	-	-	-	(46)
Net regulatory assets (liabilities) December 31, 2018	783	673	449	141	(220)	(191)	(124)	(103)	(42)	519	3,514	1,062	6,461

### **Pension & OPEB Cash Versus Accrual Differential Deferral Account**

The Pension & OPEB Cash Versus Accrual Differential Deferral Account was originally established by the OEB's November 2014 decision and December 2014 order and was continued by the OEB's decisions in 2017. 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 under US GAAP and OPG's corresponding actual cash expenditures for these plans. The balance in the account as at December 31, 2018 represents the excess of costs calculated using the accrual basis over the cash basis for the period from November 1, 2014 to December 31, 2018. As discussed in Note 3, the Company has recognized the amount set aside in the deferral account as a regulatory asset.

In accordance with US GAAP requirements, OPG recognizes a regulatory asset for the OPRB portion of deferred costs recorded in the Pension & OPEB Cash Versus Accrual Differential Deferral Account to the extent that the recovery of these costs commences within five years and is completed in full within 20 years of the period in which the costs were incurred, provided that the pattern of recovery within these constraints does not result in rate increases for a future year that is higher than the previous year. Taking into account approvals for recovery of the December 31, 2017 balance in the Pension & OPEB Cash Versus Accrual Differential Deferral Account per the OEB's February 2019 decision and order, OPG continues to satisfy the above requirements for continued recognition of the regulatory asset for the OPRB portion of deferred costs.

### **Pension and OPEB Cost Variance Account**

As authorized by the OEB, for the period from March 1, 2011 to October 30, 2014, the Pension and OPEB Cost Variance Account recorded the differences between OPG's actual pension and OPEB costs for the regulated business determined on an accrual basis and related tax impacts, and corresponding forecast amounts reflected in the regulated prices then in effect. Based on its November 2014 and December 2017 decisions that determined that the pension and OPEB amounts reflected in OPG's regulated prices established by those decisions effective November 1, 2014 and June 1, 2017, respectively, would be limited to the Company's estimated minimum contributions to its registered pension plan and a forecast of expenditures on the OPEB and supplementary pension plans for the regulated business, the OEB ordered the Pension and OPEB Cost Variance Account to record only amortization since November 1, 2014, as applicable.

### **Hydroelectric Surplus Baseload Generation Variance Account**

The Hydroelectric Surplus Baseload Generation Variance Account records the impact of forgone production at OPG's regulated hydroelectric facilities due to surplus baseload generation conditions.

### **Bruce Lease Net Revenues Variance Account**

In accordance with *Ontario Regulation 53/05*, the OEB is required to include the difference between OPG's revenues and costs associated with the two nuclear generating stations on lease to Bruce Power in the determination of the regulated prices for production from OPG's regulated nuclear facilities. Based on *Ontario Regulation 53/05* requirements, the OEB has established a variance account that captures differences between OPG's actual revenues and costs related to these stations and the corresponding forecasts included in approved nuclear regulated prices, including the costs associated with OPG's Nuclear Liabilities and the earnings from the portion of the Nuclear Segregated Funds related to the Bruce nuclear generating stations.

The OEB had previously ordered the portion of the balance in the Bruce Lease Net Revenues Variance Account related to the impact of the derivative liability then embedded in the terms of the lease agreement between OPG and Bruce Power related to the Bruce nuclear generating stations (Bruce Lease) to be recovered on the basis of OPG's expected rent rebate payments to Bruce Power and associated income tax impacts. In December 2015, as a result of amendments to the Bruce Lease, OPG reversed the derivative liability, with a corresponding reduction to the regulatory asset for the Bruce Lease Net Revenues Variance Account. Amounts OPG collected from customers for

the derivative liability for December 2015 and the year 2016, which were authorized by the OEB prior to the amendments to the Bruce Lease, have been recognized as a regulatory liability as part of the variance account balance and were approved for disposition as part of the OEB's 2017 decisions and March 2018 payment amounts order.

### **Interim Period Revenue Shortfall and Rate Smoothing Deferral Account**

The Interim Period Revenue Shortfall regulatory asset as at December 31, 2018 reflects the uncollected portion of the revenue shortfall arising from the difference between previously approved regulated prices that continued to be charged to customers for OPG's nuclear and regulated hydroelectric generation for the June 1, 2017 to February 28, 2018 interim period and the new regulated prices authorized by the OEB's December 2017 decision and March 2018 payment amounts order effective June 1, 2017. The payment amounts order authorized separate rate riders on nuclear and regulated hydroelectric production for the collection of the interim period revenue shortfall over the period March 1, 2018 to December 31, 2020, with 15 percent of the balance to be recovered between March 1, 2018 and December 31, 2018, 50 percent between January 1, 2019 and December 31, 2019, and 35 percent between January 1, 2020 and December 31, 2020. The Interim Period Revenue Shortfall regulatory asset is reduced as these riders are collected.

OPG initially recognized the Interim Period Revenue Shortfall regulatory asset and a corresponding increase to revenue in the fourth quarter of 2017 to reflect management's best estimate of the impact of new regulated prices for the June 1, 2017 to December 31, 2017 period based on the OEB's December 2017 decision, being the regulated prices proposed by OPG in its January 2018 submission of the draft payment amounts order to the OEB. OPG also recognized a regulatory liability and a corresponding reduction in revenue for the Rate Smoothing Deferral Account in the fourth quarter of 2017, to reflect management's best estimate of the impact of rate smoothing for 2017, based on the draft payment amounts order.

The nuclear base regulated prices and amounts to be deferred in the Rate Smoothing Deferral Account approved in the final payment amounts order issued in March 2018 represented an adjustment to OPG's proposal in the draft payment amounts. To reflect this adjustment, in the first quarter of 2018, the Company recorded a reduction of \$67 million in the Interim Period Revenue Shortfall regulatory asset and a reduction of the \$63 million regulatory liability for the Rate Smoothing Deferral Account. The March 2018 payment amounts order set a rate smoothing approach and resulting nuclear base regulated prices such that no amounts are to be deferred in the Rate Smoothing Deferral Account for 2017, 2018 and 2021. Pursuant to the payment amounts order, approximately \$500 million is to be deferred for future collection in the Rate Smoothing Deferral Account over the 2019-2020 period.

The Rate Smoothing Deferral Account was established by the OEB's December 2017 decision and March 2018 payment amounts order pursuant to *Ontario Regulation 53/05* to record a portion of the annual OEB-approved revenue requirement for OPG's nuclear facilities during the period from January 1, 2017 to the end of the Darlington Refurbishment project. *Ontario Regulation 53/05* requires this deferred portion to be determined in a manner that makes changes in OPG's overall production-weighted regulated price more stable year over year. The regulation requires the OEB to determine the deferred portion on a five-year basis for the ten-year period beginning on January 1, 2017. 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 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 or negative amounts deferred under rate smoothing and recorded in the Rate Smoothing Deferral Account as an increase or decrease in the regulatory asset for the deferral account and an increase or decrease in revenue in the period to which the underlying approved revenue requirement relates, respectively. As at December 31, 2018, the balance in the Rate Smoothing Deferral Account is nil.

### **Pension and OPEB Regulatory Asset**

The Pension and OPEB Regulatory Asset represents unamortized amounts in respect of OPG's pension and OPEB plans that have been recognized in OCI and not yet reclassified into the amortization component of the benefit costs in respect of these plans. These amounts are expected to be recovered from customers through future regulated prices. The regulatory asset is reduced as underlying unamortized balances are amortized as components of benefit costs. For further details, refer to Note 3 under the heading, *Rate Regulated Accounting*. The AOCL amounts related to pension and OPEB plans are presented in Note 13.

### **Deferred Income Taxes**

OPG is required to record a regulatory asset or regulatory liability for the deferred income taxes that are expected to be recovered or refunded through future regulated prices charged to customers for generation from OPG's regulated facilities. In addition, OPG is required to recognize a deferred income tax liability or asset for the regulatory asset or regulatory liability for the amount of deferred income taxes expected to be included in future regulated prices and recovered from, or paid to customers. Income taxes are discussed in Note 11.

### **Pension & OPEB Cash Payment Variance Account**

The Pension & OPEB Cash Payment Variance Account records the difference between OPG's actual contributions to its registered pension plan and expenditures on its OPEB and supplementary pension plan plans for the regulated business, and such forecast amounts reflected in the regulated prices.

### **Hydroelectric Water Conditions Variance Account**

The Hydroelectric Water Conditions Variance Account captures the impact of differences in regulated hydroelectric electricity production due to differences between forecast water conditions underlying the production forecast approved by the OEB in setting regulated hydroelectric prices, and the actual water conditions.

### **Impact Resulting from Changes to Pickering Station End-of-Life Dates Deferral Account**

The Impact Resulting from Changes to Pickering Station End-of-Life Dates (December 31, 2017) Deferral Account was established by the OEB effective January 1, 2018 in response to an application by OPG for an accounting order to establish a new deferral account to record the revenue requirement impact on the Pickering and Darlington nuclear generating stations of changes to the Nuclear Liabilities and depreciation expense arising from the extension in the estimated useful lives of the Pickering nuclear GS (Pickering GS), for accounting purposes, effective December 31, 2017. These impacts were not reflected in the regulated prices effective June 1, 2017. The deferral account will record these impacts until such time as new regulated prices reflecting the impacts of these changes in Nuclear Liabilities and depreciation expense take effect.

### **Impact Resulting from Changes in Station End-of-Life Dates Deferral Account**

The Impact Resulting from Changes in Station End-of-Life Dates (December 31, 2015) Deferral Account was established by the OEB effective January 1, 2016 in response to an application by OPG for an accounting order to establish a new deferral account to record the revenue requirement impact on the Pickering and Darlington nuclear generating stations of changes to the Nuclear Liabilities and depreciation expense arising from extensions in the estimated useful lives of OPG's nuclear stations, for accounting purposes, effective December 31, 2015. These impacts were not reflected in the regulated prices in effect prior to June 1, 2017. The deferral account recorded these impacts until the effective date of June 1, 2017 for the regulated prices established by the OEB's December 2017 decision and March 2018 payment amounts order that reflect the impacts of these changes in Nuclear Liabilities and depreciation expense.

## **Other Variance and Deferral Accounts**

### *Regulatory assets*

As at December 31, 2018 and 2017, regulatory assets for other variance and deferral accounts included amounts for the Nuclear Liability Deferral Account, the Nuclear Deferral and Variance Over/Under Recovery Variance Account, the Hydroelectric Deferral and Variance Over/Under Recovery Variance Account, the Nuclear Development Variance Account, the Fitness for Duty Deferral Account, and the Niagara Tunnel Project Pre-December 2008 Disallowance Variance Account.

Pursuant to *Ontario Regulation 53/05*, the OEB has authorized the Nuclear Liability Deferral Account in connection with changes to OPG's liabilities for nuclear used fuel management and nuclear decommissioning and L&ILW management associated with the Pickering and Darlington nuclear generating stations. The deferral account records the revenue requirement impact associated with the changes in these liabilities arising from an approved reference plan, in accordance with the terms of the ONFA.

Pursuant to *Ontario Regulation 53/05*, the OEB has authorized the Nuclear Development Variance Account to record variances between the actual non-capital costs incurred and firm financial commitments made in the course of planning and preparation for the development of proposed new nuclear generation facilities and the corresponding forecasts reflected in the regulated prices approved by the OEB.

The Niagara Tunnel Project Pre-December 2008 Disallowance Variance Account was established pursuant to the OEB's January 2016 decision on OPG's motion that requested the OEB to review and vary parts of its November 2014 decision that established regulated prices in effect prior to June 1, 2017, including the disallowed Niagara Tunnel project capital costs. The variance account captures the revenue requirement impact of the portion of the original disallowance reversed by the OEB's January 2016 decision.

The Fitness for Duty Deferral Account is effective June 1, 2017 and records OPG's costs related to implementing the Canadian Nuclear Safety Commission's (CNSC) new fitness for duty requirements.

### *Regulatory liabilities*

As at December 31, 2018 and 2017, regulatory liabilities for Other variance and deferral accounts included amounts for the Ancillary Services Net Revenue Variance Account, the Income and Other Taxes Variance Account, the Hydroelectric Incentive Mechanism Variance Account, the SR&ED ITC Variance Account and the Capacity Refurbishment Variance Account. As at December 31, 2017, regulatory liabilities for Other variance and deferral accounts also included amounts for the Rate Smoothing Deferral Account, which were reduced in the first quarter of 2018 based on the OEB's March 2018 payment amount order.

The Ancillary Services Net Revenue Variance Account has been authorized by the OEB to capture differences between actual nuclear and regulated hydroelectric ancillary services net revenue and the forecast amounts of such revenue approved by the OEB in setting regulated prices.

The Income and Other Taxes Variance Account includes deviations in income taxes for the regulated business, from those approved by the OEB in setting regulated prices, caused by changes in tax rates and rules, as well as reassessments.

The Hydroelectric Incentive Mechanism Variance Account records a credit to customers equal to 50 percent of OPG's hydroelectric incentive mechanism revenues above a specified threshold for the regulated hydroelectric facilities.

The SR&ED ITC Variance Account records the income tax expense impact for the nuclear facilities as a result of differences between actual Scientific Research & Experimental Development investment tax credits earned by OPG and such forecast amounts reflected in the regulated prices effective June 1, 2017.

Pursuant to *Ontario Regulation 53/05*, the OEB has authorized the Capacity Refurbishment Variance Account to capture variances from the forecasts reflected in the regulated prices for capital and non-capital costs incurred to increase the output of, refurbish or add operating capacity to one or more of the regulated facilities. The balance in the account as at December 31, 2018 includes cost variances related to the refurbishment of the Darlington nuclear GS (Darlington GS), life extension initiatives at the Pickering GS and other projects.

## 8. LONG-TERM DEBT AND NET INTEREST EXPENSE

Long-term debt consists of the following as at December 31:

<i>(millions of dollars)</i>	2018	2017
Notes payable to the OEFC <sup>1</sup>		
Senior Notes		
bear interest at rates ranging from 2.96% to 6.18%; maturity dates ranging from 2019 to 2048	3,400	3,195
Medium Term Note Program <sup>1</sup>		
Senior Notes		
3.32% due 2027	500	500
3.84% due 2048	450	-
UMH Energy Partnership <sup>2</sup>		
Senior Notes		
7.59% due 2041	178	181
PSS Generating Station Limited Partnership <sup>3</sup>		
Senior Notes		
4.80% due 2067	245	245
Lower Mattagami Energy Limited Partnership <sup>4</sup>		
Senior Notes		
bear interest at rates ranging from 2.31% to 5.14%; maturity dates ranging from 2021 to 2052	1,595	1,595
Fair Hydro Trust <sup>5</sup>		
Warehouse Facility Senior Notes		
2.74% due 2019	-	601
Long-term Senior Notes		
3.36% due 2033	500	-
3.52% due 2038	400	-
Eagle Creek <sup>6</sup>		
Senior Notes		
bear interest at rates ranging from 3.98% to 4.81%; maturity dates ranging from 2025 to 2030	323	-
Other	21	19
	<b>7,612</b>	<b>6,336</b>
Less: fair value discount	(31)	-
Less: bond issuance fees	(25)	(17)
Less: due within one year	(368)	(398)
<b>Long-term debt</b>	<b>7,188</b>	<b>5,921</b>

<sup>1</sup> These notes are direct unsecured obligations of OPG and rank *pari passu* with all of OPG's unsecured and unsecured obligations.

<sup>2</sup> These notes are secured by the assets of the Upper Mattagami and Hound Chute project. Principal repayments of \$3 million per year are made on a semi-annual basis until maturity in 2041, at which time the remaining principal balance of \$116 million becomes due.

<sup>3</sup> These notes are secured by the assets of the Peter Sutherland Sr. GS project, and are recourse to OPG until the recourse release date. These notes rank *pari passu* to the senior notes from the OEFC and Medium Term Note program. The notes have an interest-only feature until 2025 and will be amortized with blended semi-annual principal and interest payments thereafter until maturity in 2067, at which time the remaining principal balance of \$49 million becomes due.

<sup>4</sup> These notes are secured by the assets of the Lower Mattagami River project, including existing and new operating facilities.

<sup>5</sup> The outstanding balance of the Fair Hydro Trust revolving warehouse facility of \$12 million has been reclassified as short-term debt as at December 31, 2018 reflecting the contractual terms of the facility agreement.

<sup>6</sup> These notes are secured by assets of Eagle Creek.

In the first quarter of 2018, OPG issued a total of \$600 million senior notes payable to the OEFC maturing in 2048. The interest rates on these notes ranged from 3.87 percent to 4.00 percent. In June 2018, OPG issued an inaugural green bond offering of \$450 million under its Medium Term Note Program maturing in 2048. The interest rate on these notes was 3.84 percent.

In February 2018, the Trust issued \$500 million of senior notes payable with an interest rate of 3.36 percent, payable semi-annually until maturity on May 15, 2033. The proceeds were used to repay the majority of the outstanding balance of the revolving warehouse facility issued by the Trust in December 2017. In April 2018, the Trust issued \$400 million of senior notes payable with an interest rate of 3.52 percent, payable semi-annually until maturity in May 2038. The proceeds were used to repay the majority of the outstanding balance of the revolving warehouse facility issued in March 2018 and April 2018.

In November 2018, the Company assumed \$323 million of long-term debt upon the acquisition of Eagle Creek with maturity dates ranging from 2025 to 2030. The interest rates on these notes ranged from 3.98 percent to 4.81 percent.

During 2018, \$398 million of OPG long-term debt and \$900 million of Fair Hydro Trust revolving warehouse facility debt were repaid.

The long-term debt balance as at December 31, 2018 included \$1,400 million outstanding under OPG's \$2,350 million general corporate credit facility agreement with the OEFC that expired on December 31, 2018. OPG is currently working with the OEFC to establish a new general corporate credit facility agreement.

The following table summarizes the net interest expense for the years ended December 31:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Interest on long-term debt <sup>1</sup>	<b>290</b>	289
Interest on short-term debt	<b>11</b>	7
Interest income	<b>(8)</b>	(9)
Interest capitalized to property, plant and equipment and intangible assets	<b>(191)</b>	(162)
Interest related to regulatory assets and liabilities <sup>2</sup>	<b>(25)</b>	(30)
<b>Net interest expense</b>	<b>77</b>	95

<sup>1</sup> Excludes interest on Fair Hydro Trust senior debt.

<sup>2</sup> Includes interest to recognize the cost of financing related to regulatory accounts, as authorized by the OEB, and interest deferred in the Bruce Lease Net Revenues Variance Account, the Capacity Refurbishment Variance Account, the Niagara Tunnel Project Pre-December 2008 Disallowance Variance Account and the Impact Resulting from Changes to Pickering Station End-of-Life Dates (December 31, 2017) Deferral Account.

Interest paid in 2018 was \$279 million (2017 – \$258 million), of which \$265 million (2017 – \$251 million) relates to interest paid on long-term debt.

The total net book value of the pledged assets of PSS Generating Station Limited Partnership (PSS), UMH, LME and Lower Mattagami Limited Partnership against their debt as at December 31, 2018 was \$3,555 million (2017 – \$3,645 million). The total net book value of pledged assets of Eagle Creek against its debt as at December 31, 2018 was \$533 million.

The total net book value of the secured assets of the Fair Hydro Trust pledged in favour of specified creditors of the Trust, including the senior debtholders and OPG in its capacity as subordinated debtholder and Financial Services Manager of the Trust, was \$1,806 million as at December 31, 2018 (2017 – \$1,190 million).

## 9. SHORT-TERM DEBT

OPG maintains a \$1 billion revolving committed bank credit facility, which is divided into two \$500 million multi-year term tranches. During 2018, OPG renewed and extended the expiration date of both tranches from May 2022 to May 2023. There were no amounts outstanding under the bank credit facility as at December 31, 2018. There was \$170 million of commercial paper outstanding under OPG's commercial paper program as at December 31, 2018. The commercial paper program is used to provide short-term funding for the Company, at interest rates of approximately two percent and for less than one year in duration.

As at December 31, 2018, LME maintained a \$400 million bank credit facility to support the funding requirements for the Lower Mattagami River project including support for LME's commercial paper program. The facility consists of a \$300 million tranche maturing in August 2023 and a \$100 million tranche maturing in August 2019. As at December 31, 2018, there was \$140 million of external commercial paper outstanding under LME's commercial paper program. A letter of credit of \$55 million was issued in July 2017 and remains outstanding as at December 31, 2018 under the \$300 million tranche of LME's credit facility.

As at December 31, 2018, OPG maintained \$25 million of short-term, uncommitted overdraft facilities and \$476 million of short-term, uncommitted credit facilities, which support the issuance of the Letters of Credit. OPG uses Letters of Credit to support its supplementary pension plans and for other general corporate purposes. As at December 31, 2018, a total of \$404 million of Letters of Credit had been issued under these facilities. This included \$364 million for the supplementary pension plans, \$39 million for general corporate purposes and \$1 million related to the operation of the PEC.

The Company's short-term, uncommitted credit facilities include an agreement to sell an undivided co-ownership interest in its current and future accounts receivable to an independent trust. The maximum amount of co-ownership interest that can be sold under this agreement is \$150 million, expiring on November 30, 2020. As at December 31, 2018, there were Letters of Credit outstanding under this agreement of \$150 million, which were issued in support of OPG's supplementary pension plans.

UMH has entered into an \$8 million short-term, uncommitted overdraft facility and \$16 million of irrevocable, standby Letters of Credit facilities in support of its operations. As at December 31, 2018, total Letters of Credit of \$15 million had been issued under these facilities.

In December 2017, the Fair Hydro Trust entered into an \$800 million revolving warehouse facility agreement with an expiry date of December 2019. During 2018, there were \$311 million of borrowings issued under this facility and as at December 31, 2018, there were outstanding senior notes of \$12 million. The outstanding balance of \$12 million has been classified as short-term debt as at December 31, 2018 reflecting the contractual terms of the facility agreement. In October 2018, the capacity of the facility was decreased to \$12 million as a result of the Province's September 2018 announcement of 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, as discussed further in Note 15.

In December 2018, OPG repaid \$79 million of Eagle Creek's unsecured borrowings that became payable following the completion of the acquisition in November 2018.

## 10. NUCLEAR FIXED ASSET REMOVAL AND NUCLEAR WASTE MANAGEMENT FUNDS AND FIXED ASSET REMOVAL AND NUCLEAR WASTE MANAGEMENT LIABILITIES

The liabilities for fixed asset removal and nuclear waste management on a present value basis as at December 31, consist of the following:

<i>(millions of dollars)</i>	2018	2017
Liability for nuclear used fuel management	12,523	11,970
Liability for nuclear decommissioning and nuclear low and intermediate level waste management	8,399	8,107
Liability for non-nuclear fixed asset removal	303	344
<b>Fixed asset removal and nuclear waste management liabilities</b>	<b>21,225</b>	<b>20,421</b>

The changes in the fixed asset removal and nuclear waste management liabilities for the years ended December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Liabilities, beginning of year	20,421	19,484
Increase in liabilities due to accretion <sup>1</sup>	997	974
Increase in liabilities reflecting changes to the estimated useful lives of nuclear generating stations	-	188
Decrease in liabilities reflecting changes in the estimate of liabilities for thermal generating stations	(10)	(30)
Increase in liabilities due to nuclear used fuel and nuclear expenses and other expenses <sup>1</sup>	124	118
Liabilities settled by expenditures on fixed asset removal and nuclear waste management during the year	(307)	(313)
<b>Liabilities, end of year</b>	<b>21,225</b>	<b>20,421</b>

<sup>1</sup> Amounts shown exclude the impact of regulatory variance and deferral accounts.

OPG's fixed asset removal and nuclear waste management liabilities are comprised of expected costs to be incurred up to and beyond termination of operations and the closure of nuclear and thermal generating facilities, and other facilities. Costs will be incurred for activities such as preparation for safe storage and safe storage of the nuclear stations, dismantlement, demolition and disposal of facilities and equipment, remediation and restoration of sites and the ongoing and long-term management of nuclear used fuel and L&ILW material.

The determination of the accrual for fixed asset removal and nuclear waste management costs requires significant assumptions since these programs are long-term in nature. The most recent comprehensive update of the cost estimates for the Nuclear Liabilities is contained in the 2017-2021 ONFA reference plan, which was finalized and approved by the Province in the fourth quarter of 2016 (2017 ONFA Reference Plan). This update has been reflected in the Nuclear Liabilities since December 31, 2016.

As at December 31, 2017, OPG recognized an increase in the Nuclear Liabilities of \$188 million to reflect the extension in the estimated useful life of the Pickering GS effective December 31, 2017.

For the purposes of calculating OPG's Nuclear Liabilities, as at December 31, 2018, consistent with the current accounting end-of-life assumptions, nuclear station decommissioning activities are projected to occur over approximately the next 80 years. The estimates for the Nuclear Liabilities include cash flow estimates for decommissioning the nuclear stations for approximately 40 years after stations are shut down and to 2088 for placement of used fuel into the assumed long-term disposal repository, followed by extended monitoring.

The significant assumptions underlying operational, technical and economic factors used in the calculation of the accrued Nuclear Liabilities are subject to periodic review. Changes to these assumptions, including changes to

assumptions on the timing of the nuclear waste programs including construction of waste disposal facilities, station end-of-life dates, waste disposal methods, financial indicators or the technology employed, may result in significant changes to the value of the liabilities. With programs of this long-term duration and the evolving technology to handle the nuclear waste, there is a significant degree of inherent uncertainty surrounding the measurement of the costs for these programs. These costs may increase or decrease over time.

#### **Liability for Nuclear Used Fuel Management Costs**

The liability for nuclear used fuel management represents the cost of managing the highly radioactive used nuclear fuel bundles. The federal NFWA, proclaimed into force in 2002, required that Canada's nuclear fuel waste owners form a nuclear waste management organization, and that each waste owner establish a trust fund for used fuel management costs as specified in the NFWA. This organization, the NWMO, is responsible for the design and implementation of Canada's plan for the long-term management of nuclear used fuel waste. To estimate its liability for nuclear used fuel management costs, OPG has adopted an approach consistent with the APM concept approved by the Government of Canada.

#### **Liability for Nuclear Decommissioning and L&ILW Management Costs**

The liability for nuclear decommissioning and L&ILW management represents the estimated costs of decommissioning the nuclear generating stations after the end of their service lives, as well as the cost of managing L&ILW generated by the stations. The significant assumptions used in estimating future nuclear fixed asset removal costs include a deferred dismantlement basis for decommissioning of the stations, whereby the reactors will be de-watered and de-fuelled immediately after the station has ceased operations and thereafter will remain in a safe state condition for a 30-year period, prior to an approximate 10-year dismantlement period.

The life cycle costs of L&ILW management include the costs of processing and storage of such radioactive wastes during and following the operation of the nuclear stations, as well as the costs of the ultimate long-term management of these wastes. The current assumptions used to establish the accrued costs for the management of L&ILW include an L&ILW deep geologic repository (DGR) to be owned and operated by OPG. Agreement has been reached with local municipalities for OPG to develop a DGR for the long-term management of L&ILW adjacent to OPG's Western Waste Management Facility in Kincardine, Ontario. The environmental assessment process for the proposed DGR is continuing.

#### **Liability for Non-Nuclear Fixed Asset Removal Costs**

The liability for non-nuclear fixed asset removal primarily represents the estimated costs of decommissioning OPG's thermal generating stations at the end of their service lives. The liability is based on third-party cost estimates following a review of plant sites and an assessment of required clean-up and restoration activities. For the purposes of measuring the non-nuclear fixed asset removal liability, thermal asset removal activities are assumed to take place approximately over the next 15 years.

#### **Ontario Nuclear Funds Agreement**

In accordance with the ONFA, OPG sets aside and invests funds that are held in segregated custodian and trustee accounts specifically for discharging its life cycle obligation for nuclear decommissioning and long-term nuclear waste management. The Used Fuel Segregated Fund and the Decommissioning Segregated Fund were established under the ONFA for this purpose. OPG makes contributions to the Nuclear Segregated Funds based on the approved ONFA reference plan in effect. ONFA reference plans are subject to approval by the Province.

Since inception, OPG has been making payments to the Used Fuel Segregated Fund over the assumed lives of its nuclear generating stations, as specified in the ONFA, including contributions to the Ontario NFWA Trust (NFWA Trust) established by OPG pursuant to the NFWA. The NFWA Trust forms part of the Used Fuel Segregated Fund, with any OPG contributions to the Used Fuel Segregated Fund, as well as any portion of the fund currently not in the

NFWA Trust, being able to be applied towards the NFWA Trust's annual contribution requirements pursuant to the NFWA. ONFA requirements have resulted in the majority of the underlying used fuel management obligation being funded through OPG contributions over the initial estimated useful lives of the nuclear generating stations assumed in the ONFA, which did not reflect subsequent extensions to the nuclear station lives to reflect refurbishment and life extension decisions.

OPG has not been required to make contributions to the Decommissioning Segregated Fund, which was fully funded at its inception through an initial contribution made by the OEFC, an agency of the Province, and, taking into account asset performance and changes in underlying funding obligation over time, at the time of every subsequent approved ONFA reference plan.

The 2017 ONFA Reference Plan was approved by the Province in December 2016, with an effective date of January 1, 2017. Based on the funded status of the Used Fuel Segregated Fund and the Decommissioning Segregated Fund reflecting the life cycle liability estimates per the 2017 ONFA Reference Plan, no overall contributions to either 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 prepared. The next ONFA reference plan updated is scheduled to be completed by the end of 2021.

The *Nuclear Safety and Control Act* (Canada) requires OPG to have sufficient funds available to discharge its existing nuclear waste management and nuclear facilities decommissioning obligations. The CNSC process requires the CNSC financial guarantee requirement to be updated once every five years, with the most recent update covering the 2018-2022 period. The CNSC financial guarantee requirement continues to be satisfied by the forecast fair market value of the Nuclear Segregated Funds without the requirement of a Provincial Guarantee for the 2019-2022 period. 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 of 0.5 percent of the amount, if any, of the Provincial Guarantee.

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 infrastructure, real estate and agriculture and timberland. The Nuclear Segregated Funds are invested to fund long-term liability requirements and, as such, the portfolio asset mix is structured to achieve the required return over a long-term horizon. While short-term fluctuations in market value will occur, managing the long-term return of the Nuclear Segregated Funds remains the primary goal. OPG jointly oversees the investment management of the Nuclear Segregated Funds with the Province.

#### Decommissioning Segregated Fund

Under the ONFA, OPG is wholly responsible for cost estimate changes and investment returns in the Decommissioning Segregated Fund.

Upon termination of the ONFA, the Province has the sole right to any excess funds in the Decommissioning Segregated Fund, which is the excess of the fair market value of the fund's assets over the underlying estimated future costs, as per the most recently approved ONFA reference plan. Accordingly, when the Decommissioning Segregated Fund is overfunded, OPG limits the fund earnings recognized in the consolidated financial statements by recording an amount due to the Province, such that the asset recognized for the fund on the consolidated balances sheet is equal to the cost estimate of the liability based on the most recently approved ONFA reference plan. Additionally, OPG recognizes the portion of the surplus that it may direct to the Used Fuel Segregated Fund, which is possible when the surplus in the Decommissioning Segregated Fund is such that the underlying liabilities, as defined by the most recently approved ONFA reference plan, are at least 120 percent funded. In those circumstances, OPG may direct, at the time a new 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. Therefore, when the

Decommissioning Segregated Fund is at least 120 percent funded, OPG recognizes 50 percent of the excess greater than 120 percent in income, up to the amount by which the Used Fuel Segregated Fund is underfunded.

When the Decommissioning Segregated Fund is in an overfunded status of less than 120 percent, OPG recognizes its annual earnings on the fund at 3.25 percent plus the long-term Ontario Consumer Price Index (CPI) specified in the most recently approved ONFA reference plan, which is the rate of growth in the underlying funding liability. The same treatment is applied to the Decommissioning Segregated Fund when it is in an overfunded status of greater than 120 percent, if the Used Fuel Segregated Fund is fully funded.

As at December 31, 2018 and 2017, the Decommissioning Segregated Fund was in an overfunded position of greater than 120 percent based on the 2017 ONFA Reference Plan. As a result, OPG recognized a due to the Province amount such that the Decommissioning Segregated Fund asset on the consolidated balance sheets as at December 31, 2018 and 2017 is limited to the value of the underlying funding liability per the 2017 ONFA Reference Plan, plus 50 percent of the surplus over 120 percent up to the amount, if any, by which the Used Fuel Segregated Fund was underfunded. This payable to the Province may be reduced in subsequent periods in the event that the Decommissioning Segregated Fund earns less than its target rate of return, a new ONFA reference plan is approved with a higher underlying funding liability, or the Used Fuel Segregated Fund's underfunded status increases. When the Decommissioning Segregated Fund is underfunded, the earnings on the fund reflect actual fund returns based on the market value of the assets.

#### Used Fuel Segregated Fund

OPG is responsible for cost increases in the funding liability for used fuel waste management under the ONFA, subject to specified graduated liability thresholds, pursuant to which the Province limits OPG's total financial exposure for the first 2.23 million nuclear used fuel bundles at approximately \$16.6 billion in present value dollars as at December 31, 2018. The graduated liability thresholds do not apply to used fuel bundles beyond the 2.23 million threshold.

Under the ONFA, the Province guarantees OPG's annual return in the Used Fuel Segregated Fund at 3.25 percent plus the change in the Ontario CPI, as defined by ONFA, for funding related to the first 2.23 million used fuel bundles, (committed return). OPG recognizes the committed return on the Used Fuel Segregated Fund as earnings on the Nuclear Segregated Funds. The difference between the committed return and the actual market return determined based on the fair value of the fund assets related to the first 2.23 million used fuel bundles is recorded as due to or due from the Province. This amount due to or due from the Province represents the amount that would be paid to or received from the Province if the committed return were to be settled as at the consolidated balance sheets date. The 2.23 million threshold represents the estimated total life cycle fuel bundles based on the initial estimated useful lives of the nuclear stations assumed in the ONFA.

As prescribed under the ONFA, OPG's contributions for fuel bundles in excess of 2.23 million are not subject to the rate of return guaranteed by the Province, and earn a return based on changes in the market value of the assets of the Used Fuel Segregated Fund.

If there is a surplus in the Used Fuel Segregated Fund such that the liabilities, as defined by the most recently approved ONFA reference plan, are at least 110 percent funded after taking into account the committed return adjustment, the Province, has the right, at any time, to access the excess amount greater than 110 percent. Upon termination of the ONFA, the Province is entitled to any surplus in the fund, which is the excess of the fair market value of the Used Fuel Segregated Fund assets over the estimated future costs, as per the most recently approved ONFA reference plan. Neither OPG nor the Province has a right to direct any amounts from the Used Fuel Segregated Fund to the Decommissioning Segregated Fund. Therefore, when the Used Fuel Segregated Fund is overfunded after taking into account the committed return adjustment, OPG limits the earnings it recognizes by recording an amount due to the Province, such that the asset recognized for the fund on the consolidated balance sheets is equal to the cost estimate of the funding liability per the most recently approved ONFA reference plan. This

results in OPG recognizing annual earnings on the fund, after taking into account the committed return adjustment, at 3.25 percent plus the long-term Ontario CPI specified in the most recently approved ONFA reference plan, which is the rate of growth in the underlying funding liability, when the fund is overfunded.

Based on the 2017 ONFA Reference Plan, the Used Fuel Segregated Fund was in a marginally underfunded position as at December 31, 2018 and a marginally overfunded position as at December 31, 2017. The due to the Province amount recognized for the fund as at December 31, 2018 related solely to the committed return adjustment. The due to the Province amount recognized as at December 31, 2017 related to the committed return adjustment and the marginally overfunded position of the fund.

### Nuclear Segregated Funds

The nuclear fixed asset removal and nuclear waste management funds as at December 31 consist of the following:

<i>(millions of dollars)</i>	Fair Value	
	2018	2017
Decommissioning Segregated Fund	9,033	9,099
Due to Province – Decommissioning Segregated Fund	(1,514)	(1,933)
	7,519	7,166
Used Fuel Segregated Fund <sup>1</sup>	11,946	12,087
Due to Province – Used Fuel Segregated Fund	(1,982)	(2,529)
	9,964	9,558
Total Nuclear Segregated Funds	17,483	16,724
Less: current portion	(19)	(23)
Non-current Nuclear Segregated Funds	17,464	16,701

<sup>1</sup> The NFWA Trust represents \$3,973 million as at December 31, 2018 (2017 – \$3,882 million) of the Used Fuel Segregated Fund on a fair value basis.

The fair value of the securities invested in the Nuclear Segregated Funds as at December 31 is as follows:

<i>(millions of dollars)</i>	Fair Value	
	2018	2017
Cash and cash equivalents and short-term investments	213	227
Real assets	3,211	2,357
Pooled funds	2,685	1,713
Marketable equity securities	8,998	10,457
Fixed income securities	5,845	6,405
Net receivables/payables	27	27
	20,979	21,186
Less: Due to Province	(3,496)	(4,462)
	17,483	16,724

The historical cost, gross unrealized aggregate appreciation and depreciation of investment, gross unrealized foreign exchange gains and fair value of the Nuclear Segregated Funds as at December 31, 2018 and 2017 are summarized as follows:

<i>(millions of dollars)</i>	<b>2018</b>		<b>Total</b>
	<b>Decommissioning Segregated Fund</b>	<b>Used Fuel Segregated Fund</b>	
Historical cost	7,863	10,557	18,420
Gross unrealized gains (losses)			
Aggregate appreciation	1,183	1,403	2,586
Aggregate depreciation	(376)	(499)	(875)
Foreign exchange	363	485	848
	<b>9,033</b>	<b>11,946</b>	<b>20,979</b>
Less: Due to Province	(1,514)	(1,982)	(3,496)
Total fair value	7,519	9,964	17,483
Less: current portion	(5)	(14)	(19)
Non-current fair value	<b>7,514</b>	<b>9,950</b>	<b>17,464</b>

<i>(millions of dollars)</i>	<b>2017</b>		<b>Total</b>
	<b>Decommissioning Segregated Fund</b>	<b>Used Fuel Segregated Fund</b>	
Historical cost	7,296	9,864	17,160
Gross unrealized gains (losses)			
Aggregate appreciation	1,820	2,226	4,046
Aggregate depreciation	(134)	(180)	(314)
Foreign exchange	117	177	294
	<b>9,099</b>	<b>12,087</b>	<b>21,186</b>
Less: Due to Province	(1,933)	(2,529)	(4,462)
Total fair value	7,166	9,558	16,724
Less: current portion	(5)	(18)	(23)
Non-current fair value	<b>7,161</b>	<b>9,540</b>	<b>16,701</b>

Net realized and unrealized gains or losses from investments for the years ended December 31, 2018 and 2017 are summarized as follows:

<i>(millions of dollars)</i>	2018		Total
	Decommissioning Segregated Fund	Used Fuel Segregated Fund	
<b>Net realized gains</b>			
Net realized gains excluding foreign exchange	378	472	850
Net realized foreign exchange gains	36	50	86
Net realized gains	414	522	936
<b>Net unrealized (losses)</b>			
Net unrealized losses excluding foreign exchange	(825)	(1,102)	(1,927)
Net unrealized foreign exchange gains	192	268	460
Net unrealized losses	(633)	(834)	(1,467)

<i>(millions of dollars)</i>	2017		Total
	Decommissioning Segregated Fund	Used Fuel Segregated Fund	
<b>Net realized gains</b>			
Net realized gains excluding foreign exchange	198	245	443
Net realized foreign exchange gains	54	65	119
Net realized gains	252	310	562
<b>Net unrealized gains</b>			
Net unrealized gains excluding foreign exchange	525	704	1,229
Net unrealized foreign exchange losses	(143)	(178)	(321)
Net unrealized gains	382	526	908

The change in the Nuclear Segregated Funds for the years ended December 31 is as follows:

<i>(millions of dollars)</i>	Fair Value	
	2018	2017
Decommissioning Segregated Fund, beginning of year	7,166	6,840
(Decrease)/Increase in fund due to return on investments	(38)	807
Decrease in fund due to reimbursement of eligible expenditures	(28)	(25)
Decrease/(Increase) in due to Province	419	(456)
Decommissioning Segregated Fund, end of year	7,519	7,166
Used Fuel Segregated Fund, beginning of year	9,558	9,144
(Decrease)/Increase in fund due to return on investments	(72)	1,059
Decrease in fund due to reimbursement of eligible expenditures	(69)	(54)
Decrease/(Increase) in due to Province	547	(591)
Used Fuel Segregated Fund, end of year	9,964	9,558

The earnings from the Nuclear Segregated Funds during 2018 and 2017 were impacted by the Bruce Lease Net Revenues Variance Account authorized by the OEB. The earnings on the Nuclear Segregated Funds for the years ended December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Decommissioning Segregated Fund	381	351
Used Fuel Segregated Fund	475	468
Bruce Lease Net Revenues Variance Account	(2)	(18)
<b>Earnings on nuclear fixed asset removal and nuclear waste management funds</b>	<b>854</b>	801

## 11. INCOME TAXES

OPG follows the liability method of accounting for income taxes. The Company records an offsetting regulatory asset or regulatory liability for the deferred income taxes that are expected to be recovered or refunded through future regulated prices charged to customers for generation from OPG's regulated facilities.

A reconciliation between the statutory and the effective rate of income taxes for the year ended December 31 is as follows:

<i>(millions of dollars)</i>	2018	2017
Income before income taxes	1,354	1,090
Combined Canadian federal and provincial statutory enacted income tax rates	26.5%	26.5%
Statutory income tax rates applied to accounting income	359	289
(Decrease) increase in income taxes resulting from:		
Income tax recovery deferred in regulatory assets and regulatory liabilities	(109)	(20)
Dividend tax refund	(87)	-
Scientific Research and Experimental Development investment tax credits	(30)	(47)
Manufacturing and processing credit	(21)	(16)
Equity accounted investment tax adjustments	21	-
Other	8	3
	(218)	(80)
Income tax expense	141	209
Effective rate of income taxes	10.4%	19.2%

Significant components of income tax expense for the year ended December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Current income tax expense	162	190
Deferred income tax (recovery) expense	(21)	19
Income tax expense	141	209

The income tax effects of temporary differences that give rise to deferred income tax assets and liabilities as at December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Deferred income tax assets:		
Fixed asset removal and nuclear waste management liabilities	5,298	5,096
Other assets and liabilities	2,224	2,057
	7,522	7,153
Deferred income tax liabilities:		
Property, plant and equipment and intangible assets	(2,148)	(1,923)
Nuclear fixed asset removal and nuclear waste management funds	(4,371)	(4,181)
Other assets and liabilities	(2,021)	(1,928)
	(8,540)	(8,032)
Net deferred income tax liabilities	(1,018)	(879)

During 2018, OPG recorded an increase in the deferred income tax liability for income taxes that is expected to be recovered through regulated prices charged to customers of \$165 million (2017 – \$59 million). Since these deferred income taxes are expected to be recovered through future regulated prices, OPG recorded a corresponding increase to the regulatory asset for deferred income taxes. As a result, the deferred income tax expense for 2018 and 2017 was not impacted.

OPG has tax losses in the US of \$323 million expiring as follows: \$4 million – 2032; \$2 million – 2036; \$2 million – 2037; \$315 million – Indefinite. As at December 31, 2018, OPG had \$85 million of goodwill that is tax deductible (2017 – nil).

The following table summarizes the deferred income tax liabilities recorded for the rate regulated operations that are expected to be recovered through future regulated prices:

<i>(millions of dollars)</i>	2018	2017
<b>January 1:</b>		
Deferred income tax liabilities on temporary differences related to regulated operations	671	627
Deferred income tax liabilities on temporary differences related to the regulatory asset for the deferred income tax liabilities	226	211
	897	838
<b>Changes during the year:</b>		
Increase in deferred income tax liabilities on temporary differences related to regulated operations	124	44
Increase in deferred income tax liabilities on temporary differences related to the regulatory asset for the deferred income tax liabilities	41	15
Balance as at December 31	1,062	897

The tax benefit associated with an income tax position is recognized only when it is more likely than not that such a position will be sustained upon examination by the taxing authorities based on the technical merits of the position. The current and deferred income tax benefit is equal to the largest amount, considering possible settlement outcomes, that is greater than 50 percent likely of being realized upon settlement with the taxing authorities.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Unrecognized tax benefits, beginning of year	<b>78</b>	77
Additions based on tax positions related to the current year	<b>21</b>	21
Reductions for tax positions of prior years	<b>(17)</b>	(20)
<b>Unrecognized tax benefits, end of year</b>	<b>82</b>	78

As at December 31, 2018, OPG's unrecognized tax benefits were \$82 million (2017 – \$78 million), excluding interest and penalties, all of which, if recognized, would affect OPG's effective tax rate. Changes in unrecognized tax benefits over the next 12 months cannot be predicted with certainty.

OPG recognizes interest and penalties related to unrecognized tax benefits as income tax expense. As at December 31, 2018, OPG had recorded interest on unrecognized tax benefits of \$9 million (2017 – \$8 million). OPG considers its significant tax jurisdiction to be Canada. OPG remains subject to income tax examination for years after 2014.

OPG paid \$202 million in income taxes, net of tax refunds, during 2018 (2017 – \$195 million).

## 12. ACCUMULATED OTHER COMPREHENSIVE LOSS

The changes in the balance of each component of accumulated other comprehensive loss (AOCL), net of income taxes, are as follows:

<i>(millions of dollars)</i>	<b>2018</b>				<b>Total</b>
	<b>Unrealized Gains and Losses on Cash Flow Hedges</b>	<b>Pension and OPEB</b>	<b>Equity Securities</b>	<b>Currency Translation Adjustment</b>	
AOCL, beginning of year	<b>(66)</b>	<b>(220)</b>	<b>(9)</b>	-	<b>(295)</b>
Reclassification of cumulative unrealized losses on equity securities to opening retained earnings (Note 3)	-	-	<b>9</b>	-	<b>9</b>
	<b>(66)</b>	<b>(220)</b>	-	-	<b>(286)</b>
Net gain on cash flow hedges	<b>1</b>	-	-	-	<b>1</b>
Actuarial gain on past service costs on remeasurement of liabilities for pension and other post-employment benefits	-	<b>1</b>	-	-	<b>1</b>
Translation of foreign operations	-	-	-	<b>13</b>	<b>13</b>
Amounts reclassified from AOCL	<b>17</b>	<b>11</b>	-	-	<b>28</b>
Other comprehensive income for the year	<b>18</b>	<b>12</b>	-	<b>13</b>	<b>43</b>
<b>AOCL, end of year</b>	<b>(48)</b>	<b>(208)</b>	-	<b>13</b>	<b>(243)</b>

<i>(millions of dollars)</i>	2017				Total
	Unrealized Gains and Losses on Cash Flow Hedges	Pension and OPEB	Equity Securities	Currency Translation Adjustment	
AOCL, beginning of year	(87)	(207)	(1)	-	(295)
Actuarial loss on remeasurement of liabilities for pension and OPEB	-	(23)	-	-	(23)
Unrealized loss on equity securities	-	-	(8)	-	(8)
Amounts reclassified from AOCL	18	10	-	-	28
Other comprehensive income (loss) for the year	18	(13)	(8)	-	(3)
Reclassification of non-controlling interest on change in ownership interest	3	-	-	-	3
AOCL, end of year	(66)	(220)	(9)	-	(295)

The significant amounts reclassified out of each component of AOCL, net of income taxes, during December 31, 2018 and 2017 are as follows:

<i>(millions of dollars)</i>	Amount Reclassified from AOCL		Statement of Income Line Item
	2018	2017	
Amortization of losses from cash flow hedges			
Losses	19	20	Net interest expense
Income tax recovery	(2)	(2)	Income tax expense
	17	18	
Amortization of amounts related to pension and OPEB			
Actuarial losses and past service costs	15	13	See (1) below
Income tax recovery	(4)	(3)	Income tax expense
	11	10	
Total reclassifications for the year	28	28	

<sup>1</sup> These AOCL components are included in the computation of pension and OPEB costs (see Note 13 for additional details).

### 13. PENSION AND OTHER POST-EMPLOYMENT BENEFITS

#### Fund Assets

The OPG registered pension fund investment guidelines are stated in an approved Statement of Investment Policies and Procedures (SIPP). The SIPP is reviewed and approved by the Audit and Risk Committee of OPG's Board of Directors at least annually and includes a discussion of investment objectives and expectations, asset mix and rebalancing and the basis for measuring the performance of the pension fund assets.

In accordance with the SIPP, investment allocation decisions are made with a view to achieve OPG's objective of meeting obligations of the plan as they come due. The pension fund assets are invested in five categories of asset classes. The first category is fixed income assets, which offer exposure to real and nominal interest rates and credit, and contribute to hedging plan liabilities. The second category is return enhancing assets, which offer the potential for higher investment returns beyond returns generally expected for fixed income assets. The third category is real assets, which offer exposure to the combined characteristics from the fixed income and return enhancing assets. The fourth category is return diversifying assets, which offer the potential to improve the overall return of the pension fund while controlling the amount of downside market risk. The fifth category is special opportunities, which are

investments that are designed to take advantage of unique mandates and/or market dislocations, while offering the potential for higher risk-adjusted returns and/or improved portfolio diversification.

To achieve the above objective, OPG has adopted the following target strategic asset allocation:

Asset Class	Target
Fixed Income Assets	34%
Return Enhancing Assets	26%
Real Assets	25%
Return Diversifying Assets	13%
Special Opportunities	2%

The plan may use derivatives for risk management or strategic purposes, where such activity is consistent with the plan's investment objectives.

#### Significant Concentrations of Risk in Fund Assets

The assets of the pension fund are diversified to limit the impact of any individual investment. The pension fund is diversified across multiple asset classes. Fixed income securities are diversified among Canadian government bonds, government agency bonds, real return bonds and corporate bonds. Equity securities are diversified across Canadian, US and Global stocks. There are also real estate, infrastructure and agriculture and timberland portfolios that are included as part of the total pension fund assets as at December 31, 2018. Investments in the above asset classes are further diversified across funds, investment managers, strategies, vintages, sectors and geographies, depending on the specific characteristics of each asset class.

Credit risk with respect to the pension fund's fixed income securities is managed by risk tolerance guidelines, which require that fixed income securities comply with various investment constraints that ensure prudent diversification and prescribed minimum required credit rating quality. Credit risk, as it relates to the pension fund's derivatives, is managed through the use of International Swap and Derivatives Association documentation and counterparty management performed by the fund's investment managers.

#### Risk Management

Risk management oversight with respect to the pension fund includes, but is not limited to, the following activities:

- Periodic asset/liability management and strategic asset allocation studies
- Monitoring of funding levels and funding ratios
- Monitoring compliance with asset allocation guidelines and investment management agreements
- Monitoring asset class performance against asset class benchmarks
- Monitoring investment manager performance against benchmarks
- Monitoring of risk tolerance guidelines

#### Expected Rate of Return on Plan Assets

The expected rate of return on plan assets is based on the fund's asset allocation, as well as the return expectations considering long-term risks and returns associated with each asset class within the plan portfolio. The asset management decisions consider the economic liabilities of the plan.

#### **Fair Value Measurements**

OPG is required to classify fair value measurements using a fair value hierarchy. This hierarchy groups financial instruments into three levels, based on the significance of inputs used in measuring the fair value of the assets and liabilities. Refer to Note 15 for a detailed discussion of fair value measurements and the fair value hierarchy.

The following tables present pension plan assets measured at fair value in accordance with the fair value hierarchy:

<i>(millions of dollars)</i>	December 31, 2018			Total
	Level 1	Level 2	Level 3	
Cash and cash equivalents	331	-	-	331
Short-term investments	-	494	-	494
Fixed income				
Corporate debt securities	-	1,326	-	1,326
Government bonds	-	2,614	-	2,614
Equities				
Canadian	706	304	-	1,010
US	1,314	-	-	1,314
Global	1,043	-	-	1,043
Pooled funds	464	413	-	877
	<b>3,858</b>	<b>5,151</b>	-	<b>9,009</b>
Forward exchange contracts	-	(81)	-	(81)
Futures contracts	(5)	-	-	(5)
Investments measured at NAV <sup>1</sup>				<b>4,790</b>
				<b>13,713</b> <sup>2</sup>

<sup>1</sup> Represents investments measured at fair value using NAV as a practical expedient, which have not been classified in the fair value hierarchy. The fair value amounts for these investments presented in this table are intended to permit the reconciliation of the fair value hierarchy to the total fair value of plan assets presented in tables following.

<sup>2</sup> The table above excludes pension fund receivables and payables.

<i>(millions of dollars)</i>	December 31, 2017			Total
	Level 1	Level 2	Level 3	
Cash and cash equivalents	377	-	-	377
Short-term investments	-	9	-	9
Fixed income				
Corporate debt securities	-	521	-	521
Government bonds	-	3,476	-	3,476
Equities				
Canadian	1,441	329	-	1,770
US	1,551	-	-	1,551
Global	1,681	-	-	1,681
Pooled funds	459	105	-	564
Other	15	-	-	15
	<b>5,524</b>	<b>4,440</b>	-	<b>9,964</b>
Investments measured at NAV <sup>1</sup>				<b>4,221</b>
				<b>14,185</b> <sup>2</sup>

<sup>1</sup> Represents investments measured at fair value using NAV as a practical expedient, which have not been classified in the fair value hierarchy. The fair value amounts for these investments presented in this table are intended to permit the reconciliation of the fair value hierarchy to the total fair value of plan assets presented in tables following.

<sup>2</sup> The table above excludes pension fund receivables and payables.

## Plan Costs and Liabilities

Details of OPG's pension and OPEB obligations, pension fund assets and costs, together with the key assumptions used in determining these amounts, are presented in the following tables:

	Registered and Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017
<i>Weighted Average Assumptions – Benefit Obligations at Year-End</i>				
Discount rate for projected benefit obligation	<b>3.83 %</b>	3.57 %	<b>3.84 %</b>	3.60 %
Salary schedule escalation rate - initial rate <sup>1</sup>	<b>2.00 %</b>	1.90 %	<b>2.00 %</b>	1.90 %
- thereafter	<b>2.50 %</b>	2.50 %	<b>2.50 %</b>	2.50 %
Rate of cost of living increase to pensions	<b>2.00 %</b>	2.00 %	<b>n/a</b>	n/a
Initial health care trend rate	<b>n/a</b>	n/a	<b>3.82 %</b>	5.80 %
Ultimate health care trend rate	<b>n/a</b>	n/a	<b>4.05 %</b>	4.32 %
Year ultimate health care trend rate reached	<b>n/a</b>	n/a	<b>2040</b>	2030
Rate of increase in disability benefits	<b>n/a</b>	n/a	<b>2.00 %</b>	2.00 %

n/a – assumption not applicable.

<sup>1</sup> Per year to December 31, 2024 for 2018 and per year to December 31, 2021 for 2017.

	Registered and Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017
<i>Weighted Average Assumptions – Costs for the Year</i>				
Expected return on plan assets, net of expenses	<b>6.00 %</b>	6.00 %	<b>n/a</b>	n/a
Discount rate for current service cost	<b>3.69 %</b>	4.15 %	<b>3.64 %</b>	4.03 %
Discount rate for interest on projected benefit obligation	<b>3.25 %</b>	3.37 %	<b>3.35 %</b>	3.53 %
Discount rate for interest on current service cost	<b>3.54 %</b>	3.95 %	<b>3.55 %</b>	3.85 %
Salary schedule escalation rate - initial rate <sup>1</sup>	<b>1.90 %</b>	1.80 %	<b>1.90 %</b>	1.80 %
- thereafter	<b>2.50 %</b>	2.50 %	<b>2.50 %</b>	2.50 %
Rate of cost of living increase to pensions	<b>2.00 %</b>	2.00 %	<b>n/a</b>	n/a
Initial health care trend rate	<b>n/a</b>	n/a	<b>5.80 %</b>	5.90 %
Ultimate health care trend rate	<b>n/a</b>	n/a	<b>4.32 %</b>	4.32 %
Year ultimate health care trend rate reached	<b>n/a</b>	n/a	<b>2030</b>	2030
Rate of increase in disability benefits	<b>n/a</b>	n/a	<b>2.00 %</b>	2.00 %
Expected average remaining service life for employees (years)	<b>12</b>	12	<b>13</b>	13

n/a – assumption not applicable.

<sup>1</sup> Per year to December 31, 2021.

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
<i>Components of Cost Recognized for the Year</i>						
Current service costs	330	274	8	7	80	67
Interest on projected benefit obligation	567	548	12	11	107	106
Expected return on plan assets, net of expenses	(820)	(766)	-	-	-	-
Amortization of past service costs <sup>1</sup>	-	-	-	-	-	1
Amortization of net actuarial loss <sup>1</sup>	197	183	7	6	7	-
Recognition of LTD net actuarial loss (gain)	-	-	-	-	(2)	11
Costs recognized <sup>2</sup>	274	239	27	24	192	185

<sup>1</sup> The amortization of past service costs and net actuarial loss was recognized as an increase to OCI. This increase was partially offset by the impact of the Pension and OPEB Regulatory Asset discussed in Note 7.

<sup>2</sup> Excludes the impact of regulatory variance and deferral accounts discussed in Note 7.

Total benefit costs, including the impact of the Pension & OPEB Cash Payment Variance Account and the Pension & OPEB Cash Versus Accrual Differential Deferral Account, for the years ended December 31 are as follows:

<i>(millions of dollars)</i>	2018	2017
Registered pension plans	274	239
Supplementary pension plans	27	24
Other post-employment benefits	192	185
Pension & OPEB Cash Payment Variance Account (Note 7)	73	81
Pension & OPEB Cash Versus Accrual Differential Deferral Account (Note 7)	(169)	(117)
Pension and other post-employment benefit costs	397	412

The pension and OPEB obligations and the pension fund assets measured as at December 31 are as follows:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
<i>Change in Plan Assets</i>						
Fair value of plan assets at beginning of year	14,263	13,506	-	-	-	-
Contributions by employer	197	214	16	14	95	94
Contributions by employees	100	97	-	-	-	-
Actual return on plan assets, net of expenses	(20)	1,207	-	-	-	-
Benefit payments	(775)	(761)	(16)	(14)	(95)	(94)
Fair value of plan assets at end of year	13,765	14,263	-	-	-	-
<i>Change in Projected Benefit Obligations</i>						
Projected benefit obligations at beginning of year	17,344	16,199	356	336	3,190	2,992
Employer current service costs	330	274	8	7	80	67
Contributions by employees	100	97	-	-	-	-
Interest on projected benefit obligation	567	548	12	11	107	106
Benefit payments	(775)	(761)	(16)	(14)	(95)	(94)
Past service costs (credits)	-	-	-	-	(6)	-
Net actuarial loss (gain)	(498)	987	(7)	16	(477)	119
Projected benefit obligations at end of year	17,068	17,344	353	356	2,799	3,190
Funded status – deficit at end of year	(3,303)	(3,081)	(353)	(356)	(2,799)	(3,190)

The following table provides the pension and OPEB liabilities and their classification on the consolidated balance sheets as at December 31:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
Current liabilities	-	-	(14)	(14)	(102)	(98)
Non-current liabilities	(3,303)	(3,081)	(339)	(342)	(2,697)	(3,092)
Total liabilities	(3,303)	(3,081)	(353)	(356)	(2,799)	(3,190)

The accumulated benefit obligations for the registered pension plans and supplementary pension plans as at December 31, 2018 are \$15,803 million and \$330 million, respectively (2017 – \$16,005 million and \$333 million, respectively). The accumulated benefit obligation differs from the projected benefit obligation in that the accumulated benefit obligation includes no assumption about future compensation levels.

The following table provides the components of OPG's OCI related to pension and OPEB plans and the offsetting Pension and OPEB Regulatory Asset, discussed in Note 7, for the years ended December 31, on a pre-tax basis:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
<i>Changes in plan assets and benefit obligations recognized in OCI</i>						
Current year net actuarial loss (gain)	342	546	(7)	16	(475)	108
Current year past service credits	-	-	-	-	(6)	-
Amortization of net actuarial loss	(197)	(183)	(7)	(6)	(7)	-
Amortization of past service costs	-	-	-	-	-	(1)
Total decrease (increase) in OCI	145	363	(14)	10	(488)	107
Less: increase (decrease) in Pension and OPEB Regulatory Asset (Note 7)	126	352	(13)	9	(454)	102
Net decrease (increase) in OCI (pre-tax)	19	11	(1)	1	(34)	5

The following table provides the components of OPG's AOCL and the offsetting Pension and OPEB Regulatory Asset that have not yet been recognized as benefit costs as at December 31, on a pre-tax basis:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
<i>Unamortized amounts recognized in AOCL</i>						
Past service (credits) costs	-	-	-	-	(2)	4
Net actuarial loss (gain)	3,795	3,650	102	116	(104)	378
Total recognized in AOCL	3,795	3,650	102	116	(106)	382
Less: Pension and OPEB Regulatory Asset (Note 7)	3,517	3,391	96	109	(99)	355
Net recognized in AOCL (pre-tax)	278	259	6	7	(7)	27

Details of the unamortized net actuarial loss and unamortized past service costs as at December 31, 2018 and 2017 are as follows:

<i>(millions of dollars)</i>	Registered Pension Plans		Supplementary Pension Plans		Other Post-Employment Benefits	
	2018	2017	2018	2017	2018	2017
Net actuarial loss (gain) not yet subject to amortization due to use of market-related Values	180	(418)	-	-	-	-
Net actuarial loss (gain) not subject to amortization due to use of the corridor	1,707	1,735	35	36	(104)	299
Net actuarial loss subject to amortization	1,908	2,333	67	80	-	79
Unamortized net actuarial loss (gain)	3,795	3,650	102	116	(104)	378
Unamortized past service (credits) costs	-	-	-	-	(2)	4

The following table provides the components of OPG's AOCL and the offsetting Pension and OPEB Regulatory Asset as at December 31 (included in the table above) that are expected to be amortized as components of benefit costs and recognized as increases to OCI and reductions in the Pension and OPEB Regulatory Asset in 2019, on a pre-tax basis:

<i>(millions of dollars)</i>	<b>Registered Pension Plans</b>	<b>Supplementary Pension Plans</b>	<b>Other Post- Employment Benefits</b>
Net actuarial loss	<b>156</b>	<b>6</b>	-
Total increase in OCI	<b>156</b>	<b>6</b>	-
Less: estimated decrease in Pension and OPEB Regulatory Asset	<b>145</b>	<b>5</b>	-
<b>Net increase in OCI (pre-tax)</b>	<b>11</b>	<b>1</b>	-

The most recently filed actuarial valuation for funding purposes of the OPG registered pension plan, as at January 1, 2018, was filed with the Financial Services Commission of Ontario in September 2018. The next filed funding valuation must have an effective date no later than January 1, 2021. For 2019, OPG's required contribution to its registered pension plan is expected to be \$199 million. The amount of OPG's additional voluntary contribution, if any, is revisited from time to time. OPG will continue to assess the requirements for contributions to the pension plan.

As part of the actuarial valuation for funding purposes of the registered pension plan as at January 1, 2018, the plan's demographic and other assumptions were reviewed and revised, as necessary, by independent actuaries. Using updated demographic assumptions and demographic data as at January 1, 2018 consistent with the new funding valuation for the registered pension plan, OPG conducted a comprehensive actuarial valuation for accounting purposes of its defined benefit pension and OPEB plans in 2018. The results of this valuation were reflected in the 2018 year-end obligations reflecting appropriate assumptions for accounting purposes as at December 31, 2018. Revised assumptions including updated, lower per capita health care claims costs assumptions and updated health care trend rate assumptions contributed to a decrease in the projected benefit obligations for OPEB as at December 31, 2018.

The supplementary pension plans are not funded, but are secured by Letters of Credit totalling \$364 million as at December 31, 2018 (2017 – \$353 million).

Estimated future benefit payments to participants in the pension and OPEB plans based on the assumptions used to measure the benefit obligations as at December 31, 2018 are as follows:

<i>(millions of dollars)</i>	<b>Registered Pension Plans</b>	<b>Supplementary Pension Plans</b>	<b>Other Post- Employment Benefits</b>
2019	688	15	101
2020	722	15	105
2021	748	16	105
2022	759	16	107
2023	809	16	109
2024 through 2028	4,471	86	604

A change in the following assumptions, holding all other assumptions constant, would increase (decrease) defined benefit pension and OPEB costs for the year ended December 31, 2018 as follows:

<i>(millions of dollars)</i>	<b>Registered Pension Plans <sup>1</sup></b>	<b>Supplementary Pension Plans <sup>1</sup></b>	<b>Other Post- Employment Benefits <sup>1</sup></b>
Expected long-term rate of return			
0.25% increase	(34)	n/a	n/a
0.25% decrease	34	n/a	n/a
Discount rate			
0.25% increase	(58)	(1)	(9)
0.25% decrease	62	1	14
Inflation <sup>2</sup>			
0.25% increase	110	1	-
0.25% decrease	(103)	(1)	-
Salary increases			
0.25% increase	26	3	-
0.25% decrease	(25)	(3)	-
Health care cost trend rate			
1% increase	n/a	n/a	85
1% decrease	n/a	n/a	(38)

n/a – change in assumption not applicable.

<sup>1</sup> Excludes the impact of regulatory accounts.

<sup>2</sup> With a corresponding change in the salary increase assumption.

A one percent increase or decrease in the health care trend rate would result in an increase in the current service and interest components of the 2018 OPEB costs of \$45 million (2017 – \$40 million) or a decrease in the service and interest components of the 2018 OPEB costs of \$32 million (2017 – \$29 million). A one percent increase or decrease in the health care trend rate would result in an increase in the projected benefit obligation for OPEB as at December 31, 2018 of \$461 million (2017 – \$592 million) or a decrease in the projected benefit obligation for OPEB as at December 31, 2018 of \$354 million (2017 – \$451 million).

#### **14. RISK MANAGEMENT AND DERIVATIVES**

OPG is exposed to risks related to changes in market interest rates on debt expected to be issued in the future and movements in foreign currency that affect the Company's assets, liabilities and forecasted transactions. Select derivative instruments are used to manage such risks. Derivatives are used as hedging instruments, as well as for trading purposes.

Interest rate risk is the risk that the value of assets and liabilities can change due to movements in related interest rates. Interest rate risk for OPG arises with the need to refinance existing debt and/or undertake new financing. The management of these risks includes using derivatives to hedge the exposure in accordance with corporate risk management policies. OPG periodically uses interest rate swap agreements to mitigate elements of interest rate risk exposure associated with anticipated financing.

OPG's financial results are exposed to volatility in the Canadian/US foreign exchange rate as fuels and certain supplies and services purchased for generating stations and major development projects are denominated in, or tied to, US dollars. In addition, volatility in the Canadian/US foreign exchange rate also impacts OPG's financial results from the Eagle Creek subsidiary, whose operations are based exclusively in the US. To manage this risk, the Company employs various financial instruments such as forwards and other derivative contracts.

OPG is also exposed to fluctuations in commodity prices. Changes in the market price of fuels used to produce electricity can adversely impact OPG's earnings and cash flow from operations. To manage the risk of unpredictable increases in the price of fuels, the Company has fuel hedging programs, which include using fixed price and indexed contracts.

Some of OPG's hydroelectric facilities in the US sell energy and capacity into wholesale spot electricity markets and therefore are subject to volatility of wholesale spot electricity market pricing. While revenue from these facilities represents a small proportion of OPG's total revenue, the Company may enter into hedging arrangements from time to time to further mitigate this risk.

The majority of OPG's revenues are derived from sales through the IESO administered spot market. Market participants in the IESO spot market provide collateral in accordance with the IESO prudential support requirements to cover funds that they might owe to the market. Although the credit exposure to the IESO represents a significant portion of OPG's accounts receivable, the Company's management accepts this risk due to the IESO's primary role in the Ontario electricity market. The remaining receivables exposure is to a diverse group of generally high quality counterparties. OPG's allowance for doubtful accounts as at December 31, 2018 was less than \$1 million (2017 – less than \$1 million).

The fair value of the derivatives totalled a net liability of \$5 million as at December 31, 2018 (2017 – \$20 million).

The following table shows the pre-tax amounts related to derivatives recorded in AOCL and net income for the years ended December 31:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
<b>Cash flow hedges (recorded in AOCL)</b>		
Reclassification of losses to net interest expense	<b>19</b>	20
<b>Commodity derivatives (recorded in net income)</b>		
Realized losses in revenue	<b>(16)</b>	(9)
Unrealized gains in revenue	<b>2</b>	3

Existing pre-tax net losses of \$17 million deferred in AOCL as at December 31, 2018 are expected to be reclassified to net income within the next 12 months.

## **15. FAIR VALUE MEASUREMENTS**

OPG is required to classify fair value measurements using a fair value hierarchy. This hierarchy groups financial assets and liabilities into three levels, based on the inputs used in measuring the fair value of the financial assets and liabilities. The fair value hierarchy has the following levels:

- Level 1: Valuation of inputs is based on unadjusted quoted market prices observed in active markets for identical assets or liabilities.
- Level 2: Valuation is based on inputs other than quoted prices under Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3: Valuation is based on inputs for the asset or liability that are not based on observable market data.

The fair value of financial instruments traded in active markets is based on quoted market prices as at the consolidated balance sheet dates. A market is regarded as active if quoted prices are readily and regularly available from an exchange, dealer, broker, industry group, pricing service or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's-length basis. The quoted market price used for financial assets held by OPG is the current bid price. These instruments are included in Level 1 and are comprised primarily of equity investments and fund investments.

For financial instruments for which quoted market prices are not directly available, fair values are estimated using forward price curves developed from observable market prices or rates. The estimation of fair value may include the use of valuation techniques or models, based wherever possible on assumptions supported by observable market prices or rates prevailing as at the consolidated balance sheet dates. This is the case for over-the-counter derivatives and securities, which include energy commodity derivatives, foreign exchange derivatives, interest rate swap derivatives and fund investments. Pooled fund investments are valued at the unit values supplied by the pooled fund administrators. The unit values represent the underlying net assets at fair values, determined using closing market prices. Valuation models use general assumptions and market data and, therefore, do not reflect the specific risks and other factors that would affect a particular instrument's fair value. The methodologies used for calculating the fair value adjustments are reviewed on an ongoing basis to ensure that they remain appropriate. If all significant inputs required to fair value an instrument are observable, the instrument is included in Level 2.

If one or more of the significant inputs is not based on observable market data, the instrument is included in Level 3. Specific valuation techniques are used to value these instruments. Significant Level 3 inputs include: recent comparable transactions, comparable benchmark information, bid/ask spread of similar transactions and other relevant factors.

The following is a summary of OPG's financial instruments and their fair value as at December 31, 2018 and December 31, 2017:

<i>(millions of dollars)</i>	Fair Value		Carrying Value <sup>1</sup>		Balance Sheet Line Item
	2018	2017	2018	2017	
Nuclear Segregated Funds (includes current portion) <sup>2</sup>	17,483	16,724	17,483	16,724	Nuclear fixed asset removal and nuclear waste management funds
Financing receivables	1,868	1,179	1,788	1,179	Financing receivables
Investment in Hydro One shares <sup>3</sup>	153	188	153	188	Equity Securities
Payable related to cash flow hedges	(32)	(40)	(32)	(40)	Long-term accounts payable and accrued charges
Long-term debt – OPG (includes current portion)	(6,924)	(6,253)	(6,681)	(5,735)	Long-term debt
Long-term debt – Fair Hydro Trust	(913)	(601)	(900)	(601)	Long-term debt
Other financial instruments	28	(16)	28	(16)	Various

<sup>1</sup> The carrying values of other financial instruments included in cash and cash equivalents, receivables from related parties, other current assets, short-term debt and accounts payable and accrued charges approximate their fair values due to the immediate or short-term maturity of these financial instruments.

<sup>2</sup> The Nuclear Segregated Funds are comprised of the Decommissioning Segregated Fund and the Used Fuel Segregated Fund. OPG's fair value of the Nuclear Segregated Funds is set not to exceed an amount equal to the funding liability pursuant to the ONFA when the Nuclear Segregated Funds are in a surplus position. Refer to Note 10 for further information.

<sup>3</sup> The unrealized loss recognized during the year ended December 31, 2018 is \$15 million.

The fair value of the Fair Hydro Trust long-term senior debt including the warehouse credit facility and OPG's long-term debt issued under the Medium Term Note Program is based on indicative pricing from the market. The fair value of these debt instruments is based on Level 2 inputs. The fair value of all other long-term debt instruments is determined based on a conventional pricing model, which is a function of future cash flows, the current market yield curve and term to maturity. These inputs are considered Level 2 inputs.

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. The limited guarantee was provided by the Province to specified creditors of the Trust and is triggered by certain events, including through changes made to the Fair Hydro Act that would adversely affect the Trust's ability to meet its payment obligations, and is further described in Note 23. Consequently, the fair value of the financing receivables related to Investment Interest acquired from the IESO was updated as of December 31, 2018 to reflect the projected cash flows and expected returns on the asset to be collected from the Province. Therefore, the fair value of the financing receivables as of December 31, 2018 is based on Level 3 inputs.

The following tables present financial assets and financial liabilities measured at fair value in accordance with the fair value hierarchy as at December 31, 2018 and December 31, 2017:

<i>(millions of dollars)</i>	December 31, 2018			Total
	Level 1	Level 2	Level 3	
<b>Assets</b>				
<i>Used Fuel Segregated Fund</i>				
Investments measured at fair value, excluding investments measured at NAV	5,245	4,926	-	10,171
Investments measured at NAV <sup>1</sup>				1,775
Due to Province				11,946
Used Fuel Segregated Fund, net				(1,982)
<i>Decommissioning Segregated Fund</i>				
Investments measured at fair value, excluding investments measured at NAV	3,962	3,635	-	7,597
Investments measured at NAV <sup>1</sup>				1,436
Due to Province				9,033
Decommissioning Segregated Fund, net				(1,514)
Investment in equity securities	153	-	-	153
Other financial assets	5	3	43	51
<b>Liabilities</b>				
Other financial liabilities	(19)	(4)	-	(23)

<sup>1</sup> Represents investments measured at fair value using NAV as a practical expedient, which have not been classified in the fair value hierarchy. The fair value amounts for these investments presented in this table are intended to permit the reconciliation of the fair value hierarchy to amounts presented on the consolidated balance sheets.

<i>(millions of dollars)</i>	December 31, 2017			Total
	Level 1	Level 2	Level 3	
<b>Assets</b>				
<i>Used Fuel Segregated Fund</i>				
Investments measured at fair value, excluding investments measured at NAV	6,090	4,705	-	10,795
Investments measured at NAV <sup>1</sup>				1,292
				12,087
Due to Province				(2,529)
Used Fuel Segregated Fund, net				9,558
<i>Decommissioning Segregated Fund</i>				
Investments measured at fair value, excluding investments measured at NAV	4,547	3,487	-	8,034
Investments measured at NAV <sup>1</sup>				1,065
				9,099
Due to Province				(1,933)
Decommissioning Segregated Fund, net				7,166
Investments in equity securities	188	-	-	188
Other financial assets	5	3	6	14
<b>Liabilities</b>				
Other financial liabilities	(28)	(2)	-	(30)

<sup>1</sup> Represents investments measured at fair value using NAV as a practical expedient, which have not been classified in the fair value hierarchy. The fair value amounts for these investments presented in this table are intended to permit the reconciliation of the fair value hierarchy to amounts presented on the consolidated balance sheets.

During the year ended December 31, 2018, there were no transfers between Level 1 and Level 2 and into or out of Level 3.

The following table presents the changes in OPG's net assets measured at fair value that are classified as Level 3 financial instruments.

<i>(millions of dollars)</i>	Other financial instruments
Opening balance, January 1, 2018	6
Unrealized gains included in revenue	2
Realized losses included in revenue	(16)
Purchases	51
Closing balance, December 31, 2018	43

### Nuclear Segregated Funds

The fair value of the investments within the Nuclear Segregated Funds' real assets portfolio is determined using appropriate valuation techniques, such as recent arm's-length market transactions, references to current fair values of other instruments that are substantially the same, discounted cash flow analyses, third-party independent appraisals, valuation multiples or other valuation methods. Any control, size, liquidity or other discount premiums on the investments are considered in the determination of fair value.

The process of valuing investments for which no published market price exists is based on inherent uncertainties and the resulting values may differ from values that would have been used had a ready market existed for these investments. The values may also differ from the prices at which the investments may be sold.

The following are the classes of investments within the Nuclear Segregated Funds that are reported on the basis of NAV as at December 31, 2018:

<i>(millions of dollars except where noted)</i>	<b>Fair Value</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency</b>	<b>Redemption Notice</b>
<b>Real Assets</b>				
Infrastructure	<b>1,803</b>	<b>622</b>	n/a	n/a
Real Estate	<b>1,258</b>	<b>588</b>	n/a	n/a
Agriculture and Timberland	<b>150</b>	<b>47</b>	n/a	n/a
<b>Pooled Funds</b>				
Short-term Investments	<b>19</b>	n/a	<b>Daily</b>	<b>1-5 days</b>
Fixed Income	<b>1,823</b>	n/a	<b>Daily</b>	<b>1-5 days</b>
Equity	<b>843</b>	n/a	<b>Daily</b>	<b>1-5 days</b>
<b>Total</b>	<b>5,896</b>	<b>1,257</b>		

The fair value of the pooled funds is classified as Level 2. Infrastructure, real estate and agriculture and timberland investments are measured using NAV as a practical expedient for determining their fair value.

#### Infrastructure

This class includes investments in funds whose investment objective is to generate a combination of long-term capital appreciation and current income, generally through investments such as energy, transportation and utilities. The fair values of investments in this class have been estimated using NAV of the Nuclear Segregated Funds' ownership interest in partners' capital and/or underlying investments held by subsidiaries of an infrastructure fund. The investments in the respective infrastructure funds are not redeemable. However, the Nuclear Segregated Funds may transfer any of their partnership interests/shares to another party, as stipulated in the partnership agreements and/or shareholders' agreements. Distributions from each infrastructure fund will be received based on the operations of the underlying investments and/or as the underlying investments of the infrastructure funds are liquidated. It is not possible to estimate when the underlying assets of the infrastructure funds will be liquidated. However, the infrastructure funds have a maturity end period ranging from 2019 to 2028.

#### Real Estate

This class includes investments in institutional-grade real estate property. The investment objective is to provide a stable level of income with the opportunity for long-term capital appreciation. The fair values of the investments in this class have been estimated using NAV of the Nuclear Segregated Funds' ownership interest in these investments. The partnership investments are not redeemable. However, the Nuclear Segregated Funds may transfer any of their partnership interests to another party, as stipulated in the partnership agreement. Distributions from each real estate fund will be received based on the operations of the underlying investments and/or as the underlying investments are liquidated. For investments in private real estate corporations, shares may be redeemed through a pre-established redemption process. It is not possible to estimate when the underlying assets in this class will be liquidated.

#### Agriculture and Timberland

This class includes a diversified portfolio of global farmland and timberland investments. The investment objective is to provide a differentiated return source, income yield and inflation protection. The fair values of the investments in this class have been estimated using NAV of the Nuclear Segregated Funds' ownership interest in these investments. The investments are not redeemable. However, the Nuclear Segregated Funds may transfer any of their partnership interests/shares to another party, as stipulated in the partnership agreements and/or shareholders' agreements. Distributions from each agriculture and timberland fund will be received based on the operations of the underlying investments and/or as the underlying investments are liquidated. It is not possible to estimate when the underlying assets in this call will be liquidated.

### Pooled Funds

This class represents investments in pooled funds, which primarily include a diversified portfolio of fixed income securities, issued mainly by Canadian corporations, and diversified portfolios of Emerging Market listed equity. The investment objective of the pooled funds is to achieve capital appreciation and income through professionally managed portfolios. The fair value of the investments in this class has been estimated using NAV per share of the investments. There are no significant restrictions on the ability to sell the investments in this class.

## **16. SHARE CAPITAL**

### Common Shares

As at December 31, 2018 and 2017, OPG had 256,300,010 common shares issued and outstanding at a stated value of \$5,126 million. OPG is authorized to issue an unlimited number of common shares without nominal or par value. Any issue of new shares is subject to the consent of OPG's shareholder, the Province.

### Class A Shares

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 equity injections in OPG. All of the outstanding shares are owned directly by the Province and OPG is authorized to issue an unlimited number of Class A shares without nominal or par value. The Class A and common shares rank equally as to entitlement to dividends, and all dividends declared by OPG must 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 preference or distinction. Any issue of new class of 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.

During 2018, OPG issued 6,126,199 Class A shares at a price of \$43.74 per share to the Province for its equity injection in OPG, generating proceeds of \$268 million.

As at December 31, 2018, OPG had 18,343,815 Class A shares issued and outstanding at a stated value of \$787 million (December 31, 2017 – 12,217,616 Class A shares issued and outstanding at a stated value of \$519 million).

## **17. EARNINGS PER SHARE**

Basic and diluted earnings per share are calculated by dividing net income attributable to the Shareholder by the weighted average number of shares outstanding.

Class A shares are included in the weighted average number of shares outstanding. The weighted average number of shares outstanding as at December 31, 2018 was 273.2 million (2017 – 256.7 million). There were no dilutive securities during the years ended December 31, 2018 and 2017.

## **18. COMMITMENTS AND CONTINGENCIES**

### **Litigation**

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 from Ontario Superior Court of Justice to a timetable for the remaining steps in the litigation, pursuant to which the matter was to be set down for trial by December 31, 2018. OPG delivered a statement of defence in accordance with an extension of the original June 30, 2017 delivery deadline set up 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.

Various other legal proceedings are pending against OPG or its subsidiaries covering a wide range of matters that arise in the ordinary course of business activities.

Each of these matters is subject to various uncertainties. Some of these matters may be resolved unfavourably. While it is not possible to determine the ultimate outcome of the various pending actions, it is the Company's belief that their resolution is not likely to have a material adverse impact on its consolidated financial position.

### **Guarantees**

The Company and its joint venture partners have jointly guaranteed the financial performance of jointly owned entities related primarily to the payment of liabilities. As at December 31, 2018, the total amount of guarantees OPG provided to these entities was \$81 million (December 31, 2017 – \$82 million). OPG may terminate some of these guarantees within a short time frame by providing written notice to the counterparties at any time. Other guarantees have terms ending between 2019 and 2029. As at December 31, 2018, the potential impact of the fair value of these guarantees to income has been estimated to be negligible and OPG does not expect to make any payments associated with these guarantees.

## Contractual Obligations

OPG's contractual obligations as at December 31, 2018 are as follows:

<i>(millions of dollars)</i>	2019	2020	2021	2022	2023	Thereafter	Total
Fuel supply agreements	131	114	96	72	76	10	499
Contributions to the OPG registered pension plan <sup>1</sup>	199	203	-	-	-	-	402
Long-term debt repayment	368	663	416	177	46	5,042	6,712
Interest on long-term debt	281	259	230	215	210	3,912	5,107
Fair Hydro Trust senior debt repayment	12	-	-	-	-	900	912
Interest on Fair Hydro Trust senior debt	31	31	31	31	31	379	534
Short-term debt repayment	310	-	-	-	-	-	310
Commitments related to Darlington Refurbishment project <sup>2</sup>	378	-	-	-	-	-	378
Operating licences	43	41	42	43	44	91	304
Operating lease obligations	16	12	11	10	7	30	86
Unconditional purchase obligations	54	52	4	4	-	-	114
Accounts payable and accrued charges	892	18	-	-	-	16	926
Other	120	14	10	10	8	74	236
<b>Total</b>	<b>2,835</b>	<b>1,407</b>	<b>840</b>	<b>562</b>	<b>422</b>	<b>10,454</b>	<b>16,520</b>

<sup>1</sup> The pension contributions include ongoing funding requirements and additional funding requirements towards the deficit, in accordance with the actuarial valuation of the OPG registered pension plan as at January 1, 2018. The next actuarial valuation of the OPG registered pension plan must have an effective date no later than January 1, 2021. The pension contributions are affected by various factors including market performance, changes in actuarial assumptions, plan experience, changes in the pension regulatory environment and the timing of funding valuations. Funding requirements after 2020 are excluded due to significant variability in the assumptions required to project the timing of future cash flows. The amount of OPG's additional, voluntary contribution, if any, is revisited from time to time.

<sup>2</sup> Represents estimated currently committed costs to close the project, including accruals for completed work, demobilization of project staff and cancellation of existing contracts and material orders.

Contractual and commercial commitments as noted exclude certain purchase orders, as they represent purchase authorizations rather than legally binding contracts, and are subject to change without significant penalties.

### Lease Commitments

The Company leases the Bruce A and Bruce B nuclear generating stations to Bruce Power. Under the lease agreement, as amended in December 2015, Bruce Power has options to renew the lease up to the end of 2064. As per *Ontario Regulation 53/05* pursuant to the *Ontario Energy Board Act, 1998*, the difference between OPG's revenues and costs associated with the Bruce A and Bruce B nuclear generating stations is included in the determination of OPG's nuclear regulated prices established by the OEB. The OEB has determined that, since the Bruce nuclear generating stations are not prescribed under *Ontario Regulation 53/05*, these revenues, including lease revenues, and costs, including depreciation expense, are to be calculated on the basis of the manner in which they are recognized in OPG's consolidated financial statements, without the application of regulatory constructs. As such, the net book value of the assets for these stations is not included in the regulated rate base.

The net book value of PP&E on lease to Bruce Power as at December 31, 2018 was \$2,892 million (2017 – \$2,962 million). The net book value is largely comprised of asset retirement costs.

### Collective Bargaining Agreements

The Company maintains labour agreements with the Power Workers' Union (PWU) and the Society of United Professionals (Society). As at December 31, 2018, the PWU represented approximately 4,600 OPG regular employees or approximately 52 percent of OPG's regular workforce. The collective agreement between OPG and the PWU expired on March 31, 2018 and will be concluded through a mediation/arbitration process.

As at December 31, 2018, the Society represented approximately 3,200 OPG employees or approximately 36 percent of OPG's regular workforce. The current collective agreement between OPG and The Society has a one-year term, expiring on December 31, 2019.

## **19. BUSINESS SEGMENTS**

As at December 31, 2018, OPG has the following five reportable business segments:

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

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 PPAs and the supply of energy and capacity into wholesale spot electricity markets.

### **Regulated – Nuclear Generation Segment**

The Regulated – Nuclear Generation business segment operates in Ontario, generating and selling electricity from the Pickering GS and the Darlington GS, both owned and operated by OPG. The business segment also includes revenue under the terms of a long-term lease arrangement and related agreements with Bruce Power related to the Bruce nuclear generating stations. This revenue includes lease revenue, fees for nuclear waste management, and revenue from heavy water sales and detritiation services. Revenues from nuclear waste management, heavy water sales and detritiation services are recognized as services are provided or when products are delivered. The segment also earns revenue from existing isotope sales contracts and ancillary services supplied by OPG from the nuclear stations it operates. Ancillary revenues are earned through voltage control and reactive support.

### **Regulated – Nuclear Waste Management Segment**

OPG's Regulated – Nuclear Waste Management business segment reports the results of the Company's operations associated with the management of nuclear used fuel and L&ILW, the decommissioning of OPG's nuclear generating stations including the stations on lease to Bruce Power and other facilities, the management of the Nuclear Segregated Funds and related activities including the inspection and maintenance of the waste storage facilities. Accordingly, accretion expense, which is the increase in the Nuclear Liabilities carried on the consolidated balance sheets in present value terms due to the passage of time, and earnings from the Nuclear Segregated Funds are reported under this segment.

As the nuclear generating stations operate over time, OPG incurs incremental costs related to used nuclear fuel and L&ILW, which increase the Nuclear Liabilities. OPG charges these incremental costs to current operations in the Regulated – Nuclear Generation segment to reflect the cost of producing energy from the Pickering and Darlington nuclear generating stations and earning revenue under the Bruce Power lease arrangement and related agreements. Since the incremental costs increase the Nuclear Liabilities reported in the Regulated – Nuclear Waste Management segment, OPG records an inter-segment charge between the Regulated – Nuclear Generation and the Regulated – Nuclear Waste Management segments. The impact of the inter-segment charge is eliminated in the consolidated statements of income and balance sheets.

The Regulated – Nuclear Waste Management segment is considered regulated because OPG’s costs associated with the Nuclear Liabilities are included in the OEB’s determination of regulated prices for production from the Pickering and Darlington nuclear generating stations.

### Regulated – Hydroelectric Segment

OPG’s Regulated – Hydroelectric business segment operates in Ontario, generating and selling electricity from most of the Company’s hydroelectric generating stations. The business segment comprises the results of 54 regulated hydroelectric generating stations located across a number of major river systems in the Province. Provided OPG maintains a valid licence from the OEB and continues to remain in compliance with the IESO’s Market Rules, its regulated hydroelectric generating facilities can continue to offer electricity into the market. OPG’s current generation licence is valid till October 2023.

In addition, the business segment includes ancillary and other revenues from OPG’s regulated hydroelectric stations. Ancillary revenues are earned through offering available generating capacity as operating reserve and through the supply of other ancillary services including voltage control and reactive support, certified black start facilities, regulation service and other services.

### Contracted and Other Generation Segment

The Contracted and Other Generation business segment operates in Ontario and in the US through the Company’s Eagle Creek subsidiary, generating and selling electricity from the Company’s generating stations that are not prescribed for rate regulation and includes supply of energy into wholesale spot electricity markets. The segment primarily includes generating facilities that are under an ESA with the IESO or other long-term PPAs. The current ESAs for the thermal generating facilities are set to expire in 2022 and 2024, and for the hydroelectric facilities over the 2059 to 2064 period. Eagle Creek’s PPAs have expiration dates ranging from 2019 to 2039.

The Contracted and Other Generation segment also includes OPG’s share of equity income from its 50 percent ownership interests in PEC and Brighton Beach. Brighton Beach operates under a conversion agreement with Shell Energy North America (Canada) Inc. expiring in 2024, and PEC is operated under the terms of an Accelerated Clean Energy Supply contract with the IESO expiring in 2029.

The business segment also includes ancillary revenues and other revenues from the stations included in the segment, which are earned through offering available generating capacity as operating reserve, and the supply of other ancillary services including voltage control and reactive support, certified black start facilities, regulation service and other services.

OM&A expenses of the generation business segments include a service fee for the use of certain PP&E and intangible assets held within the Other category. The service fee is recorded as an increase to revenue of the Other category, but is eliminated in the consolidated statements of income.

The service fee included in OM&A expenses by segment in 2018 and 2017 was as follows:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Regulated – Nuclear Generation	<b>37</b>	36
Regulated – Hydroelectric	<b>7</b>	7
Contracted and Other Generation	<b>4</b>	4
	<b>48</b>	47

## 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 and third-party 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.

The earnings from the Fair Hydro Trust are comprised of the following for the years ended December 31:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
Revenue	<b>(2)</b>	<b>(8)</b>
Operating expenses	<b>1</b>	<b>8</b>
Interest income	<b>(61)</b>	<b>(1)</b>
Interest expense	<b>34</b>	<b>-</b>
<b>Earnings from Fair Hydro Trust</b>	<b>(28)</b>	<b>(1)</b>

Segment Income (Loss) for the Year Ended December 31, 2018 <i>(millions of dollars)</i>	Regulated				Unregulated				Total
	Nuclear Generation	Nuclear Waste Management	Hydro- electric	Contracted and Other Generation	Fair Hydro Trust	Other	Elimination		
Revenue from contracts with customers	3,437	-	1,425	591	-	15	-	5,468	
Leasing revenue	37	-	-	-	-	20	-	57	
Other revenue	-	131	-	-	-	56	(175)	12	
Total revenue	3,474	131	1,425	591	-	91	(175)	5,537	
Fuel expense	283	-	334	54	-	-	-	671	
Gross margin	3,191	131	1,091	537	-	91	(175)	4,866	
Operations, maintenance and administration	2,302	131	337	180	1	49	(175)	2,825	
Depreciation and amortization	512	-	154	83	-	35	-	784	
Accretion on fixed asset removal and nuclear waste management liabilities	-	971	-	8	-	6	-	985	
Earnings on nuclear fixed asset removal and nuclear waste management funds	-	(854)	-	-	-	-	-	(854)	
Earnings from Fair Hydro Trust	-	-	-	-	(28)	-	-	(28)	
Income from investments subject to significant influence	-	-	-	(44)	-	-	-	(44)	
Property taxes	26	-	1	8	-	2	-	37	
Other losses (gains)	-	-	5	1	-	(276)	-	(270)	
Income (Loss) before interest and income taxes	351	(117)	594	301	27	275	-	1,431	
Net interest expense								77	
<b>Income before income taxes</b>								<b>1,354</b>	
Income tax expense								141	
<b>Net income</b>								<b>1,213</b>	

Segment Income (Loss) for the Year Ended December 31, 2017 (millions of dollars)	Regulated			Unregulated			Total	
	Nuclear Generation	Nuclear Waste Management	Hydro- electric	Contracted and Other Generation	Fair Hydro Trust	Other		Elimination
Revenue from contracts with customers	3,058	-	1,436	579	-	6	-	5,079
Leasing revenue	37	-	-	-	-	30	-	67
Other revenue	-	121	-	-	-	54	(163)	12
Total revenue	3,095	121	1,436	579	-	90	(163)	5,158
Fuel expense	284	-	351	53	-	1	-	689
Gross margin	2,811	121	1,085	526	-	89	(163)	4,469
Operations, maintenance and administration	2,293	129	330	169	1	65	(163)	2,824
Depreciation and amortization	431	-	139	79	-	30	-	679
Accretion on fixed asset removal and nuclear waste management liabilities	-	943	-	9	-	8	-	960
Earnings on nuclear fixed asset removal and nuclear waste management funds	-	(801)	-	-	-	-	-	(801)
Earnings from Fair Hydro Trust	-	-	-	-	(1)	-	-	(1)
Income from investments subject to significant influence	-	-	-	(38)	-	-	-	(38)
Property taxes	26	-	1	7	-	6	-	40
Other losses (gains)	4	-	1	-	-	(384)	-	(379)
Income (Loss) before interest and income taxes	57	(150)	614	300	-	364	-	1,185
Net interest expense								95
<b>Income before income taxes</b>								<b>1,090</b>
Income tax expense								209
<b>Net income</b>								<b>881</b>

Selected Consolidated Balance Sheets information as at December 31, 2018 <i>(millions of dollars)</i>	Regulated			Unregulated			Total
	Nuclear Generation	Nuclear Waste Management	Hydro- electric	Contracted and Other Generation	Fair Hydro Trust	Other	
Segment property, plant and equipment in-service, net	6,228	-	7,360	4,009	-	202	17,799
Segment construction in Progress	4,869	-	178	119	-	22	5,188
Segment property, plant and equipment, net	11,097	-	7,538	4,128	-	224	22,987
Segment intangible assets in-service, net	8	-	1	117	-	80	206
Segment development in Progress	13	-	-	-	-	37	50
Segment intangible assets, net	21	-	1	117	-	117	256
Segment goodwill	-	-	-	107	-	-	107
Segment fuel inventory	253	-	-	41	-	-	294
Segment materials and supplies inventory:							
Current	101	-	-	2	-	-	103
Long-term	343	-	-	4	-	-	347
Nuclear fixed asset removal and nuclear waste management funds (current and non-current portions)	-	17,483	-	-	-	-	17,483
Financing receivables	-	-	-	-	1,788	-	1,788
Fixed asset removal and nuclear waste management Liabilities	-	(20,922)	-	(159)	-	(144)	(21,225)

Selected Consolidated Balance Sheets information as at December 31, 2017 <i>(millions of dollars)</i>	Regulated			Unregulated			Total
	Nuclear Generation	Nuclear Waste Management	Hydro- electric	Contracted and Other Generation	Fair Hydro Trust	Other	
Segment property, plant and equipment in-service, net	6,167	-	7,359	3,480	-	224	17,230
Segment construction in progress	3,839	-	157	78	-	18	4,092
Segment property, plant and equipment, net	10,006	-	7,516	3,558	-	242	21,322
Segment intangible assets in-service, net	4	-	1	5	-	84	94
Segment development in progress	16	-	-	-	-	23	39
Segment intangible assets, net	20	-	1	5	-	107	133
Segment fuel inventory	265	-	-	44	-	-	309
Segment materials and supplies inventory:							
Current	102	-	-	1	-	-	103
Long-term	351	-	-	4	-	-	355
Nuclear fixed asset removal and nuclear waste management funds (current and non-current portions)	-	16,724	-	-	-	-	16,724
Financing receivables	-	-	-	-	1,179	-	1,179
Fixed asset removal and nuclear waste management liabilities	-	(20,077)	-	(151)	-	(193)	(20,421)

Segment Capital Expenditure Information <i>(millions of dollars)</i>	Regulated			Unregulated			
	Nuclear Generation	Nuclear Waste Management	Hydro- electric	Contracted and Other Generation	Fair Hydro Trust	Other	Total
Year ended December 31, 2018 Investment in property, plant and equipment, and intangible assets	1,492	-	167	135	-	65	1,859
Year ended December 31, 2017 Investment in property, plant and equipment, and intangible assets	1,631	-	148	73	-	74	1,926

## 20. NET CHANGES IN NON-CASH WORKING CAPITAL BALANCES

<i>(millions of dollars)</i>	December 31	
	2018	2017
Receivables from related parties	(114)	60
Fuel inventory	15	1
Materials and supplies	18	30
Prepaid expenses	(1)	(14)
Other current assets <sup>1</sup>	(10)	(31)
Income taxes payable	(43)	2
Accounts payable and accrued charges	(25)	32
	(160)	80

<sup>1</sup> Represents other accounts receivable.

## 21. 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.

## 22. SALE OF NON-CORE ASSETS

### Sale of Lakeview site

In March 2018, OPG completed the sale of its former Lakeview GS site property 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.

### Sale of head office premises

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 with a gain on sale of \$283 million, net of tax effects of \$95 million, recognized in net income during the year ended December 31, 2017. Pursuant to the Shareholder Declaration and Shareholder Resolution, and as prescribed in the 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. For further discussion of the transfer, refer to Note 21.

### 23. RELATED PARTY TRANSACTIONS

As the Province owns all of the shares of OPG, related parties include the Province and other entities controlled by the Province.

The related party transactions summarized below include transactions with the Province and the principal successors to the former Ontario Hydro's integrated electricity business, including Hydro One Limited (Hydro One), the IESO and the OEFC. The transactions between OPG and the related parties are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties. As one of several wholly-owned government business enterprises of the Province, OPG also has transactions in the normal course of business with various government ministries and organizations in Ontario that fall under the purview of the Province.

The related party transactions for the years ended December 31 are summarized below:

<i>(millions of dollars)</i>	<b>2018</b>		<b>2017</b>	
	<b>Income</b>	<b>Expense</b>	<b>Income</b>	<b>Expense</b>
Hydro One				
Electricity sales	11	-	8	-
Services	-	7	1	10
Dividends	7	-	7	-
Province of Ontario				
Change in Decommissioning Segregated Fund amount due to Province <sup>1</sup>	-	(419)	-	456
Change in Used Fuel Segregated Fund amount due to Province <sup>1</sup>	-	(547)	-	591
Hydroelectric gross revenue charge	-	108	-	110
ONFA guarantee fee	-	-	-	8
Other	-	-	-	2
OEFC				
Hydroelectric gross revenue charge	-	219	-	216
Interest expense on long-term notes	-	149	-	158
Income taxes	-	267	-	246
IESO				
Electricity related revenue	5,068	-	4,802	-
Earnings from Fair Hydro Trust	63	-	1	-
	<b>5,149</b>	<b>(216)</b>	<b>4,819</b>	<b>1,797</b>

<sup>1</sup> The Nuclear Segregated Funds are reported on the consolidated balance sheets net of amounts recognized as due to the Province in respect of any excess funding and, for the Used Fuel Segregated Fund, the Province's rate of return guarantee. As at December 31, 2018 and December 31, 2017, the Nuclear Segregated Funds were reported net of amounts due to the Province of \$3,496 million and \$4,462 million, respectively.

The receivables, financing receivables, equity securities, payables and long-term debt balances between OPG and its related parties are summarized below:

<i>(millions of dollars)</i>	December 31	
	2018	2017
Receivables from related parties		
Hydro One	1	1
IESO – Electricity related receivables	478	354
IESO – Fair Hydro Trust <sup>1</sup>	2	7
PEC	2	4
Province of Ontario	-	3
Financing receivables		
IESO – Fair Hydro Trust	1,788	1,179
Equity Securities		
Hydro One shares	153	188
Accounts payable and accrued charges		
Hydro One	4	1
OEFC	50	52
Province of Ontario	8	9
IESO – Electricity related payables	8	11
IESO – Fair Hydro Trust	13	3
Long-term debt (including current portion)		
Notes payable to OEFC	3,400	3,195

<sup>1</sup> Balance consists of unbilled revenue.

OPG may hold Province of Ontario bonds and treasury bills in the Nuclear Segregated Funds and the OPG registered pension fund. As at December 31, 2018, the Nuclear Segregated Funds held \$1,399 million of Province of Ontario bonds (2017 – \$1,502 million) and \$2 million of Province of Ontario treasury bills (2017 – \$9 million). As of December 31, 2018, the registered pension fund held \$41 million of Province of Ontario bonds (2017 – nil) and no Province of Ontario treasury bills (2017 – \$1 million). These Province of Ontario bonds and treasury bills are publicly traded securities and are measured at fair value. OPG jointly oversees the investment management of the Nuclear Segregated Funds with the Province.

During 2018, the Fair Hydro Trust purchased Investment Interests from the IESO for exchange amounts totalling \$609 million (2017 – \$1,179 million), which have been classified as a financing receivable on OPG's consolidated balance sheets. The transactions were settled in cash using proceeds from the Trust's issuance of senior debt to third parties and subordinated debt to OPG. Pursuant to the general regulation of the Fair Hydro Act, the IESO is required to pay and remit carrying costs of the Trust, excluding repayment of principal on any debt obligations, up to July 31, 2021. Commencing May 1, 2021, specified consumers are to be invoiced by their local distribution company for the Clean Energy Adjustment, if any, to pay the carrying costs of the Trust. These funds are to be remitted to the Trust through the IESO and are to be used to settle all funding and other related expenses of the Trust that underlie the financing receivable.

As at December 31, 2018, OPG's consolidated balance sheet included approximately \$2 million of unbilled cost recovery revenue from the IESO (2017 – \$7 million), primarily for OPG's general fee as the Financial Services Manager under the Fair Hydro Act relating to management fees, incurred third-party costs, and certain direct labour costs.

The Province has provided a limited guarantee to specified creditors of the Fair Hydro 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.

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

## 24. INVESTMENTS SUBJECT TO SIGNIFICANT INFLUENCE

Investments subject to significant influence consist of OPG's 50 percent ownership interest in the jointly controlled entities of PEC and Brighton Beach, together with minority interests in 12 entities engaged in the operation of hydroelectric or solar facilities in the US that OPG acquired in November 2018 as part of the acquisition of Eagle Creek. These investments subject to significant influence are accounted for using the equity method. A summary of the balances of the investments subject to significant influence as at December 31 are as follows:

<i>(millions of dollars)</i>	<b>2018</b>	<b>2017</b>
<b>PEC</b>		
Current assets	<b>21</b>	20
Long-term assets	<b>225</b>	240
Current liabilities	<b>(8)</b>	(10)
Long-term liabilities	<b>(6)</b>	(6)
<b>Brighton Beach</b>		
Current assets	<b>7</b>	5
Long-term assets	<b>150</b>	160
Current liabilities	<b>(18)</b>	(17)
Long-term liabilities	<b>(9)</b>	(9)
Long-term debt	<b>(58)</b>	(74)
<b>Other <sup>1</sup></b>		
Aggregate net assets	<b>35</b>	-
<b>Investments subject to significant influence</b>	<b>339</b>	309

<sup>1</sup> Represents Eagle Creek's minority interests in 12 entities

## 25. RESEARCH AND DEVELOPMENT

For the year ended December 31, 2018, research and development expenses of \$106 million (2017 – \$107 million) were charged to OM&A expenses.

## **26. NON-CONTROLLING INTEREST**

### PSS Generating Station LP

PSS is a limited partnership between OPG, Coral Rapids Power Corporation (CRP) and PSS Generating Station Inc. The principal business of the partnership is the development, construction, ownership, operation and maintenance of the 28 megawatt (MW) Peter Sutherland Sr. hydroelectric GS on the New Post Creek. OPG consolidates the results of PSS in its consolidated financial statements and reports the equity interest of CRP as non-controlling interest.

The Peter Sutherland Sr. GS was placed in-service in March 2017 and, in April 2017, CRP increased its interest in PSS to 33 percent under the partnership agreement, by making contributions of \$21 million, reducing OPG's interest to 67 percent. CRP's 33 percent interest in PSS is reported as non-controlling interest. As a result of CRP increasing its interest in the partnership, PSS's AOCL and partner's deficit as at the time of CRP's contribution were proportionately allocated to CRP as a reduction to its non-controlling interest.

### Nanticoke Solar LP

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 IESO's Large Renewal Procurement program to construct a 44 MW solar facility at OPG's Nanticoke GS site and adjacent lands. In the first quarter of 2017, OPG acquired all of SECCLP's interests in NSLP, which represented 25 percent of the equity interest in NSLP. Subsequent to the acquisition, OPG owns 90 percent of the equity interest in NSLP, with an approximate value of \$2 million as at December 31, 2018.

OPG consolidates the results of NSLP in its consolidated financial statements and reports the equity interest of the subsidiary of Six Nations of the Grand River Development Corporation as non-controlling interest.

## **27. SUBSEQUENT EVENTS**

### Green Bond Offering

In January 2019, OPG issued a second green bond offering under its existing Medium Term Note Program. The \$500 million 30-year bonds were priced with an interest rate of 4.25 percent maturing in 2049. The net proceeds are to be used to finance eligible projects in OPG's Green Bond Framework, including the acquisition of Eagle Creek.

### OEB's Decision on OPG's Application to Recover Deferral and Variance Accounts

On February 21, 2019, the OEB issued a decision and order that approved a 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.

# OPG Officers



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Board Chair



**Ken Hartwick**  
President and  
Chief Executive  
Officer



**Shelley Babin**  
Senior Vice  
President, Law and  
General Counsel



**Nicolle Butcher**  
Senior Vice  
President,  
Corporate Business  
Development and  
Strategy



**Alec Cheng**  
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**Heather Ferguson**  
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Governance and  
Corporate Secretary



**John Mauti**  
Chief Financial  
Officer and Senior  
Vice President,  
Finance

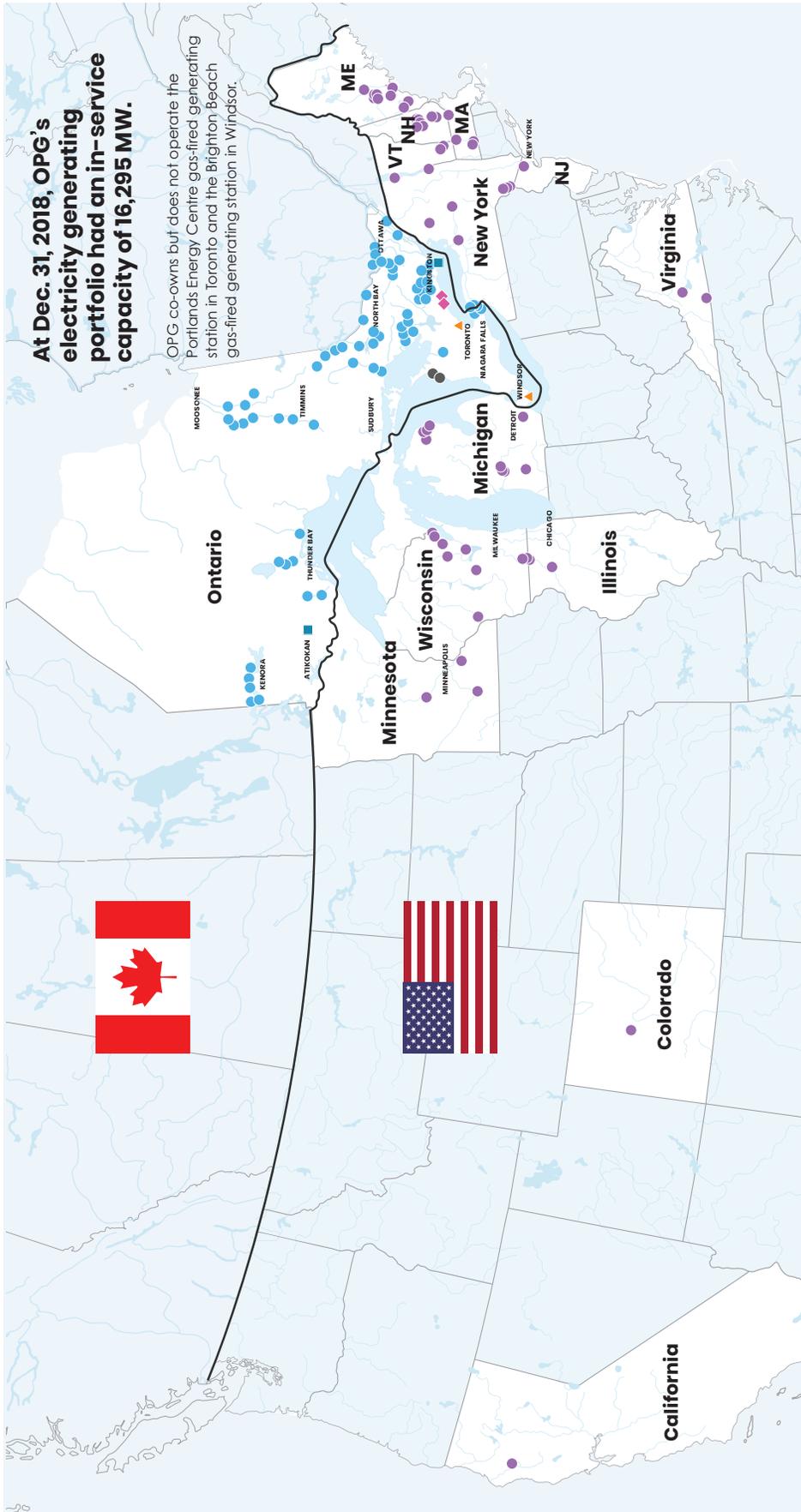


**Dominique Minière**  
President, Nuclear



**Dietmar Reiner**  
Senior Vice President,  
Chief Project Officer

# Ontario Power Generation Facilities



Map does not include minority-owned facilities in the U.S. representing approximately 10 megawatts.



This annual report is also available in French on our website  
Ce rapport est également publié en français sur notre site Web  
[www.opg.com](http://www.opg.com)

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