ONTARIOPOWER GENERATION
News from Ontario Power Generation
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# OPG REPORTS 2019 FINANCIAL RESULTS

*Company Reports Strong Operational and Financial Performance; Continues Successful Execution of Darlington Refurbishment Project*

**[Toronto]:** – Ontario Power Generation Inc. (OPG or Company) today reported net income attributable to the Shareholder of $1,126 million for 2019, compared to $1,195 million in 2018.

The Company is pleased to report that its 2019 year end results have provided another strong financial return for its shareholder, the Province of Ontario. OPG continues to achieve strong generation performance from its fleet, while remaining one of the lowest-cost generators in Ontario, for the benefit of the province and electricity consumers.

"We recognized strong performance from our fleet throughout the year. In particular, station operations at the Pickering nuclear generating station (Pickering GS) are better than ever, with increasingly high levels of plant performance," said Ken Hartwick, OPG President and CEO. "The Pickering GS was recently recognized as one of the world's top performing nuclear stations, receiving an exemplary performance rating from the World Association of Nuclear Operators. This is a tremendous honour and I want to thank again the entire team at the Pickering GS for their record-breaking performance in all areas of operations at the plant and continuous commitment to workplace and public safety."

Hartwick also provided an update on the Darlington Refurbishment project. "OPG continues to remain focused on delivering the Darlington Refurbishment project, one of Canada's largest clean energy projects, on time and on budget. Reassembly of the Unit 2 reactor is now complete, with the final feeder tube installed in the fourth quarter of 2019. We look forward to celebrating Unit 2 returning to service in the second quarter of 2020."

In December 2019, the provinces of Ontario, Saskatchewan and New Brunswick entered into a Memorandum of Understanding to advance the development of Small Modular Reactors (SMRs). Hartwick commented, "SMRs represent the next generation of innovative, versatile and scalable nuclear reactors that promise to further enhance the safety, economic and environmental benefits of nuclear energy. This is an exciting opportunity for Canada to take a global leadership role in this emerging technology and one that fits well with our Company's expertise and existing clean energy portfolio."

The Company's net income for 2019 reflects continuing strong operating performance, including higher nuclear electricity generation resulting in $189 million of additional revenue, net of fuel expense, compared to 2018. The financial results for 2018 included an after-tax gain of $205 million from the sale of the former Lakeview GS site.

OPG continued to provide electricity at a price that is approximately 40 per cent less than the average of other generators in Ontario during 2019.

**Generating and Operating Performance**

Electricity generated in 2019 was 77.8 terawatt hours (TWh) compared to 74.0 TWh in 2018. The increase in generation was due to higher generation across all of OPG's business segments.

*Regulated – Nuclear Generation Segment*

Higher nuclear generation of 2.6 TWh during 2019 compared to 2018 was primarily due to fewer planned and unplanned outage days at the Pickering GS.

At the Darlington nuclear generating station (Darlington GS), the unit capability factor was 87.4 per cent, comparable to 88.6 per cent for 2018. The decrease is attributable to an increase in unplanned outage days, largely offset by a decrease in planned outage days. Overall outage days for the three units not currently undergoing refurbishment increased to 142 days in 2019, from 134 days in 2018.

At the Pickering GS, the unit capability factor increased to 87.6 per cent for 2019 compared to 79.1 per cent for 2018. The increase is attributable to a decrease in both planned and unplanned outage days. For the year ended December 31, 2019, overall outage days for the six operating units decreased to 278 days in 2019, from 490 days in 2018. Recognizing the station's strong operating and safety performance and taking into account the economic and other benefits to Ontario, the Company is working on a plan to further optimize the shutdown sequence of the Pickering GS units as they approach the end of commercial operation. Operating any of the units past December 31, 2024 would be subject to CNSC regulatory approval, through a public hearing process.

*Regulated – Hydroelectric Segment*

Higher generation from the regulated hydroelectric stations of 0.7 TWh during 2019 compared to 2018 was primarily due to higher water flows across most of the province, particularly in the spring of 2019.

The availability of 86.6 per cent at these stations for 2019 was higher than 86.0 per cent for 2018. The increase in availability was primarily due to fewer planned outages at regulated hydroelectric generating stations in the eastern Ontario region, partially offset by a higher number of unplanned outages at regulated hydroelectric generating stations in the eastern Ontario and south-central Ontario regions.

*Contracted and Other Generation Segment*

Higher generation from the Contracted and Other Generation segment of 0.5 TWh during 2019 compared to 2018 was primarily due to electricity generation from facilities in the United States that were acquired in November 2018 and October 2019, partially offset by lower water flows at contracted facilities in Ontario in the second half of 2019.

The availability of the Ontario-based hydroelectric stations within the segment was 77.0 per cent for 2019, compared to 78.4 per cent for 2018. The decrease in the availability was primarily due to a higher number of unplanned outage days at the contracted hydroelectric generating stations in the northeastern Ontario region.

*Total Generating Cost*

The Enterprise Total Generating Cost (TGC) per megawatt hour (MWh) was $50.82 for 2019, compared to $53.24 for 2018. The decrease in Enterprise TGC per MWh was primarily due to higher electricity generation and lower OM&A expenses from the Regulated – Nuclear Generation and Regulated – Hydroelectric business segments, partially offset by higher capital expenditures for these business segments.

**Generation Development**

OPG is undertaking a number of generation development and other projects in support of Ontario's electricity system. Significant developments during 2019 were as follows:

*Darlington Refurbishment*

The Darlington Refurbishment project is expected to extend the operating life of the four-unit Darlington GS by at least 30 years. The execution of the project commenced in 2016 with the refurbishment of Unit 2.

In the fourth quarter of 2019, the Lower Feeder and Lower Body Tubing installation series were completed on Unit 2, the latter representing the completion of the third major segment of the Unit 2 refurbishment which included the installation of new reactor components. The fourth and final major segment, which is focused on returning the unit to service, began in November 2019 with the commencement of fuel loading into the reactor, which was completed by the end of November 2019. The Primary Heat Transport System was successfully filled with heavy water in January 2020. The project is currently working to restore the reactor vault, which includes removing the bulkheads to reconnect Unit 2 back to the operating units. Vault Restoration is on track for completion toward the end of the first quarter of 2020. Achievement of this milestone will represent the completion of construction work, full reconnection of Unit 2 to the station, and transition of the unit to start-up activities. It is expected that Unit 2 will return to service in the second quarter of 2020.

OPG continues to progress with the planning and prerequisite activities related to the Unit 3 refurbishment, incorporating experience learned to date from the Unit 2 refurbishment. The Unit 3 refurbishment execution is expected to commence in the second quarter of 2020. As of December 31, 2019, $488 million has been invested in planning and prerequisite activities for the Unit 3 refurbishment, including procurement of materials and components with long lead times.

Total life-to-date capital expenditures on the project were approximately $6.7 billion as at December 31, 2019. The overall project continues to track on schedule and to the $12.8 billion budget.

*Ranney Falls Hydroelectric GS*

OPG has completed construction and continues commissioning on a new 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, doubling the total station generating capacity. Due to equipment component issues identified during commissioning, the new in-service date for the project is expected to be in the first half of 2020. The project continues to track on budget of $77 million. The Ranney Falls GS is reported in the Regulated – Hydroelectric business segment.

*Little Long Dam Safety Project*

In January 2019, OPG initiated a plan to improve dam safety along the Lower Mattagami River in Ontario, primarily through the Little Long Dam Safety project. The project will increase the discharge capacity and make other reliability and operational improvements at the Little Long Main Dam, helping the Company to comply with updated dam safety requirements established by the Province of Ontario. The project entered the execution phase in the fourth quarter of 2019 with the procurement of critical materials, advanced detailed engineering construction design and permitting activities. The project's expected in-service date is in 2023, with a budget of $650 million. The Little Long Dam supports OPG's hydroelectric generating stations on the Lower Mattagami River, which are reported in the Contracted and Other Generation business segment.

*Sir Adam Beck I Hydroelectric GS Units G1 and G2 Replacement*

OPG has initiated a project to replace two older generating units at the Sir Adam Beck I GS that used outdated line frequency technology of 25 Hz prior to being decommissioned in 2009. The conversion of these units to standard generator technology of 60 Hz is expected to add approximately 125 MW of incremental generating capacity, providing many more decades of cost effective, clean power from one of the flagship stations in the Company's hydroelectric fleet. During 2019, OPG removed the decommissioned units and associated equipment from the site and continued front-end engineering design activities, and is in the process of finalizing the detailed cost and schedule commitments for the project. The installation of the new G2 unit is scheduled to begin in the second half of 2020 following the completion of engineering design activities. The project's expected in-service date is in 2022, with a total estimated cost in the range of $120 million to $150 million. The Sir Adam Beck I GS is reported in the Regulated – Hydroelectric business segment.

## FINANCIAL AND OPERATIONAL HIGHLIGHTS

| *(millions of dollars – except where noted)* | **2019** | **2018** |
|---|---|---|
| Revenue | **6,022** | 5,537 |
| Fuel expense | **677** | 671 |
| Operations, maintenance and administration | **2,788** | 2,825 |
| Depreciation and amortization | **1,073** | 784 |
| Other net expenses (gains) [1] | **87** | (174) |
| Income before interest and income taxes | **1,397** | 1,431 |
| Net interest expense | **64** | 77 |
| Income tax expense | **190** | 141 |
| **Net income attributable to the Shareholder** | **1,126** | 1,195 |
| **Net income attributable to non-controlling interest** [2] | **17** | 18 |
| ***Income before interest and income taxes*** | | |
| Electricity generation business segments | **1,522** | 1,246 |
| Regulated – Nuclear Waste Management | **(113)** | (117) |
| Other [1] | **(12)** | 302 |
| Total income before interest and income taxes | **1,397** | 1,431 |
| ***Cash flow*** | | |
| Cash flow provided by operating activities | **2,606** | 1,687 |
| ***Capital expenditures*** [3] | **1,991** | 1,859 |
| ***Electricity generation (TWh)*** | | |
| Regulated – Nuclear Generation | **43.5** | 40.9 |
| Regulated – Hydroelectric | **30.5** | 29.8 |
| Contracted and Other Generation [4] | **3.8** | 3.3 |
| Total electricity generation | **77.8** | 74.0 |
| ***Nuclear unit capability factor (per cent)*** [5] | | |
| Darlington Nuclear GS | **87.4** | 88.6 |
| Pickering Nuclear GS | **87.6** | 79.1 |
| ***Availability (per cent)*** | | |
| Regulated – Hydroelectric | **86.6** | 86.0 |
| Contracted and Other Generation – hydroelectric stations [6] | **77.0** | 78.4 |
| ***Equivalent forced outage rate*** | | |
| Contracted and Other Generation – thermal stations [7] | **2.6** | 2.5 |
| *Enterprise Total Generating Cost (TGC) per MWh ($/MWh)* [8] | **50.82** | 53.24 |
| *Return on Equity Excluding Accumulated Other Comprehensive Income (ROE Excluding AOCI) for December 31, 2019 and 2018 (per cent)* [8] | **8.2** | 9.5 |

1 For 2018, includes the pre-tax gain on the sale of the former Lakeview GS site.
2 Relates to the following: the 25 per cent interest of Amisk-oo-Skow Finance Corporation, a corporation wholly-owned by the Moose Cree First Nation in Lower Mattagami Limited Partnership; the 33 per cent interest of Coral Rapids Power Corporation, a corporation wholly-owned by the Taykwa Tagamou Nation, in PSS Generating Station Limited Partnership; the 15 per cent and 5 per cent interests of corporations wholly-owned by Six Nations of Grand River Development Corporation and the Mississaugas of the Credit First Nation, respectively, in Nanticoke Solar LP; and non-controlling interests in certain stations in the United States.
3 Includes net changes in accruals and excludes the acquisition of the remaining 50 percent interest in the Brighton Beach GS on August 30, 2019.
4 Includes OPG's proportionate share of electricity generation from co-owned facilities and minority-held facilities.
5 Excludes nuclear unit(s) during the period in which they are undergoing refurbishment.
6 Reflects the availability of contracted hydroelectric generating stations in Ontario.
7 Reflects the reliability of wholly owned thermal stations. For 2018, includes unplanned outage days at the Thunder Bay GS prior to cessation of operations in July 2018. Excludes the Brighton Beach GS, the remaining 50 per cent ownership of which was acquired on August 30, 2019.
8 Enterprise TGC per MWh and ROE Excluding AOCI are non-GAAP financial measures and do not have any standardized meaning prescribed by US GAAP. Additional information about the non-GAAP measures is provided in OPG's Management's Discussion and Analysis for the year ended December 31, 2019, in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

OPG is the largest electricity generator in the province, providing almost half of the power Ontarians rely on every day. It is also one of the most diverse generators in North America, with expertise in nuclear, hydroelectric, biomass, solar and natural gas technologies.

Ontario Power Generation Inc.'s audited consolidated financial statements and Management's Discussion and Analysis as at and for the year ended December 31, 2019 can be accessed on OPG's web site (www.opg.com), the Canadian Securities Administrators' web site (www.sedar.com), or can be requested from the Company.

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# ONTARIO POWER GENERATION INC.

# MANAGEMENT'S DISCUSSION AND ANALYSIS

## DECEMBER 31, 2019

**2019 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, 2019. 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), 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). The current exemption 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 12, 2020.

Additional information about OPG, including the Company's Annual Information Form, is available on SEDAR at www.sedar.com and the Company's website at www.opg.com.

### 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 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 (GS) performance, availability and operating lives, fuel costs, surplus baseload generation (SBG), cost of fixed asset removal and nuclear waste management and associated funding requirements, performance and earnings of investment funds, refurbishment of existing facilities, development and construction of new facilities, acquisition transactions, performance of acquired businesses, defined benefit pension and other post-employment benefit (OPEB) obligations and funds, income taxes, proposed new legislation, the ongoing evolution of electricity industries and markets in Ontario and the United States (US), the continued application and renewal of energy supply agreements and other contracts 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, changes in the Company's workforce, renewal of union collective agreements, business continuity events, the weather, financing requirements and liquidity, funding sources, applications to the Ontario Energy Board (OEB) for regulated prices, the impact of regulatory decisions by the OEB, forecasts of earnings, cash flow, Return on Equity Excluding Accumulated Other Comprehensive Income (ROE Excluding AOCI), Total Generating Cost (TGC), operations, maintenance and administration (OM&A) expenses and project and other 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:

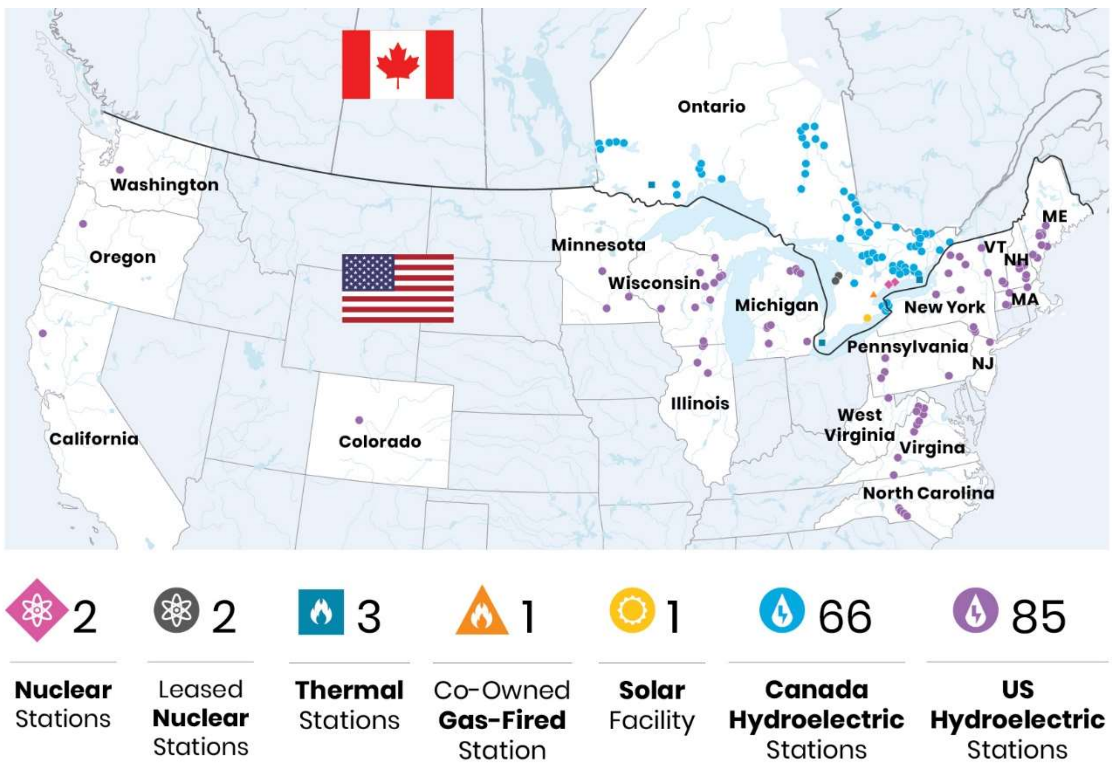
- "Return on Equity Excluding Accumulated Other Comprehensive Income";
- "Enterprise Total Generating Cost per Megawatt-Hour"; and
- "Gross Margin".

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) and is wholly owned by the Province of Ontario (Province or Shareholder). OPG's electricity generation portfolio had an in-service generating capacity of 17,017 megawatts (MW) as at December 31, 2019.

As of December 31, 2019, OPG and its wholly-owned subsidiaries owned and operated two nuclear generating stations, 66 hydroelectric generating stations, three thermal generating stations and one solar facility in Ontario, Canada. Through its wholly-owned subsidiaries in the US, the Company also wholly or jointly owned and operated 85 hydroelectric generating stations and held minority shareholdings in 13 hydroelectric and two solar facilities in the United States. In addition, OPG and TC Energy Corporation (TC Energy) co-own the 550 MW Portlands Energy Centre combined-cycle natural gas-fired GS (PEC), located in Ontario. OPG also owns two nuclear generating stations in Ontario, the Bruce A GS and the Bruce B GS (together, the Bruce nuclear generating stations), which are leased on a long-term basis to Bruce Power L.P. (Bruce Power). As at December 31, 2019, OPG did not operate PEC, the Bruce nuclear generating stations, and the minority-held facilities in the United States.

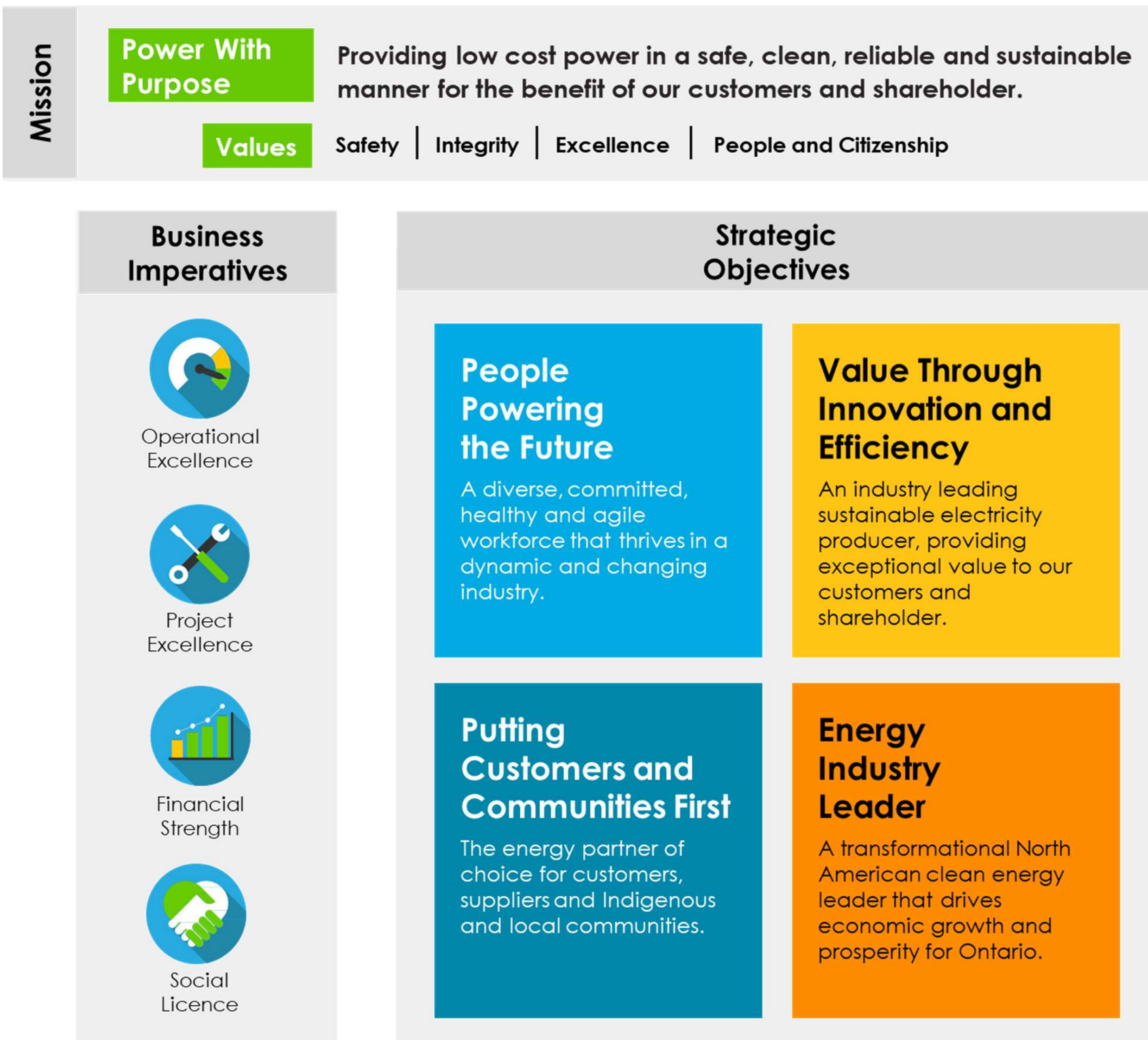



Income from the co-owned and minority-held facilities is accounted for using the equity method of accounting, with OPG's share of income included within income from investments subject to significant influence in the Contracted and Other Generation business segment. OPG's proportionate share of the in-service generating capacity and electricity generation volume from the co-owned and minority-held facilities is included in the Company's generation portfolio statistics set out in this MD&A.

Income from the stations leased to Bruce Power is included in revenue under the Regulated – Nuclear Generation segment. The leased stations are not included in the Company's electricity generation and other operating statistics set out in this MD&A.

**Corporate Strategy**

OPG's mission is to provide low-cost power in a safe, clean, reliable and sustainable manner for the benefit of the customers and Shareholder. The Company's four business imperatives, together with OPG's values, describe the areas in which OPG needs to continue to demonstrate excellence to enable achievement of its strategic objectives. The four strategic objectives describe the Company's long-term goals.



## Reporting Structure

The composition of OPG's reportable business segments effective as at December 31, 2019 is as follows:

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

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 Ontario-based regulated facilities comprise 54 hydroelectric generating stations across a number of major river systems in the province, the Pickering nuclear GS (Pickering GS) and the Darlington nuclear GS (Darlington GS). The operating results related to these facilities are described under the Regulated – Nuclear Generation, Regulated – Nuclear Waste Management and Regulated – Hydroelectric segments.

OPG's non-regulated generating facilities include 12 hydroelectric stations, three thermal stations and one solar facility located in Ontario that are operated under Energy Supply Agreements (ESAs) with the Independent Electricity System Operator (IESO) or other long-term contracts, and 85 wholly or jointly owned and operated hydroelectric generating stations located in the United States. The operating results related to these facilities are described under the Contracted and Other Generation segment.

A description of all of OPG's business 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)* | **2019** | **2018** |
|---|---|---|
| Regulated – Nuclear Generation [1] | **5,728** | 5,728 |
| Regulated – Hydroelectric | **6,420** | 6,426 |
| Contracted and Other Generation [2] | **4,869** | 4,141 |
| Total | **17,017** | 16,295 |

[1] 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.

[2] Includes OPG's proportionate share of in-service generating capacity from co-owned and minority-held electricity generating facilities.

The total in-service generating capacity as at December 31, 2019 increased by 722 MW compared to 2018. The increase was primarily due to the addition of 19 hydroelectric generating facilities in the US as part of the acquisition of Cube Hydro Partners, LLC and affiliate Helix Partners, LLC (collectively, Cube Hydro) in October 2019, the acquisition of the remaining 50 percent interest in the Brighton Beach combined-cycle natural gas-fired generating station (Brighton Beach GS) in August 2019 and the completion of the Nanticoke solar facility which was placed in service in March 2019. As of December 31, 2019, OPG's total in-service generating capacity in the US was 627 MW.

## REVENUE MECHANISMS FOR REGULATED AND NON-REGULATED GENERATION

### Regulated Generation

The majority of OPG's electricity generation is from the Regulated – Nuclear Generation and Regulated – Hydroelectric business segments. The OEB sets volumetric prices for electricity generated from these nuclear and regulated hydroelectric facilities in Ontario. The regulated prices are generally designed to permit the Company to recover, over a forecasted generation volume, an allowed level of operating costs and capital investment and to earn a formula-based rate of return on a deemed equity portion of the capital invested in the regulated assets, known 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. *Ontario Regulation 53/05* under the *Ontario Energy Board Act, 1998* sets out certain requirements the OEB must follow in setting regulated prices for OPG's prescribed facilities. The outcomes of OPG's applications for regulated prices to the OEB determine a large portion of the Company's revenues and can have a significant impact on the Company's financial performance.

The following table presents the OEB-authorized regulated prices for electricity generated from the regulated facilities in Ontario for the period from January 1, 2018 to December 31, 2021 in effect as of the date of this MD&A:

| *($/MWh)* | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| **Regulated – Nuclear Generation** | | | | |
| Base regulated price [1] | 78.64 | **77.00** | 85.00 | 89.70 |
| Interim period shortfall rider [2] | 2.88 | **7.71** | 5.64 | - |
| Deferral and variance account rate riders [3] | 1.05 | **4.99** | 4.32 | 6.13 |
| Total regulated price | 82.57 | **89.70** | 94.96 | 95.83 |
| **Regulated – Hydroelectric** | | | | |
| Base regulated price [4] | 42.05 | **42.51** | 43.15 | n/a |
| Interim period shortfall rider [2] | 0.13 | **0.35** | 0.24 | - |
| Deferral and variance account rate riders [3] | 0.52 | **2.60** | 2.26 | 2.05 |
| Total regulated price | 42.70 | **45.46** | 45.65 | n/a |

[1] Base regulated prices for the nuclear facilities were established using a rate smoothing approach that may defer a portion of each year's approved nuclear revenue requirement for future collection in the Rate Smoothing Deferral Account. Base regulated prices for the nuclear facilities do not include amounts deferred in the Rate Smoothing Deferral Account.

[2] In its payment amounts order issued in March 2018, the OEB authorized separate rate riders on OPG's regulated electricity generation to allow for the recovery of the revenue shortfall between the 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. The interim period revenue shortfall amount approved for recovery was recognized as an increase to revenue and a regulatory asset and is being collected through rate riders over the March 1, 2018 to December 31, 2020 period. The OEB determined that there will be no true up mechanism for differences in recovery of the approved interim period revenue shortfall due to differences between forecasted electricity generation used to set the rate riders and actual electricity generation upon which the rate riders are collected.

[3] Differences in recovery of the approved regulatory account balances due to differences between forecasted electricity generation used to set the rate riders and actual electricity generation upon which the rate riders are collected are trued-up with customers through OEB-authorized variance accounts.

[4] Base regulated prices for regulated hydroelectric facilities for 2021 will be determined 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 in March 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. The base regulated prices in effect prior to June 1, 2017 were established based on an approved revenue requirement for the 2014-2015 period that reflected the OEB-allowed level of operating costs and a return of and on rate base for the regulated hydroelectric facilities.

The OEB approved the base regulated prices for the regulated hydroelectric facilities for 2019 and 2020 based on the approved formula and inflation indices in December 2018 and December 2019, respectively. For 2021, the base regulated price for the regulated hydroelectric facilities is to be determined before the beginning of the year using the approved formula and inflation indices.

For the nuclear facilities, the base regulated prices for the June 1, 2017 to December 31, 2021 period have been set using a rate smoothing approach that may defer 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*. 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 rate base. In accordance with *Ontario Regulation 53/05*, the nuclear revenue requirement is adjusted by the amount of OPG's revenues, net of costs, from leasing the Bruce nuclear generating stations to Bruce Power, such that OPG's revenues reduce the nuclear revenue requirement and OPG's costs increase it.

Pursuant to the OEB's March 2018 payment amounts order, $102 million of approved nuclear revenue requirement was deferred in the Rate Smoothing Deferral Account for future collection in 2019 and $391 million is to be deferred in 2020. Amounts deferred in the Rate Smoothing Deferral Account are recorded as revenue in the Regulated – Nuclear Generation segment 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. The OEB determined that no portion of the nuclear revenue requirement was to be deferred for 2017, 2018 and 2021.

Deferral and variance accounts (regulatory accounts) are typically established by the OEB to capture, for subsequent review and approval, differences between actual costs and revenues and the corresponding forecast amounts approved by the OEB in setting base regulated prices, or record the impact of items not reflected in the approved base regulated prices. Such accounts generally help to mitigate risks and uncertainties to the regulated entity and its customers. Certain of the regulatory accounts are established as required by *Ontario Regulation 53/05*. The rate riders to recover or repay approved balances in regulatory accounts 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, beginning in 2019, the OEB's decision and order issued in February 2019 on OPG's August 2018 regulatory account clearance application. 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 on the consolidated balance sheets. The OEB's February 2019 decision and order are discussed further in the section, *Recent Developments* under the heading, *Recent Developments in Financial Strength*. Descriptions of OPG's regulatory accounts can be found in Note 9 of OPG's 2019 audited consolidated financial statements.

### Non-Regulated Generation

All of OPG's non-regulated generating assets in Ontario are subject to ESAs with the IESO or other long-term contracts. Non-regulated generating assets in the US earn revenue through a combination of energy and capacity contracts, with expiry dates ranging from 2021 to 2039, and the supply of energy and capacity into wholesale spot electricity markets.

As of December 31, 2019, the contracts for Ontario-based generating assets had the following expiration dates:

| Generating Facility | Generation Type | Term | Contract Expiry Date |
|---|---|---|---|
| Lennox GS | Oil or Natural Gas | 10 years | September 2022 |
| Atikokan GS | Biomass | 10 years | July 2024 |
| Brighton Beach GS | Natural Gas | 20 years | July 2024 |
| Nanticoke solar facility | Solar | 20 years | March 2039 |
| Lac Seul and Ear Falls generating stations | Hydroelectric | 50 years | February 2059 |
| Healey Falls GS | Hydroelectric | 50 years | April 2060 |
| Sandy Falls, Wawaitin, Lower Sturgeon and Hound Chute generating stations | Hydroelectric | 50 years | December 2060 |
| Little Long, Harmon, Smoky Falls and Kipling generating stations [1] | Hydroelectric | 50 years | January 2064 |
| Peter Sutherland Sr. GS | Hydroelectric | 50 years | March 2067 |

[1] These facilities are also known as the Lower Mattagami generating stations.

## HIGHLIGHTS

### Overview of Results

This section provides an overview of OPG's operating results for the years ended December 31, 2019 and December 31, 2018.

| *(millions of dollars – except where noted)* | **2019** | **2018** |
|---|---|---|
| Revenue | **6,022** | 5,537 |
| Fuel expense | **677** | 671 |
| Operations, maintenance and administration | **2,788** | 2,825 |
| Depreciation and amortization | **1,073** | 784 |
| Other net expenses (gains) [1] | **87** | (174) |
| Income before interest and income taxes | **1,397** | 1,431 |
| Net interest expense | **64** | 77 |
| Income tax expense | **190** | 141 |
| Net income | **1,143** | 1,213 |
| Net income attributable to the Shareholder | **1,126** | 1,195 |
| Net income attributable to non-controlling interest [2] | **17** | 18 |
| *Electricity production (TWh)* [3] | **77.8** | 74.0 |
| *Cash flow* | | |
| Cash flow provided by operating activities | **2,606** | 1,687 |
| *Capital expenditures* [4] | **1,991** | 1,859 |
| *Income before interest and income taxes by segment* | | |
| Regulated – Nuclear Generation | **632** | 351 |
| Regulated – Hydroelectric | **619** | 594 |
| Contracted and Other Generation | **271** | 301 |
| Total electricity generating business segments | **1,522** | 1,246 |
| Regulated – Nuclear Waste Management | **(113)** | (117) |
| Other [1] | **(12)** | 302 |
| Income before interest and income taxes | **1,397** | 1,431 |
| *Enterprise TGC per MWh ($/MWh)* [5] | **50.82** | 53.24 |
| *ROE Excluding AOCI (percent)* [5] | **8.2** | 9.5 |

1 For 2018, includes the pre-tax gain on the sale of the former Lakeview GS site.

2 Relates to the following: 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, a corporation wholly owned by the Taykwa Tagamou Nation, in PSS Generating Station Limited Partnership; the 15 percent interest of a corporation wholly owned by Six Nations of Grand River Development Corporation in Nanticoke Solar LP; the 5 percent interest of a corporation wholly owned by Mississaugas of the Credit First Nation in Nanticoke Solar LP; and non-controlling interests in certain electricity generating facilities in the US.

3 Includes OPG's proportionate share of electricity generation from co-owned and minority-held facilities.

4 Includes net changes in accruals and excludes the acquisition of the remaining 50 percent interest in the Brighton Beach GS on August 30, 2019.

5 Enterprise TGC per MWh and ROE Excluding AOCI are non-GAAP financial measures and do not have any standardized meaning prescribed by US GAAP. Additional information about the non-GAAP measures is provided in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

Net income attributable to the Shareholder was $1,126 million for 2019, representing a decrease of $69 million compared to 2018. Income before interest and income taxes was $1,397 million for 2019, representing a decrease of $34 million compared to 2018.

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

- A one-time 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.
- Higher depreciation and amortization expenses of $63 million for the electricity generating business segments, excluding amortization expense related to the recovery of regulatory account balances, mainly due to depreciation from the US hydroelectric generating assets acquired in November 2018 and October 2019 and the Brighton Beach GS acquired in August 2019, and depreciation on new assets in service.

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

- Higher electricity generation from the Regulated – Nuclear Generation segment of 2.6 terawatt hours (TWh), which increased revenue, net of fuel expense, by approximately $189 million.
- Decrease in OM&A expenses of $62 million for the electricity generating business segments, primarily due to lower outage-related activity in the Regulated – Nuclear Generation segment, partially offset by OM&A expenses of the acquired US operations and the Brighton Beach GS.
- Higher revenue of $46 million from the Contracted and Other Generation segment, primarily from the acquired US operations and the Brighton Beach GS, net of the impact of the closure of the Thunder Bay GS in 2018.

Net interest expense decreased by $13 million in 2019, compared to 2018. The decrease was largely due to a higher amount of interest costs capitalized related to the Darlington Refurbishment project expenditures. The decrease was partially offset by higher interest costs due to net debt issuances, net of interest income.

Income tax expense increased by $49 million in 2019, compared to 2018. The increase was primarily due to a reduction in income taxes in 2018 due to recognition of a refundable tax credit of $87 million, partially offset by a higher amount of income tax expense deferred as regulatory assets in 2019.

## Electricity Generation

Electricity generation for the years ended December 31 was as follows:

| *(TWh)* | **2019** | **2018** |
|---|---|---|
| Regulated – Nuclear Generation | **43.5** | 40.9 |
| Regulated – Hydroelectric | **30.5** | 29.8 |
| Contracted and Other Generation [1, 2] | **3.8** | 3.3 |
| Total OPG electricity generation | **77.8** | 74.0 |
| | | |
| Total electricity generation by other generators in Ontario [3] | **71.8** | 73.7 |

[1] Includes OPG's proportionate share of electricity generation from co-owned and minority-held facilities.
[2] In 2019, includes 1.2 TWh of electricity generation from facilities in the US acquired on November 27, 2018 and October 7, 2019. In 2018, includes 0.1 TWh from facilities in the US acquired on November 27, 2018.
[3] Calculated as Ontario electricity demand plus net exports, as published by the IESO, minus OPG electricity generation in Ontario.

Total OPG electricity generation increased by 3.8 TWh in 2019 due to higher electricity generation from all of OPG's business segments.

The increase in electricity generation of 2.6 TWh from the Regulated – Nuclear Generation segment in 2019 was primarily due to fewer planned and unplanned outage days at the Pickering GS.

The increase in electricity generation of 0.7 TWh from the Regulated – Hydroelectric segment in 2019 was primarily due to higher water flows across most of the province, particularly in the spring of 2019.

The electricity generation from the Contracted and Other Generation segment increased by 0.5 TWh in 2019, primarily due to electricity generation from facilities in the US that were acquired in November 2018 and October 2019, partially offset by lower electricity generation from the contracted facilities in Ontario reflecting lower water flows in the second half of 2019.

For the year ended December 31, 2019, Ontario's electricity demand as reported by the IESO was 135.1 TWh, compared to 137.4 TWh for the same period in 2018, 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 surplus in Ontario was higher in 2019, compared to 2018, mainly due to lower electricity demand and higher water flows across most river systems in the province. The gross margin impact of production forgone at OPG's regulated hydroelectric stations in Ontario due to SBG conditions in 2019 and 2018 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 3.3 TWh in 2019 and 3.2 TWh in 2018. OPG did not forgo any electricity production at its nuclear generating stations due to SBG conditions.

### Cash Flow from Operations

Cash flow provided by operating activities for 2019 was $2,606 million, compared to $1,687 million for 2018. The increase was primarily due to higher cash receipts from electricity generation from the Regulated – Nuclear Generation and Regulated – Hydroelectric business segments reflecting higher electricity production and higher rate riders in effect during 2019 and the impact of the acquired US operations and the Brighton Beach GS, net of the impact of the closure of the Thunder Bay GS in 2018.

### Capital Expenditures

Capital expenditures for the years ended December 31 were as follows:

| *(millions of dollars)* | **2019** | **2018** |
| --- | --- | --- |
| Regulated – Nuclear Generation – Excluding Darlington Refurbishment Project | **430** | 413 |
| Regulated – Nuclear Generation – Darlington Refurbishment Project | **1,151** | 1,079 |
| Regulated – Hydroelectric | **204** | 167 |
| Contracted and Other Generation [1] | **129** | 135 |
| Other | **77** | 65 |
| Total capital expenditures [2] | **1,991** | 1,859 |

[1] Excludes the acquisition of the remaining 50 percent interest in the Brighton Beach GS on August 30, 2019.
[2] Includes net changes in accruals.

Total capital expenditures for 2019 increased by $132 million compared to 2018, primarily due to higher expenditures on the Darlington Refurbishment project of $72 million reflecting execution of planned refurbishment activities on Unit 2 and preparation for the refurbishment of subsequent units. Excluding the Darlington Refurbishment project, the increase of $17 million in the capital expenditures for the Regulated – Nuclear Generation was primarily related to investments in sustaining operations of the Darlington GS.

The increase of $37 million in the capital expenditures for the Regulated – Hydroelectric segment mainly reflected expenditures on the Sir Adam Beck I GS Unit G1 and G2 Replacement project, Sir Adam Beck I GS Unit G5 overhaul and upgrade, replacement of Caribou Falls GS Block Dam No. 2 and capital investments within the Northwest plant group, offset by lower spend on the Ranney Falls GS project.

The decrease in the capital expenditures of $6 million for the Contracted and Other Generation segment primarily reflected lower expenditures on the Nanticoke solar facility, which was largely offset by expenditures on the overhaul and upgrade at Unit 1 of the Little Long hydroelectric GS and other projects at the Lower Mattagami generating stations, the acquisition of the Little Quinnesec hydroelectric GS in the state of Wisconsin, and expenditures for the US hydroelectric generating assets acquired in November 2018 and October 2019. The increase of $8 million in Other capital expenditures was mainly due to continuing investments in digital solutions to facilitate operating efficiencies.

Further details on the Company’s major projects can be found in the section, *Recent Developments* under the heading, *Recent Developments in Project Excellence.*

### 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 the twelve months ended December 31, 2019 was 8.2 percent compared to 9.5 percent for the same period in 2018.

The decrease in ROE Excluding AOCI was primarily due to the gain recognized on the sale of the former Lakeview GS site and the reduction in income tax expense due to a refundable tax credit related to the payment of a special dividend to the Shareholder, both recorded in the first quarter of 2018, partially offset by higher revenues due to greater electricity generation from the Regulated – Nuclear Generation segment in 2019. The impact of the gain on the sale of the former Lakeview GS site and the refundable tax credit contributed approximately 2.2 percent to ROE Excluding AOCI for the twelve months ended December 31, 2018.

### Enterprise Total Generating Cost per Megawatt-Hour

The Enterprise TGC per megawatt-hour (MWh) was $50.82 for the year ended December 31, 2019, compared to $53.24 for the same period in 2018. The decrease in Enterprise TGC per MWh was primarily due to higher electricity generation and lower OM&A expenses from the Regulated – Nuclear Generation and Regulated – Hydroelectric business segments, partially offset by higher capital expenditures for these business segments.

Expenditures on generation development projects, the Darlington Refurbishment project and other major projects such as the Little Long Dam Safety project, and business development transactions and initiatives are excluded from the Enterprise TGC per MWh measure.

## RECENT DEVELOPMENTS

### Recent Developments in Operational Excellence

Pickering GS Exemplary WANO Performance Rating

In the fourth quarter of 2019, OPG hosted a World Association of Nuclear Operators (WANO) peer follow-up evaluation for the Pickering GS that focused on the safe and reliable operation of the station while evaluating the plant material condition and functional and cross-functional areas of the station. The review concluded that the Pickering GS achieved an exemplary performance rating, recognizing the station as one of the top performing nuclear plants in the world and resulting in its best ever WANO peer review.

Collective Agreements

The previous collective agreement between the Power Workers' Union (PWU) and OPG expired in March 2018. In December 2018, the Government of Ontario directed the renewal collective agreement to be concluded through a mediation/arbitration process. The mediation/arbitration process concluded on April 3, 2019 with the issuance of the arbitrator's decision that ordered the parties to implement the previously reached but not ratified tentative renewal agreement. The renewed collective agreement expires on March 31, 2021.

In anticipation of the expiry of the one-year governing collective agreement between the Society of United Professionals (Society) and OPG on December 31, 2019, negotiations to renew the collective agreement took place in the second quarter of 2019. After the parties were unable to reach an agreement during negotiations, they proceeded to interest mediation/arbitration in November 2019. On November 5, 2019, the appointed arbitrator issued an arbitration award for a two-year collective agreement between the parties, covering the period from January 1, 2020 to December 31, 2021.

## Recent Developments in Project Excellence

Darlington Refurbishment

In October 2016, OPG commenced the refurbishment of the first Darlington GS unit, Unit 2, as part of the Darlington Refurbishment project. In the fourth quarter of 2019, OPG completed the third major segment of the Unit 2 refurbishment, the reassembly of the unit, and began the fourth and final major segment, which is focused on returning the unit to service. Unit 2 is expected to return to service in the second quarter of 2020.

Nanticoke Solar Facility

In March 2019, OPG's 44 MW Nanticoke solar facility, located in Ontario at the former Nanticoke GS site and adjacent lands, was placed in service and confirmation of commencement of commercial operations was received from the IESO, with an effective date of March 1, 2019. The facility operates under a Large Renewable Procurement I (LRP I) contract with the IESO through Nanticoke Solar LP, a partnership between OPG, Six Nations of Grand River Development Corporation, and the Mississaugas of the Credit First Nation.

Deep Geologic Repository for Low and Intermediate Level Nuclear Waste

On January 31, 2020, Saugeen Ojibway Nation (SON) members voted not to support OPG's proposed project to construct a deep geologic repository (DGR) for low and intermediate level irradiated waste (L&ILW) on lands adjacent to the Western Waste Management Facility (WWMF) in Kincardine, Ontario. Developing a DGR for L&ILW at this site was OPG's preferred solution for the safe long-term management of the L&ILW. OPG respects the decision of the SON community and will uphold its earlier commitment not to proceed with the project at the site without SON's support. OPG will explore alternative solutions for the safe long-term management of L&ILW and will engage with key stakeholders on any new site selection process. Any new site selection process will include engagement with Indigenous communities as well as interested municipalities. Due to significant uncertainties associated with potential alternative solutions and the estimation of their cost at the present time, including factors beyond the Company's control, no adjustment to the Company's nuclear fixed asset removal and nuclear waste management liabilities (Nuclear Liabilities) as of December 31, 2019 was recorded as a result of the SON community vote.

## Recent Developments in Financial Strength

Acquisition Developments

*Acquisition of Cube Hydro*

On October 7, 2019, OPG acquired 100 percent of the equity in Cube Hydro Partners, LLC and affiliate Helix Partners, LLC at a purchase price of US$1.12 billion, inclusive of assumed debt and subject to customary working capital adjustments. Total consideration paid, net of assumed debt, was approximately US$845 million (C$1.12 billion), subject to the finalization of customary working capital and other adjustments. Cube Hydro is a hydropower platform with 385 MW of in-service generating capacity across 19 hydroelectric facilities located throughout the northeastern and southeastern US, and provides additional scale to US hydroelectric operations acquired as part of Eagle Creek Renewable Energy, LLC (Eagle Creek) in 2018. Cube Hydro's operations are being merged with Eagle Creek. The combined organization will operate as a wholly-owned subsidiary of OPG under the Eagle Creek Renewable Energy name, with a total in-service capacity of 627 MW as of December 31, 2019. The results of Cube Hydro and Eagle Creek are reported in the Contracted and Other Generation business segment.

*Acquisition of Brighton Beach Generating Station*

On August 30, 2019, OPG acquired the remaining 50 percent interest in the combined-cycle natural gas-fired Brighton Beach GS from ATCO Power Canada Ltd., an affiliate of Canadian Utilities Limited, for $200 million, inclusive of assumed debt. The Brighton Beach GS, located in Windsor, Ontario, provides approximately 560 MW of in-service generating capacity and operates under an energy conversion agreement expiring in 2024. The Brighton Beach GS is operated by a wholly-owned subsidiary of OPG and is reported in the Contracted and Other Generation business segment.

*Agreement to Acquire Portfolio of Natural Gas-Fired Assets in Ontario*

In July 2019, OPG, under a new subsidiary, entered into a purchase and sale agreement with affiliates of TC Energy to acquire a portfolio of combined-cycle natural gas-fired plants in Ontario for $2.87 billion, subject to customary working capital and other adjustments. The portfolio includes the 900 MW Napanee GS, the 683 MW Halton Hills GS, and the remaining 50 percent interest in the 550 MW Portlands Energy Centre. The acquisition is subject to a number of closing conditions, including the receipt of various regulatory approvals and the commencement of commercial operations at the Napanee GS. A pre-merger notification and a request for an Advance Ruling Certificate have been filed with the Commissioner of Competition, and the review is currently in process. Closing of the transaction is expected to occur approximately at the end of the first quarter of 2020.

All of the assets being acquired from TC Energy operate under ESAs with the IESO, with expiry dates ranging from 2029 to 2040. The natural gas electricity generation from these assets is an important component of maintaining the reliability of Ontario's electricity system, complementing the growth of variable sources of electricity generation in the province, such as wind and solar.

OEB's Decisions on OPG's Applications for Regulated Prices

In February 2019, the OEB issued a decision and order that approved a full settlement agreement reached by OPG and interveners on OPG's requested disposition of regulatory accounts in an application filed in August 2018. The decision and order approved recovery of a total of $1.3 billion representing certain amounts recorded in the Pension & OPEB Cash Versus Accrual Differential Deferral Account as at December 31, 2017, other regulatory account balances accumulated between January 1, 2016 and December 31, 2017, and associated income tax impacts, without adjustments. The decision and order authorized OPG to collect $535 million of the approved balances through incremental rate riders on nuclear and regulated hydroelectric electricity generation over the January 1, 2019 to December 31, 2021 period. The remaining approved balances will be collected after 2021.

In December 2019, the OEB approved the annual formulaic adjustment to increase the base regulated price for the regulated hydroelectric facilities to $43.15/MWh effective January 1, 2020, as proposed by OPG.

The currently approved base regulated prices and rate riders are found in the section, *Revenue Mechanisms for Regulated and Non-Regulated Generation* under the heading, *Regulated Generation*.

Financing Developments

*Medium Term Notes Issuance*

On September 13, 2019, OPG issued $800 million of senior notes payable under the Company's Medium Term Note Program. The Company issued $500 million of senior notes maturing in September 2029 with a coupon rate of 2.98 percent, and $300 million of senior notes maturing in September 2050 with a coupon rate of 3.65 percent. The net proceeds were used for the Company's acquisition and capital expenditure program, working capital requirements, and general corporate purposes.

*Green Bond Offering*

In January 2019, OPG issued a second green bond offering under its 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 issuance were used to finance or re-finance eligible projects as defined under OPG's Green Bond Framework, namely, the November 2018 acquisition of Eagle Creek. OPG's Green Bond Framework encompasses projects that offer tangible environmental benefits.

Amendments to Ontario Fair Hydro Plan Act

The *Fixing the Hydro Mess Act, 2019* received Royal Assent on May 9, 2019 and came into force in November 2019. The new legislation amended various statutes related to energy in Ontario, including the *Ontario Fair Hydro Plan Act, 2017*. Under the new legislation, the Province is responsible for paying existing funding obligations administered by the Fair Hydro Trust (the Trust), while OPG is responsible for paying the operating costs of the Trust. As there will be no new Global Adjustment refinancing, and the Province is responsible for the existing funding obligations, including principal payments administered by the Trust, the Trust is prohibited from issuing any new funding obligations. On this basis, OPG deconsolidated the Trust from its consolidated financial results effective May 9, 2019, de-recognizing the financing receivables, long-term debt and other balances of the Trust. Subsequent to the deconsolidation, the Company's substantial retained interest in the Trust is recorded as a loan receivable on the consolidated balance sheets and represents the subordinated notes issued by the Trust to OPG.

## 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 assets through a highly trained and engaged workforce. Workplace safety and public safety are overriding priorities in all activities performed at OPG.

### 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 2019 is discussed by business 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 sustained top performance at the Darlington GS. OPG is also focused on increasing electricity generation output from the stations, by continuing to improve plant reliability and the planning and execution of outage work.

One of OPG's objectives is to maximize the safe and reliable operating life of the Pickering GS generating units. In connection with this objective, OPG continues to execute the planned work required to enable safe and reliable operation of the Pickering GS to 2024, including as required under the previously completed Periodic Safety Review (PSR) and associated Integrated Implementation Plan (IIP) commitments accepted by CNSC staff. The PSR, a comprehensive assessment of the station's design and operation, confirmed that there is a high level of safety throughout the continued operation of the station to 2024. All PSR and IIP commitments as of the end of 2019 were completed on or ahead of plan.

In 2019, OPG completed preliminary assessments which demonstrated that further optimization of the end of operations dates for the Pickering GS generating units is safe, technically feasible and would result in incremental economic and other benefits to the province and to OPG. In consideration of these benefits, OPG is working with the Province on a plan to further optimize the shutdown sequence of the Pickering GS units. Operating any of the units past December 31, 2024 would be subject to CNSC regulatory approval, through a public hearing process. Additional technical analysis and inspections will need to be performed to confirm fitness-for-service of fuel channels and other major station components in support of further optimization of the station's shutdown sequence. In addition to providing Ontario with a reliable, cost effective source of baseload electricity during a period of nuclear unit refurbishments at the Darlington and Bruce nuclear generation stations, continued operation of the Pickering GS helps to reduce carbon emissions and extends employment for over 3,000 positions at OPG.

OPG continues to make strategic investments in the performance of the Pickering GS, with a focus on improving equipment reliability and maximizing electricity generation output through to the end of the station's operation. This includes implementing equipment modifications and fuel handling reliability improvements, reducing equipment maintenance backlogs, and completing other critical and high priority work. Improving equipment reliability generally results in fewer generation interruptions.

OPG also continues to make investments in the Darlington GS in order to sustain the station's safe and reliable operations for the next three decades and position it for industry-leading operating and cost performance in the longer term. In addition to the refurbishment of the station's generating units as discussed in the section, *Core Business and Outlook* under the heading, *Project Excellence – Darlington Refurbishment*, 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.

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

On January 12, 2020, the Provincial Emergency Operations Centre (PEOC), operated by the Province, issued an emergency alert, stating there was an incident at the Pickering GS. This alert was sent in error during a routine test conducted by PEOC. OPG was not involved in this test and there was no incident at the Pickering GS or any OPG facilities that would have prompted public notification. On February 27, 2020, the Province released the results of an investigation which concluded that the cause of the alert was human error, confirming that the alert was not connected to OPG or the Pickering GS in any way.

OPG maintains a site preparation licence granted by the CNSC in 2012 in relation to the potential construction of new nuclear reactors at the Darlington site. The licence expires in 2022. OPG has informed the CNSC of the Company's intent to renew the licence and, in December 2019, received the CNSC's concurrence with its site preparation licence renewal plan. OPG intends to submit a licence renewal application in mid-2020. OPG is investigating potential technology partners for new nuclear reactor development at the Darlington site. No decision on technology has been made and no project has been commenced.

*Renewable Generation Operations*

OPG's renewable generation fleet comprises 54 regulated and 12 non-regulated hydroelectric generating stations and one solar facility located in Ontario, and through the Company's wholly-owned US subsidiaries, 85 wholly or jointly owned and operated hydroelectric generating stations located throughout the United States.

The objectives of OPG's hydroelectric operations include operating and maintaining the generating facilities in a safe, reliable, efficient and cost-effective manner, while increasing the output from, and pursuing opportunities to increase, the fleet's generating capacity. OPG aims to increase the hydroelectric 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 generating capacity, maintain and improve operational performance and extend the operating life of its hydroelectric generating assets. OPG also assesses opportunities to expand its renewable generation portfolio through asset acquisitions in key North American markets.

Given the very long-term nature of OPG's 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. Where economical and practical, OPG also pursues opportunities to refurbish, expand or redevelop its existing hydroelectric stations, with a number of these projects increasing the fleet's generating capacity. As necessary, OPG also plans for repair, rehabilitation or replacement of aging civil hydroelectric structures.

In addition to the major projects discussed in the *Project Excellence* section, highlights of OPG's ongoing investment in the existing hydroelectric fleet in 2019 included:

- Completed overhaul and rehabilitation work at Unit 6 of the Sir Adam Beck Pump GS and Unit 2 of the DeCew Falls GS;
- Completed the overhaul and upgrade at Unit 1 of the Little Long GS, which increased in-service generating capacity of the Contracted and Other Generation business segment by approximately 4MW;
- Completed the overhaul and upgrade of Unit 2 of Cube Hydro's High Rock GS, which was placed in service in February 2020;
- Completed the automatic sluicegates system replacement at the Whitedog Falls GS and the replacement of Caribou Falls GS Block Dam No. 2;
- Completed construction of a new, minimum flow unit at the Swinging Bridge GS, which was placed in service in February 2020; and
- Initiated execution phase work for the overhaul and upgrade of Unit 5 at the Sir Adam Beck I GS.

During 2019, OPG's hydroelectric operations experienced challenging conditions due to high water levels and flows as a result of spring freshet, due to high snow pack and substantial rain experienced across much of Ontario. OPG safely and effectively managed conditions within its control. This was accomplished through coordination with stakeholders, including industry partners and various levels of government. Where applicable, OPG's comprehensive Emergency Preparedness and Response Plan was followed. Following the freshet, the Province appointed a Special Advisor to assess current roles and responsibilities of governments, agencies and organizations involved in flood management and review the actions taken in 2019. The Special Advisor concluded that there were no indicators of human error or negligent operation of water control structures as the cause of the flooding, and that the government and its partners were effective at reducing and mitigating flood risks. Consistent with the Special Advisor's findings, OPG has taken a proactive approach to freshet by initiating water management plan education sessions for key stakeholders and communities along the river systems on which the Company operates.

In July 2019, OPG and the New York Power Authority (NYPA) revised the Memorandum of Understanding (MOU) for the shared operations at the R.H. Saunders GS on the St. Lawrence River under the Joint Works Agreement. OPG and NYPA have shared operations at the R.H. Saunders GS for more than 60 years, with the main dam and generating station as one structure spanning the entire St. Lawrence River and consisting of 32 generators, 16 owned and operated by OPG within Canada and 16 owned and operated by NYPA in the United States. The revisions to the Joint Works Agreement are expected to result in efficiencies to shared processes.

In October 2019, OPG renewed the operating services agreement with Hydro-Québec that will facilitate continued safe and reliable operation of the jointly-owned Chats Falls GS, a partnership between the two companies since 1928. OPG is the operator and maintainer of this eight-unit, 192 MW hydroelectric station located on the Ottawa River near the Ontario-Québec border and sending power to both provinces. The operating agreement sets out a framework for how the facility is operated and maintained, and how costs are recovered, allowing both companies to share their respective expertise and experience.

*Thermal Operations*

OPG's wholly-owned thermal operations are located in Ontario and consist of the 2,100 MW oil/gas dual-fuelled Lennox GS, the 560 MW natural gas fired Brighton Beach GS and the 205 MW biomass-fuelled Atikokan 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. The Brighton Beach GS is operated by a wholly-owned subsidiary of OPG.

These stations, which operate as peaking facilities under their respective ESAs or other long-term contracts, 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 2,800 MW of peaking generation capacity.

OPG's strategy in operating thermal generating 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.

*Decommissioning of Former 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 former Lambton GS and the former Nanticoke GS, which ceased operations in 2013, and the Thunder Bay GS, which ceased operations in 2018. OPG has a comprehensive program to ensure the safe, secure and environmentally responsible decommissioning of these stations. The costs of decommissioning activities are charged to a previously established decommissioning provision.

Demolition, site clean-up activities and removal of saleable equipment and materials at the former Lambton GS and Nanticoke GS sites continued in 2019, including the implosion of the Nanticoke GS powerhouse. Demolition and site clean-up activities at the Nanticoke GS are expected to be completed in 2020.

During 2019, all systems at the Thunder Bay GS were drained and de-energized, and an external water treatment system has been commissioned to treat site run-off, primarily from the ash landfill. While decommissioning work on the station continues, the Company is also assessing alternate solutions for the site, including a potential sale of the property.

Improving Efficiency and Reducing Costs

As part of its commitment to operational excellence, OPG is focused on pursuing productivity improvements and efficiencies in operating costs across the organization, while ensuring no adverse impact on the safety, reliability and environmental sustainability of the Company's operations. The Company is building on efficiencies achieved to date, which leverage investments in technology and innovation, improvements in business processes and internal service delivery models, strategic sourcing initiatives, workspace optimization, and resourcing strategies. Strategies to improve cost performance and organizational capability continue to be implemented at the enterprise and business unit level.

The identification, and continued pursuit, of operational efficiencies is driven by an enterprise-wide strategic initiative that is centrally-led and monitored to drive achievement of the Company's targeted operating model and business strategies. While this initiative was initially launched to ensure the continued cost effectiveness of OPG's operations subsequent to the shutdown of the Pickering GS and the mitigation of related organizational impacts, it has expanded to also support the Company's evolving business strategies that include a focus on growth opportunities and energy sector innovation. Accordingly, the initiative is anchored in driving a high-performing, collaborative workforce that is dedicated to achieving OPG's long-term goals.

In June 2019, the Company announced plans to establish a new corporate campus in Clarington, Ontario. The new campus will be a high-tech energy hub that will bring together all non-station based employees in Toronto, Niagara and Durham regions to promote innovation and collaboration across the organization. The campus is planned to include the existing Darlington Energy Complex and a new building, and will reduce OPG's existing real estate footprint and associated costs. It is expected to be constructed by 2024.

### Project Excellence

OPG is pursuing a number of generation development and other projects to maximize the value of and expand its generating fleet and support Ontario's electricity system. OPG strives for excellence in the planning and delivery of all capital and maintenance 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 based on industry best practices across the enterprise, establishing strong project management teams, optimizing contracting strategies, engaging qualified and experienced vendors and effectively monitoring and controlling performance. The achievement of these objectives is being further facilitated by a recently established central project support organization that will ensure all business units have the necessary processes, tools and expertise to achieve project excellence.

The status updates for OPG's major projects as at December 31, 2019 are outlined below.

| Project<br>*(millions of dollars)* | Capital expenditures<br>Year-to-date | <br>Life-to-date | Approved Budget | Expected in-service date | Current status |
|---|---|---|---|---|---|
| Darlington Refurbishment | 1,151 | 6,664 | 12,800 [1] | First unit - 2020<br>Last unit - 2026 | The project is executing on the final major segment of the Unit 2 refurbishment, which is expected to be completed in the second quarter of 2020 upon the return to service of Unit 2. Planning activities for the refurbishment of Unit 3 are progressing as planned. The overall project is tracking on schedule and to the $12.8 billion budget. |
| Little Long Dam Safety Project | 6 | 8 | 650 | 2023 | In the fourth quarter of 2019, OPG initiated the execution phase of this project to improve dam safety along the Lower Mattagami River in Ontario, with the procurement of critical materials, advanced detailed engineering construction design and permitting activities. The project is expected to provide additional discharge capacity and make other reliability and operational improvements at OPG's Little Long Main Dam. |
| Ranney Falls Hydroelectric GS | 13 | 70 | 77 | 2020 | OPG completed construction and continues commissioning on a new 10 MW single-unit powerhouse that will replace an existing unit that has reached end of life, doubling the in-service generating capacity of the Ranney Falls GS, as part of the Regulated – Hydroelectric business segment. Due to equipment component issues identified during commissioning, the new in-service date for the project is expected to be in the first half of 2020. The project continues to track on budget. |
| Deep Geologic Repository for Low and Intermediate Level Nuclear Waste | 5 [2] | 218 [2] | | | On January 31, 2020, SON members voted not to support OPG's proposed DGR project for L&ILW on lands adjacent to the WWMF in Kincardine, Ontario. OPG respects the decision of the SON community. OPG will explore alternative solutions for safe long-term management of L&ILW and will engage with key stakeholders on any new site selection process. |

[1] The total project budget of $12.8 billion is for the refurbishment of all four units at the Darlington GS.
[2] Expenditures are charged against the Nuclear Liabilities.

Darlington Refurbishment

The Darlington GS 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 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, Unit 2, is expected to be returned to service in the second quarter of 2020 and the last unit is scheduled to be completed in 2026. The overall project is tracking on schedule and to the $12.8 billion budget.

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

- De-fuelling and Fuel Handling, which involves the de-fuelling of the reactors and the refurbishment of the fuel handling equipment;
- 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;
- Steam Generators, which includes mechanical cleaning, water lancing and inspection and maintenance work on the generators; and
- Balance of Plant, which consists of work on a number of projects to replace or repair certain other station components.

The Re-tube and Feeder Replacement sub-project is the largest sub-project and represents a majority of the critical path schedule.

These major sub-projects are executed over four major segments for each unit:

- Shut Down, which involves removing fuel from the reactor and physically separating the unit under refurbishment from the other operating units, known as islanding;
- Disassembly, which involves removing the required reactor components including feeder tubes, fuel channels and calandria tubes;
- Reassembly, which involves procuring, installing and inspecting new reactor components; and
- Power Up, which involves loading new fuel into the reactor, restoring the reactor vault, reconnecting the unit to the rest of the station, and returning the unit to service.

In 2016, the Darlington Refurbishment project transitioned from the planning phase to the execution phase, as OPG commenced the refurbishment of Unit 2 in October 2016 as planned. The unit was taken offline on October 15, 2016. The Shut Down segment of the Unit 2 refurbishment was completed in 2017, and the Disassembly segment was completed in 2018.

During 2019, OPG continued to execute and completed the Reassembly segment of the Unit 2 refurbishment. In the second quarter of 2019, the project successfully completed the Fuel Channel installation series, the Upper and Middle Feeders installation series and re-filled the unit's moderator with heavy water, which is used for the creation of nuclear energy. Challenges were experienced in achieving the planned installation rates for the Lower Feeder installation series, extending the completion of the series into October 2019. The Reassembly segment was completed in the fourth quarter of 2019 with the completion of the Lower Body Tubing installation series.

The Power Up segment of the Unit 2 refurbishment commenced in November 2019, with loading of new fuel into the reactor, which was completed by the end of November 2019. The Primary Heat Transport System was successfully filled with heavy water in January 2020. The project is currently working to restore the reactor vault, which includes removing the bulkheads to reconnect Unit 2 back to the operating units. Vault Restoration is on track for completion toward the end of the first quarter of 2020. Achievement of this milestone will represent the completion of construction work, full reconnection of Unit 2 to the station, and transition of the unit to start-up activities. It is expected that Unit 2 will return to service in the second quarter of 2020.

In addition to refurbishment activities on Unit 2, OPG has completed substantially all of the pre-requisite projects, including construction of facilities, infrastructure upgrades and installation of safety enhancements. These pre-requisite projects are integral to the Darlington Refurbishment project and the continued operation of the Darlington GS. The final pre-requisite project, the Heavy Water Storage and Drum Handling Facility, has been substantially completed and is tracking to be fully available for service by the required date to support refurbishment activities on Unit 3, the second unit to undergo refurbishment. OPG also has completed all of the work required as of the end of 2019 to support the requirements set out in the IIP for the station accepted by CNSC staff. The IIP contains actions previously identified as part of a series of assessments undertaken by OPG in line with applicable CNSC regulatory requirements related to life extensions of nuclear plants.

Planning and pre-requisite activities related to the Unit 3 refurbishment continue to progress in accordance with the overall project schedule, incorporating experience learned to date from the Unit 2 refurbishment. The Unit 3 refurbishment execution is expected to commence in the second quarter of 2020. As of December 31, 2019, $488 million has been invested in planning and pre-requisite activities related to the Unit 3 refurbishment, including procurement of materials and components with long lead times.

<u>Little Long Dam Safety Project</u>

In January 2019, OPG initiated a plan to improve dam safety along the Lower Mattagami River in Ontario, primarily through the Little Long Dam Safety project. The project will increase the discharge capacity and make other reliability and operational improvements at the Little Long Main Dam, helping the Company to comply with updated dam safety requirements established by the Province. The project entered the execution phase in the fourth quarter of 2019 with the procurement of critical materials, advanced detailed engineering construction design and permitting activities. The project's expected in-service date is in 2023, with a budget of $650 million. The Little Long Dam supports OPG's hydroelectric generating stations on the Lower Mattagami River, which are reported in the Contracted and Other Generation business segment.

<u>Sir Adam Beck I Hydroelectric GS Units G1 and G2 Replacement</u>

OPG has initiated a project to replace two older generating units at the Sir Adam Beck I GS that used outdated line frequency technology of 25 hertz (Hz) prior to being decommissioned in 2009. The conversion of these units to standard generator technology of 60 Hz is expected to add approximately 125 MW of incremental generating capacity, providing many more decades of cost effective, clean power from one of the flagship stations in the Company's hydroelectric fleet. During 2019, OPG removed the decommissioned units and associated equipment from the site and continued front-end engineering design activities, and is in the process of finalizing the detailed cost and schedule commitments for the project. The installation of the new G2 unit is scheduled to begin in the second half of 2020 following the completion of engineering design activities. The project's expected in-service date is in 2022, with a total estimated cost in the range of $120 million to $150 million. The Sir Adam Beck I GS is reported in the Regulated – Hydroelectric business segment.

### 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 including emerging renewable energy opportunities; and
- 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 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 prudent growth of rate 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 return.

The regulated prices established by the OEB's December 2017 decision and March 2018 payment amounts order on OPG's 2017-2021 rate application resulted in a substantial increase in revenue and net income compared to the previously approved regulated prices, providing significant price certainty for the regulated business up to 2021. 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 pursuing further efficiency improvements in the Company's cost structure.

The following rate base levels, deemed equity percentage and formulaic rates of return on equity (ROE) are reflected in OPG's currently approved base regulated prices:

| | | | Rate Base | | | |
|---|---|---|---|---|---|---|
| *(millions of dollars – except where noted)* | **ROE** | **Equity** [1] | **2018** | **2019** | **2020** | **2021** |
| Regulated – Nuclear [2,4] | **8.78%** | **45%** | 3,446 | **3,374** | 7,347 | 7,711 |
| Regulated – Hydroelectric [3,4] | | | n/a | | | |

[1] The remaining 55 percent of rate base is deemed to be financed by debt, with an average approved cost of 4.6 percent per annum reflected in the base regulated prices for the nuclear facilities for the 2017-2021 period.
[2] Represents values approved by the OEB's March 2018 payment amounts order in setting the base regulated prices for the 2017-2021 period.
[3] 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. There is no separately approved rate base, deemed equity percentage or ROE for the regulated hydroelectric facilities for the 2017-2021 period. The most recent OEB-approved hydroelectric rate base value was $7,490 million, with an ROE of 9.33 percent and a deemed equity of 45 percent, all of which were reflected in the base regulated prices in effect prior to June 1, 2017.
[4] Excludes differences between approved forecast rate base additions and actual rate base additions for qualifying investments, where the revenue requirement impact of such differences is trued up through regulatory accounts, subject to OEB's review and approval. These differences are included in rate base values shown in the table once reflected in OEB-approved base regulated prices.

OPG continues to invest in the nuclear and hydroelectric rate base, with the Darlington Refurbishment project being the single largest such capital investment. In setting the 2017-2021 base nuclear regulated prices, the OEB reflected a total of $5.5 billion in Darlington Refurbishment in-service capital additions in rate base by 2021, which excluded the Heavy Water Storage and Drum Handling Facility. The Heavy Water Storage and Drum Handling Facility is expected to be reviewed by the OEB as part of OPG's next application for nuclear base regulated prices. As discussed in the section, *Core Business and Outlook* under the heading, *Operational Excellence – Electricity Generation Production and Reliability* OPG also continues to pursue an extensive capital program across its regulated hydroelectric operations that includes expansion, redevelopment and upgrades 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 and be reflected in rate base for the foreseeable future.

The revenue requirement impact of differences in the amount or timing between approved forecast rate base additions and the actual rate base additions related to OPG's investments to increase the output of, refurbish or add generating capacity to one or more of its nuclear or hydroelectric regulated facilities, including the Darlington Refurbishment project, are recorded for future review and disposition in a variance account authorized by the OEB pursuant to *Ontario Regulation 53/05*.

OPG's revenue from the regulated business segments includes recovery of amounts accumulated in regulatory accounts. As discussed in the section, *Recent Developments* under the heading, *Recent Developments in Financial Strength – OEB's Decisions on OPG's Applications for Regulated Prices*, in February 2019, the OEB approved for recovery $1.3 billion in regulatory account balances and associated income tax impacts requested by OPG, authorizing the Company to collect $535 million of the balances through incremental rate riders on nuclear and regulated hydroelectric electricity generation over the January 1, 2019 to December 31, 2021 period. The collection of the rate riders contributes positively to the Company's cash flow from operating activities. The $1.3 billion in approved balances included $433 million that was previously approved but not yet authorized for collection by the OEB.

For generation assets that do not form part of the rate regulated operations, OPG seeks to secure long-term revenue arrangements that support an appropriate return on the investment. In line with this strategy, all of OPG's non-regulated facilities in Ontario are subject to ESAs with the IESO or other long-term contracts. The majority of the ESAs are structured to provide for recovery of operating costs and capital investment in the underlying facilities and a formula-based return on invested capital, subject to the facilities continuing to meet their contractual obligations. A number of the Company's generating facilities in the US are also subject to energy and capacity supply contracts, and OPG continues to pursue new agreements where appropriate. The remainder of OPG's facilities in the US earn revenue from wholesale spot electricity markets. While revenue from generating facilities supplying energy and capacity into US wholesale spot electricity markets represents a small portion of OPG's overall revenue, the Company may enter into hedging arrangements from time to time to further mitigate the commodity price risks.

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 and other commitments and long-term obligations. In addition to funds generated from operations, OPG utilizes the following primary funding sources:

- commercial paper;
- securitization of assets;
- letters of credit;
- credit facilities;
- long-term debt sourced from the Ontario Electricity Financial Corporation (OEFC);
- public debt offerings; and
- private placement project financing.

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.

As discussed in the section, *Recent Developments* under the heading *Recent Developments in Financial Strength – Acquisition Developments*, the Company has entered into an agreement to acquire a portfolio of natural gas-fired generating stations from TC Energy. OPG has secured the following additional liquidity sources to ensure adequate financing is available to maintain ongoing liquidity and for its financing requirements, taking into account the capital expenditure program and the closing of the TC Energy transaction:

- In July 2019, OPG established a new $800 million general corporate credit facility agreement with the OEFC expiring on December 31, 2021. In August 2019, OPG issued senior notes payable to the OEFC totalling $100 million with a maturity date of August 2039 and a coupon rate of 3.49 percent under the credit facility. The Company anticipates the credit facility agreement to be amended, increasing the facility to $1.3 billion;
- In October 2019, OPG received a binding commitment from a syndicate of banks for a $1 billion one-year term loan; and
- In November 2019, OPG established a 364-day revolving credit facility with a one year extension option of US$750 million with a syndicate of banks.

*Credit Ratings*

Maintaining an investment grade credit rating supports OPG's ability to access cost effective financing. As at December 31, 2019, the Company's credit ratings were as follows:

| Type of Rating | DBRS Limited | S&P Global Ratings (S&P) | Moody's Investor Service (Moody's) |
|---|---|---|---|
| Senior unsecured debt<br>(Trend/Outlook) | A (low)<br>(Stable) | BBB+<br>(Negative) | A3<br>(Stable) |
| Commercial paper program – Canada | R-1 (low) | A-1 (low) | NR [1] |
| Commercial paper program – US | NR [1] | A-2 | P-2 |

[1] NR indicates no rating assigned.

In July 2019, subsequent to the Company's announcement that it had entered into purchase and sale agreements for the acquisitions of a portfolio of combined-cycle natural gas-fired plants from TC Energy and US-based Cube Hydro hydroelectric platform, S&P re-affirmed OPG's credit ratings and revised its outlook from stable to negative.

In December 2019, the Company obtained ratings for its $750 million US commercial paper program. Moody's assigned OPG a US commercial paper rating of 'P-2' and S&P assigned OPG a US commercial paper rating of 'A-2'. Moody's also assigned the Company a long-term debt credit rating of 'A-3'.

Additional discussion of the Company's credit facilities and liquidity can be found in the section, *Liquidity and Capital Resources*.

<u>Building Our Business</u>

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 through pursuit of commercial-based opportunities. 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, and may be pursued in partnership with other commercial entities where aligned with OPG's business objectives.

OPG's strategy includes the renewal and expansion of the Company's portfolio of generating assets, including the redevelopment and expansion of existing sites, new developments and business acquisitions. The strategy leverages OPG's operating and project development expertise as well as its diverse physical asset base across Ontario and the United States. OPG's current major generation development projects and asset life extension initiatives are discussed in the section, *Core Business and Outlook* under the headings, *Operational Excellence* and *Project Excellence*.

Acquisition opportunities consider potential operating synergies, strategic benefits, financial returns and risk profile. In 2019, OPG continued to expand the Company's portfolio of generating assets through the acquisitions of Cube Hydro, a US hydropower platform with 385 MW of in-service generating capacity, and the remaining 50 percent interest in the Brighton Beach GS. Eagle Creek also acquired several smaller hydroelectric facilities during 2019, adding approximately 16 MW of in-service generating capacity to the Company's US operations. OPG will continue to expand its generating fleet in 2020 through the anticipated closing of the TC Energy transaction to acquire a portfolio of combined-cycle natural gas-fired plants in Ontario.

OPG also actively seeks to expand beyond its core generation business through investments in innovative and emergent low-carbon technologies in the electricity sector, including nuclear innovation, energy storage, distributed generation, transport electrification and other business development opportunities. In 2019, OPG and Nordion (Canada) Inc. entered into an agreement to expand the production of the cobalt-60 isotope to the Darlington GS. Cobalt-60 is currently produced by OPG at certain units of the Pickering GS and is used mainly in the health industry to sterilize surgical and medical supplies. Also in 2019, OPG and a subsidiary of Hydro One Limited (Hydro One) formed a partnership to own and operate electric vehicle fast charging stations across Ontario, under the Ivy Charging Network brand.

In December 2019, the provinces of Ontario, Saskatchewan and New Brunswick entered into a MOU to advance the development of nuclear Small Modular Reactors (SMRs). The MOU recognizes SMRs as the next generation of innovative, versatile and scalable nuclear reactors that promise to further enhance the safety, economic and environmental benefits of nuclear energy. As part of the MOU, the provinces agreed to collaborate on developing a business case and strategic plan for the deployment of SMRs, including market opportunities across Canada and globally. OPG continues to explore the nuclear SMR technology as a source of safe, carbon-free, reliable and cost effective energy in the future.

Further information can be found in the section, *Environmental, Social, Governance and Sustainability*.

### 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, and strives to be a leader in climate change mitigation.

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

## Outlook

Operating Performance

OPG expects net income for the 2020 year to be lower than in 2019, in line with the cyclical outage schedule for the Pickering GS and the Darlington Refurbishment schedule which will reduce electricity generation from the Regulated – Nuclear Generation business segment. The increase in planned outage activity at the Pickering GS is also expected to increase OM&A expenses in 2020.

The year-over-year decrease in net income for 2020 is expected to be partially offset by revenue from the higher OEB-approved nuclear base regulated price and rate smoothing deferrals, including the increase in the approved rate base. The anticipated acquisition of a portfolio of natural gas-fired assets from TC Energy in 2020 is also expected to partly offset the year-over-year decrease in net income.

Several regulatory accounts will continue to reduce the relative variability of the regulated business segments' contribution to the Company's net income, particularly for the Regulated – Hydroelectric Generation segment. This includes accounts that capture the gross margin impact of variability in water flows and forgone production due to SBG conditions at the regulated hydroelectric stations. As such, earnings from the Regulated – Hydroelectric segment are expected to continue to be generally stable on a year-over-year basis in 2020. There are no regulatory accounts in place related to the impact of variability in OPG's nuclear stations' generation performance on revenue from base regulated prices.

Based on the ESAs and other contracts in place for the Company's non-regulated assets and taking into account the acquisitions completed in 2019, OPG expects existing operations of the Contracted and Other Generation business segment to contribute a generally comparable level of earnings in 2020, compared to 2019.

*Enterprise Total Generating Cost*

OPG forecasts the Enterprise TGC to be higher in 2020, compared to 2019, due to lower electricity generation from the Regulated – Nuclear Generation segment and an increase in OM&A expenses associated with increased planned outage activity at the Pickering GS.

In general, lower nuclear electricity generation due to the Darlington Refurbishment outages will continue to negatively impact the Enterprise TGC for the duration of the project. The Enterprise TGC can also be negatively affected by lower hydroelectric generation due to outages for various major rehabilitation and operational projects. Variability in the sustaining capital expenditure program, planned nuclear outages and water flows will continue to contribute to year-over-year fluctuations in the Enterprise TGC results.

*Nuclear Segregated Funds*

OPG's operating results are affected by earnings on the nuclear fixed asset removal and nuclear waste management segregated funds (Nuclear Segregated Funds) established under the Ontario Nuclear Funds Agreement (ONFA) between OPG and the Province, as part of the Regulated – Nuclear Waste Management business 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 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 Maintaining Financial Strength – Nuclear Liabilities and Nuclear Segregated Funds*.

As at December 31, 2019, the Decommissioning Segregated Fund was overfunded by approximately 30 percent and the Used Fuel Segregated Fund was overfunded by approximately 1 percent based on the current ONFA reference plan. OPG expects the Regulated – Nuclear Waste Management segment to continue to report generally stable operating results on a year-over-year basis in 2020, subject to the Nuclear Funds continuing to be in a fully funded or overfunded position. Variability in asset performance due to volatility inherent in financial markets and changes in Ontario CPI, or changes in funding liability estimates when the ONFA reference plan is updated, may result in either or both funds becoming underfunded in the future. The ONFA reference plan is currently scheduled to be updated at the end of 2021.

Financing and Liquidity

The Company expects to generate a lower level of cash flow from operating activities in 2020, compared to 2019. This reflects a planned reduction in nuclear electricity generation and higher OM&A expenses associated with the increase in planned outage activity at the Pickering GS, partially offset by impact of the higher OEB-approved nuclear regulated price and the anticipated acquisition of natural gas-fired assets from TC Energy.

Taking into account the TC Energy transaction and planned capital expenditure program, OPG expects to maintain sufficient liquidity and meet financing requirements in 2020 by leveraging its diverse funding sources. OPG's funding sources are further discussed in the section, *Core Business and Outlook* under the heading, *Financial Strength – Ensuring Availability of Cost Effective Funding*.

Capital Expenditures

OPG's total forecasted capital expenditures for the 2020 year are approximately $2.2 billion, representing an increase over 2019 levels, excluding the impact of acquisition related-activity. The anticipated increase in capital expenditures primarily relates to the execution of the Little Long Dam Safety project and the hydroelectric unit overhaul and upgrade program for the stations of the Regulated – Hydroelectric segment, partially offset by lower Darlington Refurbishment project expenditures reflecting planned activities for each of Unit 2 and Unit 3 refurbishments. Excluding the Darlington Refurbishment project, capital expenditures for the Regulated – Nuclear Generation business segment are expected to be generally comparable to 2019 levels. The Company will also continue to invest in digital solutions and infrastructure to facilitate improvements in productivity and asset performance.

OPG's major projects are discussed in the section, *Core Business and Outlook* under the heading, *Project Excellence*.

## BUSINESS SEGMENTS

As at December 31, 2019, OPG has the following four reportable business segments:

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

### Regulated – Nuclear Generation Segment

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

### 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 used nuclear 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 Darlington and Pickering 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 electricity produced from the Darlington and Pickering 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. Additionally, the business segment includes revenues from supplying ancillary services to the electricity system and other revenues from OPG's regulated hydroelectric stations.

### Contracted and Other Generation Segment

The Contracted and Other Generation business segment operates in Ontario and in the US, generating and selling electricity from the Company's non-regulated generating stations .The segment primarily includes generating facilities that are under ESAs with the IESO or other long-term contracts. A number of facilities in the US supply energy and capacity into wholesale spot electricity markets.

The Contracted and Other Generation segment includes OPG's share of equity income from its current 50 percent ownership interest in PEC, which is operated under the terms of a 20-year Accelerated Clean Energy Supply contract with the IESO expiring in 2029, and from other co-owned and minority-held electricity generating facilities.

The business segment also includes revenues from supplying ancillary services to the electricity system and other revenues from the stations included in the segment.

## DISCUSSION OF OPERATING RESULTS BY BUSINESS SEGMENT

### Regulated – Nuclear Generation Segment

| *(millions of dollars – except where noted)* | **2019** | **2018** |
|---|---|---|
| *Electricity generation (TWh)* | **43.5** | 40.9 |
| Revenue | **3,831** | 3,474 |
| Fuel expense | **299** | 283 |
| Gross margin | **3,532** | 3,191 |
| Operations, maintenance and administration | **2,201** | 2,302 |
| Depreciation and amortization | **674** | 512 |
| Property taxes | **25** | 26 |
| Income before interest and income taxes | **632** | 351 |

Income before interest and income taxes from the segment increased by $281 million in 2019 compared to 2018. The increase was primarily due to:

- Higher electricity generation of 2.6 TWh as a result of overall fewer outage days across the nuclear generating stations, resulting in higher revenue, net of fuel expense, of approximately $189 million;
- Increase in revenue of approximately $35 million primarily due to a higher amount of the OEB-approved nuclear revenue requirement deferred in the Rate Smoothing Deferral Account for future collection, net of the impact of the lower base regulated price for the nuclear facilities;
- Decrease in OM&A expenses of $101 million, primarily due to lower outage-related activity across the nuclear generating stations; and
- Decrease in non-electricity generation revenue of $32 million, primarily due to lower revenue from heavy water sales.

Higher rate riders for the recovery of regulatory account balances in effect during 2019 also contributed to an increase in segment revenue compared to 2018. This increase in revenue was largely offset by a corresponding increase in the amortization expense related to these balances.

The planned and unplanned outage days at the Darlington and Pickering nuclear generating stations were as follows:

| | **2019** | **2018** |
|---|---|---|
| Planned Outage Days | | |
| Darlington GS [1] | **89.2** | 111.4 |
| Pickering GS | **241.9** | 360.6 |
| Unplanned Outage Days | | |
| Darlington GS [1] | **52.6** | 22.1 |
| Pickering GS | **35.6** | 129.7 |

[1] The planned and unplanned outage days exclude unit(s) during the period in which they are undergoing refurbishment. Accordingly, Unit 2 of the Darlington GS, which was taken offline in October 2016 for refurbishment, has been excluded from the reported planned and unplanned outage days.

Year-over-year changes in the number of planned outage days are driven by each station's cyclical maintenance schedule and the Company's execution of planned outage work. In 2019, outages were taken at the Darlington GS to safely conduct repairs, resulting in an increase in unplanned outage days compared to 2018. In 2018, the Pickering GS experienced a higher number of unplanned outage days after significant amounts of algae debris interfered with water intake screens following inclement weather.

The Unit Capability Factors for the Darlington and Pickering nuclear generating stations were as follows:

| | 2019 | 2018 |
|---|---|---|
| Unit Capability Factor *(%)* [1] | | |
| Darlington GS | **87.4** | 88.6 |
| Pickering GS | **87.6** | 79.1 |

[1] The nuclear Unit Capability Factor excludes unit(s) during the period in which they are undergoing refurbishment. Accordingly, Unit 2 of the Darlington GS 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 Unit Capability Factor at the Darlington GS in 2019 was comparable to 2018, as the increase in the number of unplanned outage days was largely offset by fewer planned outage days due to the favourable execution of planned outage work.

The higher Unit Capability Factor at the Pickering GS in 2019 compared to 2018 reflected fewer planned outage days in line with the station's cyclical maintenance schedule, the favourable execution of planned outage work, and fewer unplanned outage days.

### Regulated – Nuclear Waste Management Segment

| *(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| Revenue | **144** | 131 |
| Operations, maintenance and administration | **144** | 131 |
| Accretion on nuclear fixed asset removal and nuclear waste management liabilities | **1,007** | 971 |
| Earnings on nuclear fixed asset removal and nuclear waste management funds | **(894)** | (854) |
| Loss before interest and income taxes | **(113)** | (117) |

Loss before interest and income taxes from the segment was $113 million in 2019, compared to $117 million in 2018, representing an increase in earnings of $4 million. The increase was due to:

- Higher earnings from the Nuclear Segregated Funds of $40 million, primarily due to the growth in the present value of the underlying funding liabilities per the current approved ONFA reference plan in effect since January 1, 2017; and
- Largely offset by an increase in accretion expense on the Nuclear Liabilities of $36 million, due to the increase in the present value of the underlying obligation to reflect the passage of time during 2019.

As both the Decommissioning Segregated Fund and the Used Fuel Segregated Fund were in an overfunded position in 2019, they were not impacted by market returns and the rate of return guaranteed by the Province for a portion of the Used Fuel Segregated Fund. When the funds are in an overfunded position, OPG limits the Nuclear Segregated Funds assets reported on the consolidated balance sheet to the present value of the underlying life cycle funding liabilities per the most recently approved ONFA reference plan. Further details on the accounting policy for the Nuclear Segregated Funds can be found in the section, *Critical Accounting Policies and Estimates*.

### Regulated – Hydroelectric Segment

| *(millions of dollars – except where noted)* | 2019 | 2018 |
|---|---|---|
| *Electricity generation (TWh)* | ***30.5*** | *29.8* |
| Revenue [1] | **1,517** | 1,425 |
| Fuel expense | **336** | 334 |
| Gross margin | **1,181** | 1,091 |
| Operations, maintenance and administration | **336** | 337 |
| Depreciation and amortization | **224** | 154 |
| Property tax | **1** | 1 |
| Other losses | **1** | 5 |
| Income before interest and income taxes | **619** | 594 |

[1] During 2019 and 2018, the Regulated – Hydroelectric segment revenue included incentive payments of $6 million and $11 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 increased by $25 million in 2019, compared to 2018. The increase was primarily due to higher revenue reflecting an increase in the base regulated price for the regulated hydroelectric facilities approved by the OEB effective January 1, 2019 and fewer outages impacting production at the regulated hydroelectric generating stations in 2019.

Higher rate riders for the recovery of regulatory account balances in effect during 2019 also contributed to an increase in segment revenue compared to 2018. This increase in revenue was largely offset by a corresponding increase in amortization expense related to these balances.

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

| | 2019 | 2018 |
|---|---|---|
| Hydroelectric Availability *(%)* [1] | **86.6** | 86.0 |

[1] The Hydroelectric Availability is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

The Hydroelectric Availability increased in 2019, compared to 2018, primarily due to fewer planned outages at regulated hydroelectric generating stations in the eastern Ontario region, partially offset by a higher number of unplanned outages at regulated hydroelectric generating stations in the eastern Ontario and south-central Ontario regions.

## Contracted and Other Generation Segment

| *(millions of dollars – except where noted)* | 2019 | 2018 |
|---|---|---|
| *Electricity generation (TWh)* | ***3.8*** | *3.3* |
| | | |
| Revenue | **637** | 591 |
| Fuel expense | **42** | 54 |
| Gross margin | **595** | 537 |
| Operations, maintenance and administration | **220** | 180 |
| Depreciation and amortization | **127** | 83 |
| Accretion on fixed asset removal liabilities | **6** | 8 |
| Property taxes | **14** | 8 |
| Income from investments subject to significant influence | **(40)** | (44) |
| Other (gains) losses | **(3)** | 1 |
| | | |
| Income before interest and income taxes | **271** | 301 |

Income before interest and income taxes from the segment decreased by $30 million in 2019, compared to 2018. The decrease in segment income was primarily due to:

- Higher OM&A expenses of $40 million, mainly from the US hydroelectric facilities acquired in November 2018 and October 2019 and due to planned outages at the Lower Mattagami hydroelectric generating stations, partially offset by the impact of the closure of the Thunder Bay GS in 2018;
- Higher depreciation expenses of $44 million, mainly from the acquired US hydroelectric facilities;
- Partially offset by higher revenue of $46 million, mainly from the acquired US hydroelectric facilities, the acquired Brighton Beach GS and the Nanticoke solar facility placed in-service in March 2019, partially offset by the impact of the closure of the Thunder Bay GS in 2018; and
- Lower fuel expense of $12 million, primarily at the thermal generating stations, including the impact of the Thunder Bay GS closure in 2018.

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

| | 2019 | 2018 |
|---|---|---|
| Hydroelectric Availability *(%)* [1] | **77.0** | 78.4 |
| Thermal EFOR *(%)* [2] | **2.6** | 2.5 |

[1] The Hydroelectric Availability reflects hydroelectric generating stations in Ontario. US hydroelectric generating operations acquired on November 27, 2018 and October 7, 2019 are not reflected in these results. The Hydroelectric Availability is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

[2] The Thermal EFOR reflects the reliability of a generating unit at OPG's wholly-owned thermal stations. The Brighton Beach GS, the remaining 50 percent of which was acquired on August 30, 2019, is not reflected in these results. For 2018, includes unplanned outage days at the Thunder Bay GS prior to its cessation of operations effective June 30, 2018. The Thermal EFOR is defined in the section, *Key Operating Performance Indicators and Non-GAAP Financial Measures*.

The Hydroelectric Availability decreased in 2019, compared to 2018, primarily due to a higher number of unplanned outage days at the Lower Mattagami generating stations in the northeastern Ontario region.

The Thermal EFOR increased marginally in 2019, compared to 2018, primarily due to a higher number of unplanned outage days at the Lennox GS for maintenance and repair activities, partially offset by the unplanned outage days at the Thunder Bay GS prior to its cessation of operations effective June 30, 2018.

## LIQUIDITY AND CAPITAL RESOURCES

OPG maintains a range of funding sources to ensure sufficient liquidity and meet financing requirements, as discussed in the section, *Core Business and Outlook* under the heading, *Financial Strength – Ensuring Availability of Cost Effective Funding*. 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 2019 and 2018 were as follows:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Cash, cash equivalents and restricted cash, beginning of period | **313** | 234 |
| Cash flow provided by operating activities | **2,606** | 1,687 |
| Cash flow used in investing activities | **(3,279)** | (2,504) |
| Cash flow provided by financing activities | **854** | 895 |
| Effect of exchange rate changes on cash, cash equivalents and restricted cash | **4** | 1 |
| Net increase in cash, cash equivalents and restricted cash | **185** | 79 |
| Cash and cash equivalents and restricted cash, end of period | **498** | 313 |

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 2019 increased by $775 million compared to 2018. The increase was primarily due the acquisition of Cube Hydro on October 7, 2019, the acquisition of the remaining 50 percent of the Brighton Beach GS on August 30, 2019, higher investment in fixed assets in 2019 and the receipt of proceeds from the sale of the former Lakeview GS site in March 2018, partially offset by the acquisition of financing receivables from the IESO by the Fair Hydro Trust and the acquisition of Eagle Creek in 2018. As discussed further in the section, *Recent Developments* under the heading, *Recent Developments in Financial Strength*, OPG deconsolidated the Fair Hydro Trust from its consolidated financial results effective May 9, 2019.

### Financing Activities

As at December 31, 2019, long-term debt outstanding was $8,226 million, with $693 million representing amounts due within one year. Short-term debt outstanding as at December 31, 2019 was $164 million.

Cash flow provided by financing activities for the year ended December 31, 2019 decreased by $41 million compared to the same period in 2018. The decrease was primarily due to the net issuance of the Fair Hydro Trust long-term debt in 2018, proceeds received from the issuances of Class A shares to the Province in 2018 and the higher net repayment of short-term debt in 2019, largely offset by higher net issuances of OPG long-term debt in 2019 and the special dividend paid to the Shareholder in March 2018.

As at December 31, 2019, the Company had the following committed credit facilities:

| *(millions of dollars)* | | Amount |
|---|---|---|
| **Bank facilities:** | | |
| Corporate | | **1,000** |
| Corporate | USD | **750** |
| Lower Mattagami Energy Partnership [1] | | **400** |
| Cube Hydro | USD | **20** |
| **OEFC facility [2]** | | **700** |
| **Securitization facility [3]** | | **150** |

[1] A letter of credit of $55 million was issued in July 2017 and remains outstanding as at December 31, 2019 under this facility.
[2] Represents amounts available under this facility, net of long-term debt issuances.
[3] Represents an agreement to sell an undivided co-ownership interest in the Company's current and future accounts receivable from the IESO to an independent trust. As of December 31, 2019, $150 million of letters of credit were issued under the securitization facility.

In addition to the table above, in October 2019, OPG received a binding commitment from a syndicate of banks for a $1 billion one-year term loan.

The following are the short-term debt, letters of credit and parental guarantees as of December 31:

| *(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Short-term debt:** | | |
| Lower Mattagami Energy Partnership | **114** | 140 |
| Commercial paper | **50** | 170 |
| Fair Hydro Trust | **-** | 12 |
| | **164** | 322 |
| **Letters of credit** | **537** | 475 |
| **Guarantees** | **80** | 81 |
| | **617** | 556 |

As at December 31, 2019, a total of $537 million of Letters of Credit had been issued. This included $392 million for the supplementary pension plans, $55 million for Lower Mattagami Energy Partnership, $53 million for general corporate purposes, $19 million for Cube Hydro, $16 million for UMH Energy Partnership and $1 million for each of PSS Generating Station Limited Partnership and PEC.

The following are the long-term debt balances as of December 31:

| *(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Long-term debt:** | | |
| Notes payable to the OEFC | **3,135** | 3,400 |
| Medium Term Notes program | **2,250** | 950 |
| Project financing | **2,823** | 2,341 |
| Fair Hydro Trust Senior Notes [1] | **-** | 900 |
| Other | **25** | 21 |
| | **8,233** | 7,612 |

[1] Senior debt owed by Fair Hydro Trust to external third parties ceased to be recognized in OPG's consolidated financial statements following deconsolidation of the Trust in May 2019.

Additional information regarding the company's long-term debt maturity dates and interest rates can be found in Note 11 of OPG's 2019 audited consolidated financial statements.

Share Capital

As at December 31, 2019 and 2018, 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.

As at December 31, 2019 and 2018, OPG had 18,343,815 Class A shares issued and outstanding at a stated value of $787 million. OPG is entitled to redeem outstanding Class A shares as may be approved by OPG's Board of Directors (Board).

## Contractual Obligations

OPG's contractual obligations as at December 31, 2019 were as follows:

| *(millions of dollars)* | **2020** | **2021** | **2022** | **2023** | **2024** | **Thereafter** | **Total** |
|---|---|---|---|---|---|---|---|
| Fuel supply agreements | 154 | 150 | 101 | 92 | 25 | 14 | 536 |
| Contributions to the OPG registered pension plan [1] | 181 | 183 | - | - | - | - | 364 |
| Long-term debt repayment | 693 | 448 | 207 | 75 | 215 | 6,595 | 8,233 |
| Interest on long-term debt | 326 | 298 | 284 | 279 | 274 | 4,650 | 6,111 |
| Short-term debt repayment | 164 | - | - | - | - | - | 164 |
| Commitments related to Darlington Refurbishment project [2] | 288 | - | - | - | - | - | 288 |
| Operating licences | 44 | 45 | 46 | 47 | 48 | 49 | 279 |
| Operating lease obligations | 14 | 12 | 11 | 7 | 6 | 13 | 63 |
| Unconditional purchase obligations | 59 | 5 | - | - | - | - | 64 |
| Accounts payable and accrued charges | 938 | 13 | 1 | - | - | - | 952 |
| Other | 36 | 26 | 10 | 8 | 7 | 84 | 171 |
| Total | 2,897 | 1,180 | 660 | 508 | 575 | 11,405 | 17,225 |

1 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, 2019. The next actuarial valuation of the OPG registered pension plan must have an effective date no later than January 1, 2022. 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 2021 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.

2 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.

Ontario Nuclear Funds Agreement

Pursuant to the ONFA, OPG may be required to make contributions to the Nuclear Segregated Funds, based on life cycle cost estimates and resulting funding liabilities for nuclear facilities decommissioning and nuclear waste management, determined under periodically updated reference plans as approved by the Province. Based on the 2017 ONFA Reference Plan, OPG is currently not 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 currently scheduled to be completed at the end of 2021. Further details on the Nuclear Segregated Funds can be found in the section, *Critical Accounting Policies and Estimates*.

Collective Agreements

As at December 31, 2019, OPG and its wholly-owned subsidiaries had approximately 8,800 regular employees, mostly in Ontario. Most of OPG's regular employees are represented by two unions:

- PWU – This union represents approximately 4,400 regular employees at OPG and its wholly-owned subsidiaries, or approximately 51 percent, of the Company's regular workforce in Ontario as at December 31, 2019. Union membership includes operators, technicians, skilled trades, clerical staff and security personnel. The current collective agreement between the PWU and OPG expires on March 31, 2021. The current collective agreement between the PWU and OPG's wholly-owned subsidiary operating the Brighton Beach GS expires on November 15, 2020.
- Society – This union represents approximately 3,100 regular employees at OPG, or approximately 36 percent of the Company's regular workforce in Ontario as at December 31, 2019. Union membership includes supervisors, professional engineers, scientists and other professionals. The current collective agreement between the Society and OPG expires on December 31, 2021.

In addition to the regular workforce, construction work in Ontario is performed through 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 and its wholly-owned subsidiaries. The associated collective agreements are negotiated either directly between the parties or through the EPSCA. Most of these collective agreements currently have multi-year terms that expire in 2025. The remaining collective agreements expire in 2020 and are currently in the process of being negotiated for renewal. The EPSCA is a voluntary association of owners and contractors who perform work in Ontario's electrical power systems sector.

## BALANCE SHEET HIGHLIGHTS

The following section provides other highlights of OPG's 2019 audited consolidated financial position using selected balance sheet data as at December 31:

| *(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Property, plant and equipment – net**<br>The increase was primarily due to capital expenditures on the Darlington Refurbishment project, the acquisition of Cube Hydro and the Brighton Beach GS, and investments in other capital projects, partially offset by depreciation expense. | **26,047** | 22,987 |
| **Nuclear fixed asset removal and nuclear waste management funds**<br>*(current and non-current portions)*<br>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. | **18,292** | 17,483 |
| **Long-term debt**<br>*(current and non-current portions)*<br>The increase was primarily due to the issuance of senior notes under the Company's Medium Term Note Program, partially offset by the derecognition of Fair Hydro Trust's long-term debt upon deconsolidation of the Trust effective May 9, 2019. | **8,226** | 7,556 |
| **Fixed asset removal and nuclear waste management liabilities**<br>The increase was primarily a result of accretion expense, partially offset by expenditures on fixed asset removal and nuclear waste management activities. | **22,081** | 21,225 |

### 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 21 of OPG's 2019 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 2019 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 *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 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 the 54 prescribed hydroelectric generating stations and the Darlington and Pickering nuclear generating stations located in Ontario. 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 accumulated other comprehensive income (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 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 2019 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 interveners 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-related 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. 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 approval by the OEB, 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 generating 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.

### Goodwill

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.

### 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 life cycle 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 nuclear fuel storage incurred after the nuclear generating stations are shut down. The Used Fuel Segregated Fund was established to fund the future costs of long-term used nuclear fuel management and certain costs of used nuclear fuel storage incurred after the nuclear generating stations are shut down. Costs for L&ILW management and used nuclear 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 nuclear fuel liability by the end of the initial estimated useful lives of the nuclear generating 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 fund 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 fund 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 nuclear 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 nuclear 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 nuclear fuel bundles if the fund assets earned a rate of return that is less than the guaranteed rate of return. If the return on the fund 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 nuclear bundles, upon approval of a new or amended ONFA reference plan. The 2.23 million threshold represents the number of estimated total life cycle fuel bundles based on the initial estimated useful lives of the nuclear generating stations assumed in the ONFA.

As prescribed under the ONFA, OPG's contributions attributed to the used nuclear 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 has the sole right 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 facilities 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, OPG expects that the CNSC financial guarantee requirement for the 2020-2022 period will continue 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 2020-2022 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 discussed below.

Accounting Policy

OPG's post-employment benefit programs covering eligible employees include a contributory defined benefit registered pension plan, a defined benefit supplementary pension plan, other post-retirement benefits (OPRB) including group life insurance and health care benefits, and long-term disability (LTD) benefits. Certain post-employment defined benefit programs are also provided by the Nuclear Waste Management Organization (NWMO), OPG's subsidiary operating the Brighton Beach GS, and Cube Hydro Partners, LLC, all of which are consolidated into OPG's financial results. Eagle Creek and OPG's subsidiary operating the Brighton Beach GS sponsor defined contribution employee savings plans for eligible employees, under which employer and employees make contributions according to the plan terms. 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 domestic and international equity securities, corporate and government fixed income securities, pooled funds, real estate, infrastructure and other investments. These assets are managed by professional investment managers. The pension funds do not invest in equity or debt securities issued by OPG or its subsidiaries. Pension fund assets of defined benefit pension plans 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 for pension fund assets of the OPG defined benefit pension plan recognizes gains and losses on equity assets relative to a 6 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 defined benefit 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 defined benefit plan 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, 2019, the unamortized net actuarial loss and unamortized past service credits for the defined benefit pension and OPEB plans totalled a net of $3,950 million (2018 – $3,791 million). Details of the unamortized net actuarial loss and unamortized past service credits as at December 31 are as follows:

| (millions of dollars) | Registered Pension Plans 2019 | Registered Pension Plans 2018 | Supplementary Pension Plans 2019 | Supplementary Pension Plans 2018 | Other Post-Employment Benefits 2019 | Other Post-Employment Benefits 2018 |
|---|---|---|---|---|---|---|
| Net actuarial (gain) loss not yet subject to amortization due to use of market-related values | **(190)** | 180 | **-** | - | **-** | - |
| Net actuarial loss (gain) not subject to amortization due to use of the corridor | **1,813** | 1,707 | **39** | 35 | **224** | (104) |
| Net actuarial loss subject to amortization | **1,994** | 1,908 | **88** | 67 | **2** | - |
| Unamortized net actuarial loss (gain) | **3,617** | 3,795 | **127** | 102 | **226** | (104) |
| Unamortized past service credits | **-** | - | **-** | - | **(20)** | (2) |

OPG records an offsetting regulatory asset or regulatory liability for the portion of the pension and OPEB-related 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, 2019 was approximately 3.1 percent. This represents a decrease compared to the discount rate of approximately 3.8 percent that was used to determine the obligations as at December 31, 2018. 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 used in the determination of the projected benefit obligations are applied to the relevant projected cash flows.

The expected rate of return on defined benefit pension 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 Regulatory Authority of Ontario in September 2019 with an effective date of January 1, 2019. 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, 2019 consistent with the new funding valuation for the registered pension plan, OPG conducted a comprehensive actuarial valuation for accounting purposes of the OPG defined benefit pension and OPEB plans in 2019. The results of this valuation were reflected in the 2019 year-end obligations reflecting appropriate assumptions for accounting purposes as at December 31, 2019.

The deficit for the registered pension plan, for accounting purposes, decreased from $3,303 million as at December 31, 2018 to $3,198 million as at December 31, 2019. This decrease was largely due to the excess of actual returns on the pension plan assets over interest costs on the liabilities during the year, and a re-measurement of the benefit obligation at the end of 2019 reflecting a lower inflation rate assumption, partially offset by the impact of lower discount rates.

The projected benefit obligations for OPEB plans increased from $2,799 million as at December 31, 2018 to $3,203 million as at December 31, 2019. This increase was largely due to a re-measurement of the liabilities at the end of 2019 reflecting a decrease in the discount rates.

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, 2019 as follows:

| *(millions of dollars)* | **Registered Pension Plans [1]** | **Supplementary Pension Plans [1]** | **Other Post-Employment Benefits [1]** |
|---|---|---|---|
| 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 | (56) | (1) | (2) |
| 0.25% decrease | 59 | 1 | 2 |
| Inflation [2] | | | |
| 0.25% increase | 107 | 1 | - |
| 0.25% decrease | (100) | (1) | - |
| Salary increases | | | |
| 0.25% increase | 25 | 4 | - |
| 0.25% decrease | (24) | (3) | - |
| Health care cost trend rate | | | |
| 1% increase | n/a | n/a | 39 |
| 1% decrease | n/a | n/a | (44) |

n/a – change in assumption not applicable.

1 Excludes the impact of regulatory accounts.

2 With a corresponding change in the salary increase assumption.

### Asset Retirement Obligation

OPG recognizes asset retirement obligations (ARO) related to 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 ARO is comprised of expected costs to be incurred up to and beyond termination of operations and the closure of nuclear, thermal and solar 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 used nuclear fuel 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 Bruce nuclear generating 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 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 assumptions used to establish the obligation for these costs currently include an L&ILW DGR facility to be constructed on the lands adjacent to the WWMF in Kincardine, Ontario and operated by OPG. In light of the SON community vote on January 31, 2020, not to support OPG's proposed L&ILW DGR at this site, the Company has begun a process to evaluate potential alternative solutions for the safe long-term management of the L&ILW and to assess the potential corresponding impact to the ARO. Due to significant uncertainties associated with potential alternative solutions and the estimation of their cost at the present time, including factors beyond the Company's control, no adjustment to the ARO as at December 31, 2019 was recorded as a result of the SON community vote. OPG will continue to evaluate the underlying assumptions and cost estimates based on available information.

To estimate the liability for used nuclear 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, thermal and solar 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; and
- the present value of the variable cost portion of nuclear waste management programs taking into account waste volumes generated to date.

A number of significant assumptions used in the calculation of the accrued liabilities are subject to inherent uncertainty and judgement. 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 materially 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, 2019, 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, 2019 was $21,787 million (2018 – $20,922 million). As at December 31, 2019, the undiscounted cash flows of expenditures for OPG's Nuclear Liabilities in 2019 dollars are as follows:

| *(millions of dollars)* | **2020** | **2021** | **2022** | **2023** | **2024** | **Thereafter** | **Total** |
|---|---|---|---|---|---|---|---|
| Expenditures for nuclear fixed asset removal and nuclear waste management [1] | 341 | 328 | 628 | 814 | 722 | 41,502 | **44,335** |

[1] 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.

The liability for non-nuclear fixed asset removal was $294 million as at December 31, 2019 (2018 – $303 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, Lambton and Thunder Bay 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 over the next 25 years. The amount of undiscounted estimated future cash flows associated with the thermal fixed asset removal liabilities is approximately $350 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. Various other 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*.

## ENVIRONMENTAL, SOCIAL, GOVERNANCE AND SUSTAINABILITY

OPG recognizes that operating in a sustainable, safe and inclusive manner is directly connected to business success and is expected by the Company's Shareholder and stakeholders. As Ontario's largest low-cost clean energy provider, the Company strives to be a leader in sustainability and climate change mitigation through the implementation of operational and growth strategies that minimize the Company's environmental footprint, foster biodiversity, support reductions in greenhouse gas (GHG) emissions and increase resilience to climate change impacts.

### Environmental and Sustainability

OPG is committed to 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; 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 2019, 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 2019 targets for spills, environmental infractions, carbon-14 emissions to air, volume of L&ILW produced and tritium emissions to air and water. There were no significant environmental events during 2019.

Under the federal *Greenhouse Gas Pollution Pricing Act* (GGPPA), an Output-Based Pricing System (OBPS) for industrial facilities took effect on January 1, 2019 and a fuel charge came into effect on April 1, 2019 in Ontario. On July 10, 2019, OBPS regulations were published, including fuel-specific performance standards for electricity generation that apply retroactively beginning January 1, 2019. OPG has implemented processes to comply with the federal requirements and recover associated carbon costs to the extent possible.

On July 4, 2019, the Government of Ontario published Greenhouse Gas Emissions Performance Standards (EPS) to provide Ontario with an alternative to the OBPS portion of the federal GGPPA. Only the registration provisions of the EPS currently apply. Other key provisions will not apply while Ontario is subject to the federal OBPS requirements. Neither the federal pricing system nor the provincial EPS are expected to have a material financial impact on the Company.

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. During 2019, OPG continued to work with community partners to support regional ecosystems and biodiversity, including efforts to protect and restore habitat, promote biodiversity education and awareness and help the recovery of species at risk.

OPG communicates its environmental performance internally to employees and to external stakeholders, including the Ontario Ministry of the Environment, Conservation and Parks, 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 on the Company's website at www.opg.com.

## Climate Change

OPG supports 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. OPG's current approach, strategies and performance metrics related to climate change are discussed below.

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

OPG continues to integrate adaptation and mitigation into the Company's decision-making and business processes to address the vulnerabilities to climate change. Risks exacerbated by or directly resulting from climate change are identified and managed in line with 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. Additionally, the OPG pension plan's investment strategy includes provisions to address risks arising from Environmental, Social and Governance (ESG) factors, including climate-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.

As part of the governance framework related to climate change management, OPG has established an Environmental, Social, Governance and Sustainability steering committee, consisting of Enterprise Leadership Team (ELT) members with expertise in the areas of environment, finance, communications 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, business growth and development, and identification of at-risk assets. As OPG gains further information about the potential impacts of climate change on the Company's operations and future financial performance, the committee will also provide guidance on the metrics and targets determined to be most significant for measurement and disclosure to investors and other stakeholders.

### Strategies 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, regions where OPG operates have experienced changes in climate and an increase in extreme weather events. This includes changes in precipitation patterns and intensity, water temperatures and ambient air temperatures, all of which may impact various aspects of OPG's operations. In addition to the potential impacts on electricity generation at hydroelectric generating stations and cooling water efficiency at nuclear and thermal generating stations, changes in climate can also significantly affect the reliability and life expectancy of major equipment as well as electricity supply and demand profile.

OPG is pursuing initiatives to increase resilience against potential climate change impacts, including identifying and prioritizing opportunities for increasing the resilience of its hydroelectric assets, updating business processes to embed consideration for climate change projections, and increasing the organization and the public's knowledge and awareness of climate change adaptation. OPG also continues to provide leadership and engage in industry-wide initiatives to increase the resilience of critical infrastructure through such initiatives as the National Resources Canada and Canadian Electricity Association's (CEA) project to establish standardized industry guidelines for developing climate change adaptation plans and collaboration with other major Canadian utilities to develop vulnerability assessment tools and best practices.

Consistent with its business imperatives, OPG also continues to seek opportunities to mitigate climate change by investing in the safe generation of clean and sustainable energy and related infrastructure. The following is a summary of key actions taken by OPG to advance this strategy in 2019:

Acquisitions

- During 2019, the Company added 401 MW of in-service generating capacity from renewable electricity generation through acquisitions to expand its hydroelectric fleet. This included the acquisition of Cube Hydro in October 2019 and interests in several smaller hydroelectric stations in the US during the year.
- In July 2019, OPG, under a new subsidiary, entered into a purchase agreement with affiliates of TC Energy to acquire a portfolio of combined-cycle natural gas-fired plants in Ontario. The natural gas electricity generation from these assets is an important component of maintaining the reliability of Ontario's electricity system, complementing the growth of variable sources of electricity generation in the province, such as wind and solar.

Refer to the section, *Recent Developments* under the heading, *Recent Developments in Financial Strength* for further details.

Financing

- In January 2019, OPG issued its second green bond offering raising $500 million to finance or refinance eligible projects under OPG's Green Bond Framework. In November 2019, OPG's use of green bonds to align financial and sustainability goals was recognized by the CEA with the 2019 Sustainable Electricity Program award for Advancement of an Integrated Approach to Sustainability.

Generation Development

- In 2019, OPG continued to execute one of the largest clean energy infrastructure project in Canada, the Darlington Refurbishment project, and is nearing completion on the refurbishment of the first of the station's four generating units. Once the project has been completed, the Darlington GS will continue to provide clean, reliable and cost effective baseload generation for the people of Ontario for at least another 30 years.
- In March 2019, OPG placed the 44 MW Nanticoke solar facility into service. Built on the former lands of the coal-fuelled Nanticoke GS in Ontario, the facility represents the first solar facility operated by the Company, through Nanticoke Solar LP.
- During 2019, OPG continued to execute the work required to enable safe and reliable operation of the Pickering GS to 2024 and is working with the Province on a plan to further optimize the shutdown sequence of the station's generating units, subject to the CNSC's regulatory approvals. Continued operation of the Pickering GS provides the province with a reliable, cost effective source of carbon-free baseload electricity.

Refer to the section, *Core Business and Outlook* under the headings, *Operational Excellence* and *Project Excellence* for further details.

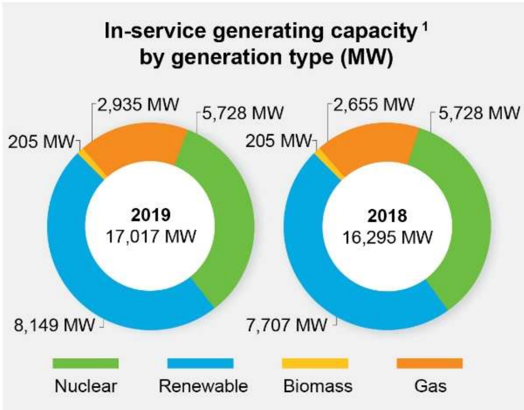
| | |
|---|---|
| New Nuclear Development | • Global First Power (GFP), Ultra Safe Nuclear Corporation™ (USNC) and OPG have partnered on a small modular reactor project in Canada proposed by GFP using Micro Modular Reactors technology (MMR ™). The companies propose to construct and operate a 15 MW thermal (approximately 5 MW electrical) MMR ™ plant at Chalk River Laboratories, owned by Atomic Energy of Canada Limited and operated by Canadian Nuclear Laboratories (CNL), in response to CNL's request for expressions of interest to construct a demonstration SMR at a CNL site. In July 2019, the Canadian federal government issued the notice of commencement of an environmental assessment for the proposed project. In parallel, GFP will provide CNL with the required information as CNL continues its proponent selection process, and provide the CNSC with information to support the licence application process.<br><br>• In December 2019, OPG received the CNSC's concurrence with its renewal plan for the site preparation licence in relation to the potential construction of new nuclear reactors at the Darlington site. OPG intends to submit a licence renewal application in mid-2020. No decision on technology has been made and no project has been commenced.<br><br>Refer to the section, *Core Business and Outlook* under the heading, *Operational Excellence* for further details. |
| Electrification | • In 2019, OPG and a subsidiary of Hydro One formed a partnership to own and operate electric vehicle fast charging stations across Ontario, under the Ivy Charging Network brand. The Ivy Charging Network is expected to be the largest fast-charging network in Ontario with 73 sites and 160 chargers by the end of 2021. In addition to enabling the electrification of the transportation sector, this initiative is expected to provide a new source of revenue for OPG.<br><br>• In 2019, OPG constructed a vehicle-to-grid pilot with electric vehicles and bidirectional chargers hosted at two commercial buildings in Toronto, Ontario. This pilot implementation with Peak Power Inc., a global energy technology services provider, will explore feasibility of demand management using an aggregate resource. |
| Water Safety | • In January 2019, OPG initiated a plan to improve dam safety along the Lower Mattagami River in Ontario, primarily through the Little Long Dam Safety project. The project will provide additional discharge capacity and make other improvements at the Little Long Main Dam supporting OPG's hydroelectric generating stations on the Lower Mattagami River. The project will help to meet new dam safety requirements, protect the community, keep the stations running safely and reduce impacts to the environment, in the event of large-scale flooding in the area.<br><br>• At OPG, the safety of the public is the top priority. In recent years, OPG's hydroelectric operations experienced challenging conditions due to high water levels and flows in Ontario. The Company has worked closely with stakeholders, including industry partners and various levels of government, to safely and effectively manage conditions within its control. OPG continues to explore ways to manage water systems and invest in infrastructure, where feasible, to help mitigate the impact of severe weather events on affected communities and businesses.<br><br>Refer to the section, *Core Business and Outlook* under the heading, *Operational Excellence – Electricity Generation Production and Reliability* for further details. |

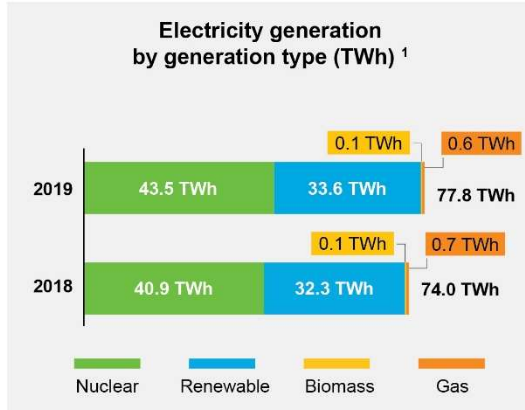
| | |
|---|---|
| Indigenous Relations | • In August 2019, OPG completed the commissioning of a renewable micro grid in partnership with the Kiashke Zaaging Anishinaabek (KZA), also known as the Gull Bay First Nation. The micro grid utilizes solar panels, lithium-ion storage batteries and automated control technology and will help the community to reduce its diesel use by approximately 30 percent, eliminating more than 400 tonnes of carbon emissions annually. |

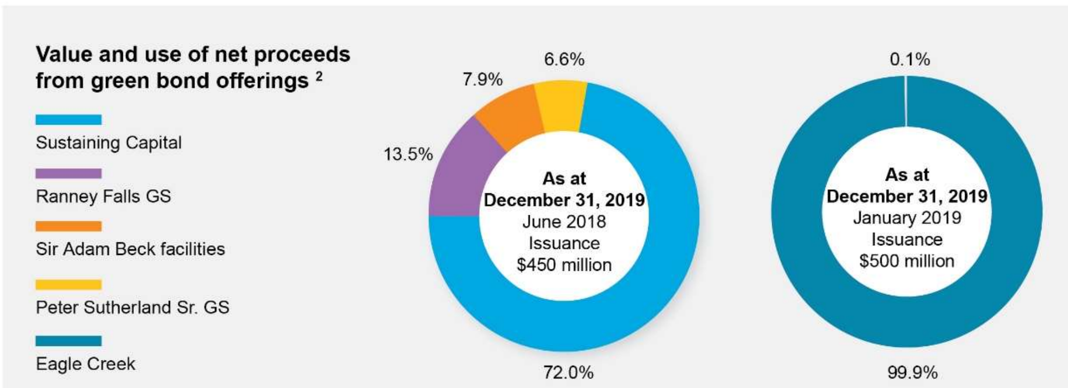
Climate-Related Performance and Key Metrics

OPG continues to determine the most relevant climate-related impacts for the business in the context of its ESG and Sustainability framework and is 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. OPG is in the process of developing such longer-term quantitative metrics and targets for climate change adaptation. In the meantime, OPG has identified certain initial current metrics that it considers relevant to stakeholders. These are outlined below.

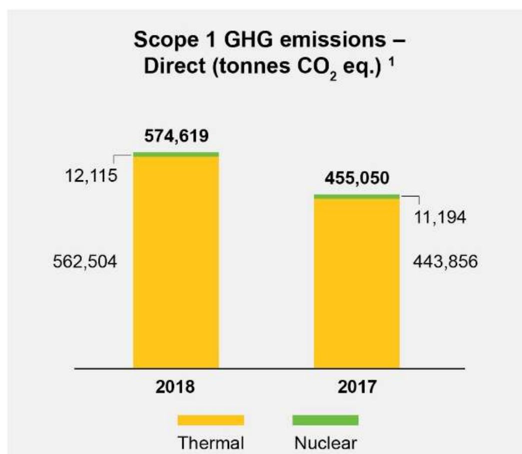
## Climate change metrics








[1] Includes OPG's proportionate share of in-service generating capacity and electricity generation from co-owned and minority-held facilities, as applicable. The Scope 1 GHG emissions represents OPG's thermal and nuclear carbon dioxide equivalent emissions in Ontario, including OPG's co-owned generating facilities. Gas category includes the oil/gas dual-fuelled Lennox GS, the Brighton Beach GS and OPG's proportionate share of PEC.

[2] Sir Adam Beck facilities category includes the Sir Adam Beck I GS Units G1 and G2 Replacement project, the Water Conveyance System rehabilitation of Sir Adam Beck I GS and the Sir Adam Beck Pump GS Reservoir Refurbishment Project.

| Climate change metrics | |
|---|---|
| *In-service generating capacity by generation type* | 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 and solar) 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 2019, total in-service generating capacity from low-carbon emitting sources increased by 442 MW, compared to 2018, primarily due to the acquisition of Cube Hydro, the completion of the Nanticoke solar facility and the acquisition of interests in several smaller hydroelectric facilities in the United States. |
| *Electricity generation by generation type* | 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 supply approximately 99 percent of OPG's total generation. Biomass and Gas generation, which comprises OPG's thermal operations, typically function as peaking facilities and therefore operate for limited periods as required by the IESO-administered grid to meet peaks in electricity demand. |
| *Revenue by facility category* | This metric identifies the portion of OPG's total revenue derived from low-carbon generation sources. Approximately 98 percent of OPG's revenue from electricity generation operations is derived from low-carbon facilities. Revenue from low-carbon generation increased in 2019, compared to 2018, mainly due to higher electricity generation from the Regulated – Nuclear Generation business segment, the impact of higher regulatory account rate riders authorized by the OEB for the regulated facilities and revenue from the acquired hydroelectric facilities in the United States. |
| *Value and use of net proceeds from green bond offerings* | This metric demonstrates the opportunity for increased investment in renewable energy and related infrastructure and highlights the projects financed with green bond proceeds. During 2019, the net proceeds from the June 2018 $450 million and the June 2019 $500 million green bond issuances were fully allocated to eligible hydroelectric projects under OPG's Green Bond Framework. Additionally, the Company issued its first annual Green Bond Impact Report, which outlines OPG's Green Bond Framework and provides details regarding the use of proceeds from the June 2018 and January 2019 issuances. The report is available on the Company's website at www.opg.com. |
| *Scope 1 GHG emissions – Direct and Atmospheric Emission Rates* | The Scope 1 GHG emissions metric identifies carbon dioxide equivalent ($CO_2$ eq.) emissions from OPG's thermal and nuclear operations in Ontario. For the year ended December 31, 2018, 562,504 tonnes of $CO_2$ eq. (2017 – 443,856 tonnes of $CO_2$ eq.) were emitted by thermal operations, representing approximately 98 percent of OPG's total $CO_2$ eq. emissions, with the remainder emitted by nuclear operations. The increase in $CO_2$ eq. emissions in 2018 was primarily due to higher electricity generation from the Company's co-owned thermal facilities. In comparison, OPG's $CO_2$ emissions peaked at 39 million tonnes before the phase-out of coal-fired generation by 2014. Since the elimination of coal-fired generation, annual $CO_2$ emissions |

| Climate change metrics | |
|---|---|
| | have averaged approximately 545,000 tonnes per year, fluctuating mainly with variability in electricity generation from thermal operations.<br><br>As virtually all of OPG's electricity is generated from low-carbon sources, the Company's $CO_2$ Atmospheric Emission Rate remains comparatively low. For the year ended December 31, 2018, OPG emitted $CO_2$ at an average rate of 7.8 tonnes per gigawatt hour (GWh) of its total electricity generation in Ontario (2017 – 6.1 tonnes per GWh), including the Company's proportionate share from co-owned facilities.<br><br>Updated Scope 1 GHG emissions and Atmospheric Emission Rate information is published annually and data for 2019 will be available in June 2020. |

## 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, the Employee Health and Safety Policy and the 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 several years, OPG has stood in the top quartile of its comparator Canadian electrical utilities in various safety performance metrics. In November 2019, 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 uses Total Recordable Injury Frequency (TRIF) as a key performance measure to track progress toward the Company's goal of zero injuries and to benchmark OPG's performance against other CEA utilities.

OPG's employee workplace safety performance as measured by the TRIF indicator was as follows:

| Safety data | 2019 | 2018 |
|---|---|---|
| TRIF *(injuries per 200,000 hours)* [1] | **0.37** | 0.51 |

[1] Includes OPG's wholly-owned subsidiaries.

OPG's TRIF improved substantially in 2019 compared to 2018. 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, falling objects, exposures to falls from height and the use of human performance tools including increased field supervisory oversight and monitoring the presence of safety defenses.

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 have been or 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.

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 2019, the Company continued to offer the Mental Health First Aid training course for employees. 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. Over 2,300 managers, supervisors and union leaders have received this training since 2016.

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 (μSv), which is an international unit of radiation dose measurement.

The doses to the public resulting from OPG's nuclear operations were as follows:

| **Annual public dose** | **2018** | | **2017** | |
|---|---|---|---|---|
| | **μSv** | **% of annual legal limit [1]** | **μSv** | **% of annual legal limit [1]** |
| Darlington GS | **0.8** | **0.1%** | 0.7 | 0.1% |
| Pickering GS | **2.1** | **0.2%** | 1.8 | 0.2% |

[1] The annual legal limit is 1,000 μSv for each nuclear generating station.

While the public doses from OPG's nuclear operations for the 2019 operating year will not be finalized until the second quarter of 2020, they are not expected to differ significantly from the 2018 levels.

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 in Ontario is industry leading, within Canada and internationally.

In 2019, OPG entered into an MOU with the Ontario Ministry of Natural Resources and Forestry related to the application of the *Lakes and Rivers Improvement Act*. The purpose of the MOU is to streamline future approvals for rehabilitation projects related to dam safety upgrades, including piloting more modern methods of analysis than those currently prescribed in provincial standards. These more up to date methods are expected to result in improved levels of public safety while lowering the overall costs associated with dam upgrades. Additionally, OPG launched a major refresh of its public safety messaging campaign in 2019, introducing a new cycle of educational advertisements on various media platforms to increase public awareness of the safety risks associated with dams and hydropower stations.

### Human Resources

A well-trained and engaged workforce is fundamental to the achievement of OPG's business imperatives. The Company is focused on building a diverse, committed, healthy and agile workforce that thrives in a dynamic and changing industry, while fostering a strong culture of collaboration, accountability and innovation. OPG 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. OPG utilizes workforce planning and resourcing strategies 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 project. 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, including the period to de-fuel, de-water and place the station in a safe storage state after shutdown. As the end of commercial operation at the Pickering GS is expected to lead to a reduction in the Company's workforce, OPG continues to develop and assess strategies that may mitigate the impact of this future restructuring.

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, including leadership development programs 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 requirements of various qualifications.

The Government of Ontario's Bill 124, *Protecting a Sustainable Public Sector for Future Generations Act, 2019* came into effect on November 7, 2019. The legislation limits compensation increases for unionized and non-unionized employees in the province's public sector by establishing three-year moderation periods. Salary increases are limited to 1 percent for each 12-month period of the applicable moderation period. Any incremental increases to existing and new compensation entitlements, including salary increases, are also limited to a total of 1 percent on average for all employees, for each 12-month period of the moderation period. The legislation applies to OPG.

OPG's average number of regular employees and average number of seasonal, casual construction and non-regular employees (Other Employees) during the years ended December 31 were as follows:

| | Regular Employees | | Other Employees | | Total Employees | |
|---|---|---|---|---|---|---|
| Business segment | **2019** | **2018** | **2019** | **2018** | **2019** | **2018** |
| Regulated – Nuclear Generation [1] | **6,776** | 7,097 | **1,853** | 1,694 | **8,629** | 8,791 |
| Regulated – Hydroelectric | **1,189** | 1,192 | **60** | 63 | **1,249** | 1,255 |
| Contracted and Other Generation [2] | **644** | 566 | **91** | 78 | **735** | 644 |
| Other | **106** | 87 | **17** | 10 | **123** | 97 |
| **Total** | **8,715** | 8,942 | **2,021** | 1,845 | **10,736** | 10,787 |

[1] Includes employees associated with the Regulated – Nuclear Waste Management segment.

[2] In 2019, includes average number of regular and other employees employed by Cube Hydro and the Brighton Beach GS from the date of acquisition of October 7, 2019 and August 30, 2019, respectively. The average number of regular and other employees at Eagle Creek is included from the date of acquisition of November 27, 2018.

### Diversity and Inclusion

OPG embraces diversity in its broadest sense – a mix of talents, perspectives, backgrounds and experiences that increases collective capability. OPG believes strongly 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 interviews a diverse candidate for every Board vacancy.

In January 2019, OPG became a member of 30% Club Canada, a widely recognized organization whose mission includes the aspirational goal of having 30 percent of board seats and senior management positions within the Canadian business community to be held by women by 2022. In August 2019, the Board set a new target for diverse representation on the Board of 50 percent of the independent directors, including a target of 30 percent women on the Board by 2022. As at December 31, 2019, the Board met its diverse representation target of 50 percent, including the target for women on the Board.

Although a diversity target and policy has not been established for senior management, 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 and senior management diversity representation as at December 31, 2019 was as follows:

| Gender diversity data | Women | | Men | | Total |
|---|---|---|---|---|---|
| Independent Directors | 3 | 38% | 5 | 62% | 8 |
| Diverse Independent Directors | | | | | > 50% |
| Corporate Officers [1] | 4 | 29% | 10 | 71% | 14 |
| Enterprise Leadership Team [2] | 3 | 30% | 7 | 70% | 10 |
| Senior Leadership Team [3] | 17 | 43% | 23 | 57% | 40 |

1 Corporate officers as defined by the *Business Corporations Act* (Ontario).
2 ELT comprises the OPG President and CEO, the Business Presidents, C – Suite Officers and Senior Vice Presidents who report directly to the CEO or who may be named to the ELT.
3 Senior Leadership Team is generally comprised of Vice Presidents who report directly to a member of the ELT.

### Indigenous Relations

The Company 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. OPG is 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 is committed to the goal of achieving a Gold PAR certification.

OPG owns and operates electricity generation assets within the traditional territories of Indigenous Peoples, and 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, where appropriate, pursuing generation-related development partnerships on the basis of long-term commercial arrangements and other joint projects. Over approximately the last decade, 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 facility.

The data in the following table measures the economic impact of OPG's generation-related development partnerships with Indigenous communities for the year ended December 31:

| Indigenous partnerships data | 2019 | 2018 |
|---|---|---|
| In-service generation capacity of facilities constructed in partnership with Indigenous communities *(MW)* | **522** | 478 |
| Revenues earned from facilities in partnership with Indigenous communities *(millions of dollars)* [1] | **315** | 314 |

[1] Represents 100 percent of revenue earned from facilities in partnership with Indigenous communities.

Additionally, in August 2019, OPG completed the commissioning of a renewable micro grid in partnership with the KZA to help the community reduce its diesel use. Ownership of the micro grid will be transferred to KZA upon completion of a system monitoring period.

In March 2020, OPG, EPCOR Utilities Inc. and PCL Construction signed a MOU with Minawshyn Development Corporation (MDC), a wholly owned corporation of the Matawa First Nations member communities, and Enterprise Canada Inc. to identify and assess potential projects to develop community-based infrastructure with the Matawa First Nations member communities in northern Ontario. The MOU will allow OPG to play a lead role in development by working with MDC on exploring infrastructure solutions that will benefit their communities.

OPG is committed to continuing to undertake proactive engagement and consultation with Indigenous communities on its new projects. Currently, OPG is in the process of undertaking 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 also undertook proactive engagement with Wabaseemoong Independent Nation throughout the Caribou Falls GS Block Dam No. 2 replacement project. The project provided over 8,000 hours of community employment and was completed in November 2019. The new block dam enhances the safety of OPG's operations for the community of Wabaseemoong and the surrounding area.

OPG also continued to engage with Indigenous communities regarding the Company's nuclear operations during 2019. This included regularly scheduled meetings and ongoing dialogue with the Métis Nation of Ontario Region 7, the Historic Saugeen Métis and the SON on OPG's proposed L&ILW DGR project. On January 31, 2020, SON members voted not to support the L&ILW DGR project on lands adjacent to the WWMF in Kincardine, Ontario. OPG respects the decision of the SON community and will uphold its earlier commitment not to proceed with the project at the site without SON's support. For further detail, refer to the section, *Recent Developments* under the heading, *Recent Developments in Project Excellence*.

OPG is committed to improving Indigenous access to employment and procurement opportunities, including increasing the profile of the nuclear generation industry in Indigenous communities. In 2019, OPG's Indigenous Opportunities in Nuclear (ION) program completed its second year. The program is a collaboration between OPG, the EPSCA, Kagita Mikam Aboriginal Employment and Training, and unions and vendors engaged on the Darlington Refurbishment project. ION places Indigenous program participants in energy sector building trades, such as carpenters, boilermakers and millwrights. As of December 2019, the program exceeded its annual goal by achieving 12 such placements for the current year.

In October 2019, OPG hosted its second Indigenous procurement engagement event in conjunction with the CCAB. The event provides opportunities for Indigenous and non-Indigenous businesses to network and learn about OPG's procurement initiatives.

OPG is focused on providing training opportunities and learning resources for employees to gain the necessary knowledge and skills to perform their duties in a manner that supports and enhances OPG's Indigenous Relations Policy. To support this objective, in 2019, OPG completed the development of an Indigenous Relations learning module. The module was rolled out in January 2020 as part of required internal training for all regular OPG employees.

## RISK MANAGEMENT

### Overview

OPG faces various risks that could significantly impact the achievement of its business 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 of the Board is mandated to fulfill the Board's oversight responsibilities 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 business 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 business imperatives are briefly described below. These are key risks that management believes could materially affect the Company's business, revenues, net income, cash flow, 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. As described below, the operational risks of a station are generally a function of its age, human performance, regulatory requirements and the technology used.

| | |
|---|---|
| Supply Chain | OPG's ability to operate effectively is in part dependent upon timely access to equipment, materials and service suppliers. Loss of key suppliers, particularly for the nuclear business, and vendor performance risks 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. OPG also identifies critical components that require long lead times to timely initiate the procurement process. |
| Labour Relations | As of December 31, 2019, approximately 87 percent of OPG's regular labour force in Ontario was represented by a union. As such, there is an inherent risk of labour relations disputes in the Company's operations. There is also an inherent risk that renewal of collective agreement in the future may include terms that will unfavourably impact OPG's costs and ability to efficiently manage its operations.<br><br>In April 2019, following the Government of Ontario's earlier direction that the renewal of the collective agreement between the PWU and OPG be submitted to binding arbitration, an arbitrator issued an award for a three-year collective agreement expiring on March 31, 2021. As a result, the earliest date for a PWU legal strike is April 2021.<br><br>The current collective agreement between the Society and OPG precludes strike by or lock-out of the Society-represented employees. If the parties are unable to reach a renewal collective agreement, the terms of the renewal collective agreement are decided through interest mediation/arbitration. In November 2019, an arbitrator issued an award for a two-year collective agreement expiring on December 31, 2021, after the parties were unable to reach an agreement on the terms of the renewal during negotiations held earlier in the year. |

| | |
|---|---|
| Generating Asset End of Life | Major damage or deterioration of station components and systems may result in generating assets reaching end of life prematurely. An earlier than planned retirement of a unit or station would result in a reduction of OPG's future generation revenue and cash flow, and may lead to the advancement of station shutdown and decommissioning expenditures and reductions in the workforce.<br><br>Risks inherent in maintaining commercial operations to a generating station or unit's stated end of life include discovery of unexpected conditions, equipment failures, rate of degradation of critical plant components and a requirement for significant plant modifications. To mitigate these risks, for nuclear operations, OPG has implemented actions recommended by technical assessments into each station's outage work program. OPG has also incorporated these actions into the comprehensive inspection and maintenance program as part of the stations' life cycle management plans. For non-nuclear operations, OPG maintains a rigorous maintenance and asset management program to ensure continuing operations of hydroelectric, thermal and solar assets. |
| 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.<br><br>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's cyber security program has policies and strategies in place to prepare for, respond to and recover from cyber security incidents as rapidly as possible in order to minimize operational and safety impacts. 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. OPG also performs periodic assessments of its cyber risk profile and effectiveness of controls.<br><br>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 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.<br><br>The Company has policies and programs in place to manage cyber risks; these programs are subject to oversight by management and the Board. OPG's current cyber programs primarily focus on the following:<br><br>• protection of the Company's assets from cyber attacks and safeguarding sensitive information;<br>• 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.

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 the 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.

Asset Condition 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 electricity 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.

Human Resources

The development of new leaders and attraction and retention of qualified employees in critical roles are key factors to OPG's success. The risk associated with the 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 continue to meet the human resource needs of the business by developing existing employees and hiring in specific areas, while leveraging attrition through realignment of work and streamlining of processes, where appropriate.

Legislative compensation constraints, such as the *Compensation Framework Regulation 406/18* under the *Broader Public Sector Executive Compensation Act, 2014* which imposes a freeze on base salary for designated executives in Ontario's broader public sector, continue to pose challenges to OPG's ability to attract and retain necessary talent.

Regulatory Compliance

OPG is subject to extensive legislation and regulations by various entities in the jurisdictions in which it operates, including 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 regulations 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 licences 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 licence, the FERC will impose new conditions that either restrict operations or require incremental expenditures related to the environment, recreation 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 inherent 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 lack of a permanent disposal site means that nuclear waste is stored in temporary locations. On January 31 2020, SON members voted not to support OPG's proposed DGR project for L&ILW on lands adjacent to the WWMF in Kincardine, Ontario. OPG will uphold its 2013 commitment not to proceed with the L&ILW DGR on these lands without the SON's support, and will explore alternative solutions for the safe long-term management of L&ILW.

For used nuclear fuel, 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 nuclear fuel waste in a DGR. The NWMO is currently undertaking a site selection process for the used fuel DGR and has indicated that it expects to complete the process by about 2023.

Hydroelectric Generation

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 generating 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. For OPG's regulated hydroelectric generation in Ontario, the financial impact of variability in electricity production due to differences between the forecast water conditions underpinning the hydroelectric base regulated prices and the actual water conditions is captured in an OEB-approved regulatory variance account.

SBG continues to be present in Ontario when electricity supply exceeds demand. To manage SBG conditions, the IESO may require OPG to reduce hydroelectric generation. A regulatory variance 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 in Ontario. Subject to variability in water flows that can contribute to SBG fluctuations, the Company anticipates a declining trend in SBG conditions as the refurbishment of units at the Darlington GS, the refurbishment of the Bruce generating stations and the end of commercial operations at the Pickering GS reduce future availability of nuclear electricity generation in the province.

**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, including violation of regulatory limits on emissions, 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 details, refer to the section, *Environmental, Social, Governance and Sustainability*.

**Climate Change and Extreme Weather Events**

In recent years, Ontario and other regions in North America where OPG operates have experienced an increase in climate and extreme weather events such as severe flooding during spring freshets. 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 collaborates with all levels of government in Canada, local communities and industry on climate change adaptation initiatives, with the goal of increasing the resiliency of electricity sector and other critical infrastructure. For further details, refer to 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 electricity generation revenue or additional costs to repair damages and restore operations.

OPG's business continuity program provides a framework to build resilience into critical business processes to ensure continued operation of critical business functions. OPG's emergency management program is 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 an incident on site security, production capability and the environment. The program elements are designed to meet legal and regulatory requirements.

OPG regularly monitors and assesses global events, such as emerging geopolitical events, natural disasters and pandemics, and prepares contingency plans should they potentially impact OPG's operations, employees, customers and stakeholders. OPG continues to monitor the impact of the COVID-19 virus and is reviewing business continuity plans to prepare the organization for changing conditions.

## Risks to Achieving Project Excellence

As a capital intensive business, OPG undertakes a large portfolio of projects with significant investments. There may be an adverse effect on the Company if it is unable to obtain necessary approvals for the projects, effectively manage the projects on time and on budget, or fully recover capital costs and earn an appropriate return on project investments. The projects may also impact OPG's borrowing capacity and credit rating. OPG mitigates risks associated with project execution through a scalable project management methodology that applies to projects across the Company. 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 generating 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 the Unit 2 refurbishment to the planning for refurbishments of the other units.

OPG is leveraging robust risk management practices to manage a number of risks related to the Darlington Refurbishment project, including:

- vendor performance risks;
- competition for tradespeople from non-OPG capital projects;
- delay and productivity risks;
- financial risks related to escalation of costs;
- technical risks such as equipment conditions resulting in additional scope;
- quality 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 related to vendor-related risks 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.

The Company has engaged various independent, third-party oversight for the execution of the project.

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| Key Trades Availability | Competing capital and infrastructure projects within Ontario, and throughout Canada, may limit the availability of key tradespeople to work on OPG projects. There is a risk that skilled tradespeople may choose to work on non-OPG projects, thereby impacting the Company's ability to complete projects on schedule. OPG is mitigating this risk through active monitoring of the supply and demand of key tradespeople and collaborating with training institutions and competing organizations to coordinate timing, where appropriate. |

## 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 electricity generation by competitors and financial risk associated with energy trading.

**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 and earn an appropriate return on the assets.

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.

In August 2019, legislation to amend the *Fisheries Act* to further protect fish and fish habitat and the *Impact Assessment Act* came into force in Canada. There is a risk that strengthened fish and fish habitat protection provisions under the *Fisheries Act* may affect OPG's hydroelectric operations. To mitigate this risk, OPG and its industry partners are working with Fisheries and Oceans Canada to develop the codes, policies and procedures that will determine how the regime is administered. OPG is also developing a compliance strategy. The *Impact Assessment Act* and its supporting regulations are not expected to impact OPG's current projects.

**Rate Regulation**

There is an inherent risk that regulated prices established by the OEB may not provide for the full recovery of actual costs incurred by OPG's regulated operations and allow the regulated operations to earn an appropriate return on the assets, adversely affecting the Company's earnings and cash flow from operations. This could occur if:

- in setting regulated prices, the OEB makes adjustments to forecasts submitted by OPG;
- OPG is unable to achieve cost reductions in line with OEB-approved stretch factors included in regulated prices under incentive ratemaking; or
- actual production and costs significantly differ from the forecasts approved by the OEB. 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 material as well as the decommissioning of its nuclear stations and waste management facilities. Under the ONFA, OPG is required to set aside and invest funds in the Nuclear Segregated Funds for discharging its obligations for nuclear decommissioning and long-term nuclear waste management. The cost estimates for OPG's nuclear waste management and nuclear decommissioning obligations are based on multiple underlying assumptions and estimates that may change significantly over time. To address this 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 as part the 2017 ONFA Reference Plan.

The Nuclear Segregated 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 Funds are allocated to domestic and international equity securities, corporate and government fixed income securities, pooled funds, real estate, infrastructure, and other investments. The rates of return earned on the funds in a given period 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 the 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 used nuclear fuel 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 methodologies, 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 as discussed below, under the OEB-approved cost recovery methodologies, OPG's net income is exposed to the rate of return risk related to the portion of the Nuclear Segregated Funds attributed to the Darlington and Pickering nuclear generating stations.

OPG limits the Nuclear Segregated Funds assets reported on the consolidated 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. Therefore, a reduction in the Nuclear Segregated Funds due to market conditions would first reduce the surplus in the respective fund before impacting OPG's net income. As such, the income statement impact of the rate of return risk is reduced when the funds are in a fully funded or overfunded position.

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| 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 on pension plan assets; 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.<br><br>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 in Ontario 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, address and monitor contractual obligations and milestones.<br><br>While OPG expects that the generating stations operating under ESAs or other contracts will continue to provide energy and capacity to the respective markets in Ontario and US over the term of the respective agreements, there is a risk that the contracts may not be renewed upon their expiry or may not be financially viable. |

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| Electricity Markets | OPG's revenue can be impacted by external factors related to the electricity markets 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 applicable markets.<br><br>A number 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 portion of OPG's overall revenue, the Company may enter into hedging arrangements from time to time to further mitigate this risk.<br><br>The IESO is transitioning into the detailed design stages of its Market Renewal Program, which is expected to result in a redesign of Ontario's electricity markets and which may impact OPG depending on the market features that are 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 *Business Corporations Act* (Ontario) 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 revenue or cash flow 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 | There are execution and integration risks associated with the Company's acquisition and growth strategy with the potential to cause realized value to differ from baseline projections. 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.<br><br>To mitigate these risks, OPG conducts detailed due diligence and has put in place a robust process for integrating acquisitions. Additionally, OPG engages in open and transparent communication with the acquired companies to build forward momentum and employee engagement throughout the process, where possible. |
| 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 plan contributions, payments towards |

OPEB and other benefit plans, funding ongoing operations, debt maturities, and investments in new generating capacity, acquisition transactions and other business development opportunities. The Company's ability to arrange sufficient and cost-effective debt financing as part of its funding requirements could be adversely affected by a number of factors, including financial market and general economic conditions, the regulatory environment, the Company's results from operations, financial conditions and the ratings assigned to the Company by credit rating agencies. In mitigating these risks, OPG utilizes multiple sources and forecasts availability of funds, actively monitors funding requirements and is focused on maintaining its investment grade credit rating.

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

Commodity Markets

Changes in the market prices 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 electricity generation and supply mix and, as such, are subject to change as these forecasts are updated.

| | **2020** | **2021** | **2022** |
|---|---|---|---|
| Estimated fuel requirements hedged [1] | 76% | 74% | 70% |

[1] Represents the approximate portion of MWh of expected electricity generation (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 electricity 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. To manage this risk, OPG periodically employs various financial instruments such as forwards and other derivative contracts, in accordance with approved risk management policies. As at December 31, 2019, OPG had no foreign exchange contracts outstanding. Additionally, volatility in the Canadian/US foreign exchange rate impacts OPG's financial results from certain of its subsidiaries, whose operations are based exclusively in the United States.

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 or undertake new financing. The management of these risks includes using derivatives to hedge the exposure in accordance with approved risk management policies. OPG periodically uses interest rate swap agreements to mitigate elements of interest rate risk exposure associated with anticipated financing.

Credit

The Company's credit risk exposure is a function of its electricity sales, trading and hedging activities, and 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 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, 2019:

| | All Counterparties | | Largest Counterparties | |
|---|---|---|---|---|
| **Credit Rating** [1] | **Number of Counterparties** [2] | **Potential Exposure** [3] *(millions of dollars)* | **Number of Counterparties** | **Potential Exposure** *(millions of dollars)* |
| Investment grade | 47 | 24 | 5 | 14 |
| IESO [4] | 1 | 462 | 1 | 462 |
| Other | 31 | 3 | - | - |
| **Total** | **79** | **489** | **6** | **476** |

[1] 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.
[2] OPG's counterparties are defined on the basis of individual master agreements.
[3] Potential exposure is OPG's statistical assessment of maximum exposure over the life of each transaction at a 95 percent confidence interval.
[4] Credit exposure represents an estimated 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.

Litigation

OPG and 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 21 of OPG's 2019 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 partners' expectations are critical to OPG's business success. OPG focuses on maintaining its social licence and corporate reputation through safe, reliable and sustainable operations as well as corporate citizenship initiatives. An inability to maintain safe, reliable and environmentally-responsible operations could negatively impact OPG's reputation and result in a loss of public support.

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| 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.<br><br>OPG may be subject to claims by Indigenous communities. These claims stem from projects and generation development activities 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.<br><br>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. |

## 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:

| | 2019 | | 2018 | |
|---|---|---|---|---|
| *(millions of dollars)* | **Income** | **Expense** | **Income** | **Expense** |
| Hydro One | | | | |
| Electricity sales | **8** | **-** | 11 | - |
| Services | **-** | **9** | - | 7 |
| Dividends | **7** | **-** | 7 | - |
| Province of Ontario | | | | |
| Change in Decommissioning Segregated Fund amount due to Province [1] | **-** | **870** | - | (419) |
| Change in Used Fuel Segregated Fund amount due to Province [1] | **-** | **1,085** | - | (547) |
| Hydroelectric gross revenue charge | **-** | **109** | - | 108 |
| OEFC | | | | |
| Hydroelectric gross revenue charge | **-** | **218** | - | 219 |
| Interest expense on long-term notes | **-** | **136** | - | 149 |
| Income taxes | **-** | **343** | - | 267 |
| IESO | | | | |
| Electricity related revenue | **5,521** | **-** | 5,068 | - |
| Earnings from Fair Hydro Trust [2] | **24** | **-** | 63 | - |
| Fair Hydro Trust | | | | |
| Interest Income [2] | **20** | **-** | - | - |
| | **5,580** | **2,770** | 5,149 | (216) |

[1] 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, 2019 and December 31, 2018, the Nuclear Segregated Funds were reported net of amounts due to the Province of $5,451 million and $3,496 million, respectively.

[2] The Fair Hydro Trust was deconsolidated from OPG's consolidated financial results effective May 9, 2019. As a result, certain transactions that were previously eliminated on consolidation, including interest income earned by OPG from its investment in the Trust's subordinated debt, are now treated as transactions with entities outside of OPG, and are disclosed as related party transactions with the Fair Hydro Trust. Earnings from Fair Hydro Trust are for the period prior to the deconsolidation and primarily comprise net interest income earned by the Trust from the IESO on financing receivables, which were consolidated within OPG's financial results up to May 9, 2019.

Balances between OPG and its related parties are summarized below:

| (millions of dollars) | December 31 2019 | 2018 |
|---|---|---|
| Receivables from related parties | | |
| Hydro One | **1** | 1 |
| IESO – Electricity related receivables | **462** | 478 |
| Fair Hydro Trust [1] | **4** | - |
| IESO – Fair Hydro Trust [2] | **-** | 2 |
| PEC | **1** | 2 |
| Loan receivable | | |
| Fair Hydro Trust [2] | **917** | - |
| Financing receivables | | |
| IESO – Fair Hydro Trust [2] | **-** | 1,788 |
| Equity securities | | |
| Hydro One shares | **169** | 153 |
| Accounts payable, accrued charges and other payables | | |
| Hydro One | **2** | 4 |
| PEC | **1** | - |
| OEFC | **65** | 50 |
| Province of Ontario | **9** | 8 |
| IESO – Electricity related payables | **5** | 8 |
| IESO – Fair Hydro Trust [2] | **-** | 13 |
| Long-term debt (including current portion) | | |
| Notes payable to OEFC | **3,135** | 3,400 |

1 Represents the receivable balance from interest income earned by OPG from its investment in the Trust's subordinated debt.
2 The Fair Hydro Trust was deconsolidated from OPG's consolidated results effective May 9, 2019. As a result, certain balances are no longer recognized in OPG's consolidated balance sheet. Loan receivable from the Fair Hydro Trust represents OPG's investment in the subordinated debt issued by the Trust with a face value of $876 million, and is reported on OPG's consolidated balance sheet subsequent to the deconsolidation date.

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, 2019, the Nuclear Segregated Funds held $1,426 million of Province of Ontario bonds (2018 – $1,399 million) and $11 million of Province of Ontario treasury bills (2018 – $2 million). As of December 31, 2019, the registered pension fund held $67 million of Province of Ontario bonds (2018 − $41 million) and $7 million of Province of Ontario treasury bills (2018 – nil). 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.

## INTERNAL CONTROL OVER FINANCIAL REPORTING AND DISCLOSURE CONTROLS

Management, including the President and Chief Executive Officer (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.

OPG acquired 100 percent ownership interest of Cube Hydro, a hydropower platform in the US, on October 7, 2019. Cube Hydro's contribution to OPG's consolidated net income for the year ended December 31, 2019 was less than 1.0 percent. As at December 31, 2019, Cube Hydro's total assets represented approximately 2.8 percent of the Company's total assets and total liabilities represented approximately 1.0 percent of the Company's total liabilities. The controls, policies and procedures of Cube Hydro were excluded from the scope of OPG's DC&P and ICOFR as of December 31, 2019, as permitted by 3.3(1)(b) of National Instrument 52-109 – *Certification of Disclosure in Issuers' Annual and Interim Filings* for businesses acquired by an issuer not more than 365 days before the end of a certification period.

Aside from the scope limitation as disclosed above, there were no changes in OPG's ICOFR during the year ended December 31, 2019 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, 2019, OPG's DC&P and ICOFR, as defined in National Instrument 52-109, were effective.

## FOURTH QUARTER

### Discussion of Results

| *(millions of dollars)* (unaudited) | **Three Months Ended December 31** **2019** | **2018** |
|---|---|---|
| Revenue | **1,522** | 1,475 |
| Fuel expense | **182** | 175 |
| Operations, maintenance and administration | **697** | 722 |
| Depreciation and amortization | **275** | 200 |
| Other net expenses (gains) | **37** | (5) |
| Income before interest and income taxes | **331** | 383 |
| Net interest expense | **29** | 21 |
| Income tax expense | **55** | 97 |
| Net income | **247** | 265 |
| Net income attributable to the Shareholder | **243** | 260 |
| Net income attributable to non-controlling interest [1] | **4** | 5 |

[1] Relates to the following: 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, a corporation wholly owned by the Taykwa Tagamou Nation, in PSS Generating Station Limited Partnership; the 15 percent interest of a corporation wholly owned by Six Nations of Grand River Development Corporation in Nanticoke Solar LP; the 5 percent interest of a corporation wholly owned by Mississaugas of the Credit First Nation in Nanticoke Solar LP; and non-controlling interests in certain electricity generating facilities in the US.

Net income attributable to the Shareholder for the fourth quarter was $243 million, compared to $260 million for the same quarter in 2018.

Income before interest and income taxes was $331 million for the fourth quarter of 2019, representing a decrease of $52 million compared to the same quarter in 2018.

The decrease in income before interest and income taxes was largely due to lower electricity generation from the Regulated – Nuclear Generation business segment of 0.5 TWh, resulting in lower revenue, net of fuel expense, of $43 million.

Higher rate riders for the recovery of regulatory account balances in effect during the fourth quarter of 2019 also contributed to an increase in revenue. This increase in revenue was largely offset by a corresponding increase in amortization expense related to these balances.

Net interest expense increased by $8 million during the fourth quarter of 2019, compared to the same quarter in 2018. The increase 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 decreased by $42 million during the fourth quarter of 2019, compared to the same quarter in 2018. The decrease was primarily due to the impact of lower income before taxes, a higher 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.

### Electricity Generation

OPG's electricity generation for the three months ended December 31, 2019 and 2018 was as follows:

| | Three Months Ended December 31 | |
|---|---|---|
| *(TWh)* | **2019** | **2018** |
| Regulated – Nuclear Generation | **10.8** | 11.3 |
| Regulated – Hydroelectric | **7.4** | 7.5 |
| Contracted and Other Generation [1] | **1.2** | 0.9 |
| Total OPG electricity generation | **19.4** | 19.7 |
| Total electricity generation by other generators in Ontario [2] | **18.3** | 17.9 |

[1] Includes OPG's proportionate share of electricity generation from co-owned and minority-held facilities.
[2] Calculated as Ontario electricity demand plus net exports, as published by the IESO, minus OPG electricity generation in Ontario.

The decrease in OPG's electricity generation of 0.3 TWh during the fourth quarter of 2019 compared to the same quarter in 2018 was mainly due to the lower electricity generation of 0.5 TWh from the Regulated – Nuclear Generation business segment. The decrease in electricity generation from the Regulated – Nuclear Generation segment was primarily due to an increase in unplanned outage days at the Darlington GS in the fourth quarter of 2019, partially offset by higher electricity generation of 0.3 TWh from the Contracted and Other Generation segment, primarily due to the acquisition of Cube Hydro on October 7, 2019.

Ontario's electricity demand as reported by the IESO was 33.6 TWh during the fourth quarter of 2019, compared to 34.0 TWh for the same period in 2018. 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, 2019 was $678 million, compared to $524 million for the same period in 2018. The increase was primarily due to the impact of higher rate riders in effect during 2019.

Cash flow used in investing activities during the three months ended December 31, 2019 was $1,604 million, compared to $872 million during the same period in 2018. Cash flow used in investing activities increased primarily due to the acquisition of Cube Hydro in October 2019, partially offset by the acquisition of Eagle Creek in November 2018.

Cash flow used in financing activities during the three months ended December 31, 2019 was $51 million, compared to cash flow provided by financing activities of $139 million for the same period in 2018. Cash flow used in financing activities increased primarily due to the net repayment of short-term and long-term debt during the fourth quarter of 2019.

## 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

| *(millions of dollars – except where noted)* | **2019** | **2018** | **2017** |
|---|---|---|---|
| Revenue | **6,022** | 5,537 | 5,158 |
| Net income attributable to the Shareholder | **1,126** | 1,195 | 860 |
| Earnings per share, attributable to the Shareholder *(dollars)* | **$4.10** | $4.37 | $3.35 |
| Total assets | **55,404** | 52,252 | 48,822 |
| Total long-term liabilities | **39,060** | 37,192 | 34,933 |
| Weighted average shares outstanding *(millions)* | **274.6** | 273.2 | 256.7 |

### Quarterly Financial Information

| *(millions of dollars – except where noted)* | **2019 Quarters Ended** | | | | |
|---|---|---|---|---|---|
| *(unaudited)* | **December 31** | **September 30** | **June 30** | **March 31** | **Total** |
| Electricity generation (TWh) | **19.4** | **19.1** | **20.2** | **19.1** | **77.8** |
| Revenue | **1,522** | **1,508** | **1,566** | **1,426** | **6,022** |
| Net income | **247** | **323** | **356** | **217** | **1,143** |
| Less: Net income attributable to non-controlling interest | **4** | **4** | **5** | **4** | **17** |
| Net income attributable to the Shareholder | **243** | **319** | **351** | **213** | **1,126** |
| **Earnings per share, attributable to the Shareholder *(dollars)*** | **$0.88** | **$1.16** | **$1.28** | **$0.78** | **$4.10** |

### Quarterly Financial

| *(millions of dollars – except where noted)* | **2018 Quarters Ended** | | | | |
|---|---|---|---|---|---|
| *(unaudited)* | **December 31** | **September 30** | **June 30** | **March 31** | **Total** |
| Electricity generation (TWh) | 19.7 | 18.3 | 17.2 | 18.8 | 74.0 |
| Revenue | 1,475 | 1,373 | 1,282 | 1,407 | 5,537 |
| Net income | 265 | 283 | 126 | 539 | 1,213 |
| Less: Net income attributable to non-controlling interest | 5 | 4 | 5 | 4 | 18 |
| Net income attributable to the Shareholder | 260 | 279 | 121 | 535 | 1,195 |
| **Earnings per share, attributable to the Shareholder *(dollars)*** | $0.95 | $1.02 | $0.44 | $1.99 | $4.37 |

## Trends

OPG's quarterly electricity generation from the Regulated – Hydroelectric and Contracted and Other Generation business segments is affected by changes in grid-supplied electricity demand. Changes in grid-supplied electricity demand are primarily caused by 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. Historically, there has been greater electricity demand in Ontario during the winter and summer months due to heating and air conditioning demands.

OPG's quarterly electricity generation from hydroelectric facilities is also impacted by weather conditions that affect water flows. Historically, there have been higher water flows in the springtime as a result of snow and ice melt entering the river systems. The financial impact of variability in water flows on the Regulated – Hydroelectric segment is mitigated by OEB-authorized regulatory variance accounts.

The financial impact of variability in electricity generation from the Contracted and Other Generation segment is mitigated by the terms of the applicable ESAs and other long-term contracts for the contracted generating facilities in Ontario.

Electricity generation and financial results of the Regulated – Nuclear Generation segment are primarily impacted by outage activities at the nuclear generating stations. The frequency and timing of planned outages under a station's outage cycle may result in period-over-period variability in OPG's financial results. The outage cycle at each of OPG's nuclear generating stations determines the number of planned outages in a particular year. The outage cycles are designed to ensure continued safe and reliable long-term operations of the stations and their compliance with the CNSC's regulatory requirements.

The Darlington and Pickering nuclear generating stations have been designed to operate at full power as baseload generating facilities and therefore their electricity production does not vary with changes in grid-supplied electricity demand.

## 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 business imperatives include 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

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. An outage day represents a single unit being offline or derated for an amount of time equivalent to one day. 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 has been excluded from the measure since October 2016, when the unit was taken offline as part of the Darlington Refurbishment project. As at December 31, 2019, the Darlington GS had three units in service and the Pickering GS had six units in service.

#### Hydroelectric Availability

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 wholly-owned 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. As applicable, these measures are discussed in the section, *Environmental, Social, Governance and Sustainability*.

### Non-GAAP Financial Performance Measures

In addition to net income and other financial information in accordance with US GAAP, certain non-GAAP financial measures are also presented in this 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 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:

| *(millions of dollars – except where noted)* | **2019** | **2018** |
|---|---|---|
| ROE Excluding AOCI | | |
| Net income attributable to the Shareholder | **1,126** | 1,195 |
| Divided by: Average equity attributable to the Shareholder, excluding AOCI | **13,788** | 12,623 |
| **ROE Excluding AOCI *(percent)*** | **8.2** | 9.5 |

**(2) Enterprise TGC 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, generation development and other major projects and business development transactions and initiatives, US operations, the impact of regulatory accounts, the Fair Hydro Trust 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, generation development and other major projects and US operations) 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:

| *(millions of dollars – except where noted)* | **2019** | **2018** |
|---|---|---|
| Enterprise TGC | | |
| Total OM&A expenses | **2,788** | 2,825 |
| Total fuel expense | **677** | 671 |
| Total capital expenditures | **1,991** | 1,859 |
| Less: Darlington Refurbishment capital and OM&A costs | **(1,153)** | (1,111) |
| Less: Capital and OM&A costs for generation development and other major projects and business development | **(100)** | (152) |
| Add: OM&A and fuel expenses deferred in regulatory accounts | **5** | 47 |
| Less: Nuclear fuel expense for non OPG-operated stations | **(65)** | (64) |
| Add: Hydroelectric gross revenue charge and water rental payments for electricity generation forgone due to SBG conditions | **43** | 42 |
| Less: OM&A expenses ancillary to electricity generation business | **(22)** | (17) |
| Less: OM&A expenses and capital expenditures related to US operations | **(93)** | (5) |
| Other adjustments | **(23)** | (11) |
| | **4,048** | 4,084 |
| Adjusted electricity generation *(TWh)* | | |
| Total OPG electricity generation | **77.8** | 74.0 |
| Adjust for electricity generation forgone due to SBG conditions, OPG's share of electricity generation from co-owned facilities and US operations | **1.9** | 2.7 |
| | **79.7** | 76.7 |
| **Enterprise TGC per MWh *($/MWh)*** [1] | **50.82** | **53.24** |

[1] Amounts may not calculate due to rounding.

**(3) Gross Margin** is defined as revenue less fuel expense.

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# ONTARIO POWER GENERATION INC.

# CONSOLIDATED FINANCIAL STATEMENTS

## DECEMBER 31, 2019

# 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.

**Ken Hartwick (signed)**
*President and Chief Executive Officer*

**John Mauti (signed)**
*Chief Financial Officer and Senior Vice President – Finance*

March 12, 2020

# 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, 2019 and 2018, 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, 2019 and 2018, and its consolidated results of 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 and 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.

/s/ Ernst & Young LLP

Toronto, Canada

Chartered Professional Accountants
Licensed Public Accountants

March 12, 2020

# CONSOLIDATED STATEMENTS OF INCOME

| **Years Ended December 31**<br>*(millions of dollars except where noted)* | **2019** | **2018** |
|---|---|---|
| **Revenue** | **6,022** | 5,537 |
| Fuel expense | **677** | 671 |
| **Gross margin** | **5,345** | 4,866 |
| Operations, maintenance and administration | **2,788** | 2,825 |
| Depreciation and amortization *(Note 8)* | **1,073** | 784 |
| Accretion on fixed asset removal and nuclear waste management liabilities *(Note 13)* | **1,019** | 985 |
| Earnings on nuclear fixed asset removal and nuclear waste management funds *(Note 13)* | **(894)** | (854) |
| Property taxes | **42** | 37 |
| Income from investments subject to significant influence | **(40)** | (44) |
| | **3,988** | 3,733 |
| **Income before other gains, interest and income taxes** | **1,357** | 1,133 |
| Other gains *(Note 25)* | **(40)** | (298) |
| **Income before interest and income taxes** | **1,397** | 1,431 |
| Net interest expense *(Note 11)* | **64** | 77 |
| **Income before income taxes** | **1,333** | 1,354 |
| Income tax expense *(Note 14)* | **190** | 141 |
| **Net income** | **1,143** | 1,213 |
| **Net income attributable to the Shareholder** | **1,126** | 1,195 |
| Net income attributable to non-controlling interest | **17** | 18 |
| **Basic and diluted earnings per share** *(dollars) (Note 20)* | **4.10** | 4.37 |

*See accompanying notes to the consolidated financial statements*

# CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

| **Years Ended December 31**<br>*(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **Net income** | **1,143** | 1,213 |
| **Other comprehensive income (loss), net of income taxes** *(Note 15)* | | |
| Actuarial (loss) gain on remeasurement of liabilities for pension and other post-employment benefits [1] | **(14)** | 1 |
| Reclassification to income of amounts related to pension and other post-employment benefits [2] | **9** | 11 |
| Net gain on derivatives designated as cash flow hedges [3] | **-** | 1 |
| Reclassification to income of losses on derivatives designated as cash flow hedges [4] | **15** | 17 |
| Currency translation adjustment [5] | **(44)** | 13 |
| Other comprehensive (loss) income for the year | **(34)** | 43 |
| **Comprehensive income** | **1,109** | 1,256 |
| **Comprehensive income attributable to the Shareholder** | **1,092** | 1,238 |
| Comprehensive income attributable to non-controlling interest | **17** | 18 |

1 Net of income tax recoveries of $4 million and income tax expense of nil for 2019 and 2018, respectively.
2 Net of income tax expense of $3 million and $4 million for 2019 and 2018, respectively.
3 Net of income tax expense of nil for each of 2019 and 2018.
4 Net of income tax expense of $2 million for each of 2019 and 2018.
5 Net of income tax expense of nil for each of 2019 and 2018.

*See accompanying notes to the consolidated financial statements.*

# CONSOLIDATED STATEMENTS OF CASH FLOWS

| **Years Ended December 31**<br>*(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **Operating activities** | | |
| Net income | **1,143** | 1,213 |
| Adjust for non-cash items: | | |
| Depreciation and amortization *(Note 8)* | **1,073** | 784 |
| Accretion on fixed asset removal and nuclear waste management liabilities | **1,019** | 985 |
| Earnings on nuclear fixed asset removal and nuclear waste management funds | **(894)** | (854) |
| Pension and other post-employment benefit costs *(Note 16)* | **438** | 397 |
| Deferred income taxes *(Note 14)* | **(91)** | (21) |
| Regulatory assets and regulatory liabilities | **275** | (51) |
| Other gains | **(33)** | (263) |
| Other | **7** | (23) |
| Expenditures on fixed asset removal and nuclear waste management | **(336)** | (307) |
| Reimbursement of eligible expenditures on nuclear fixed asset removal and nuclear waste management | **93** | 97 |
| Contributions to pension funds and expenditures on other post-employment benefits and supplementary pension plans | **(294)** | (308) |
| Distributions received from investments subject to significant influence | **54** | 49 |
| Net changes to other long-term assets and long-term liabilities | **53** | 149 |
| Net changes to non-cash working capital balances *(Note 23)* | **99** | (160) |
| **Cash flow provided by operating activities** | **2,606** | 1,687 |
| **Investing activities** | | |
| Investment in property, plant and equipment and intangible assets *(Note 22)* | **(2,058)** | (1,826) |
| Acquisition of Cube Hydro, net of cash acquired *(Note 4)* | **(1,101)** | - |
| Acquisition of Brighton Beach generating station, net of cash acquired *(Note 4)* | **(131)** | - |
| Proceeds from loan receivable | **11** | - |
| Acquisition of Eagle Creek Renewable Energy, net of cash acquired *(Note 4)* | **-** | (358) |
| Net proceeds from sale of property, plant and equipment | **-** | 289 |
| Acquisition of Fair Hydro Trust financing receivables | **-** | (609) |
| **Cash flow used in investing activities** | **(3,279)** | (2,504) |
| **Financing activities** | | |
| Issuance of short-term debt | **4,161** | 3,922 |
| Repayment of short-term debt | **(4,307)** | (3,951) |
| Net proceeds from issuance of OPG long-term debt *(Note 11)* | **1,397** | 1,049 |
| Repayment of OPG long-term debt | **(385)** | (398) |
| Distribution to non-controlling interest | **(17)** | (18) |
| Contribution from non-controlling interest | **5** | - |
| Net proceeds from issuance of Fair Hydro Trust long-term debt *(Note 11)* | **-** | 1,206 |
| Repayment of Fair Hydro Trust revolving warehouse debt | **-** | (900) |
| Issuance of Class A shares *(Note 19)* | **-** | 268 |
| Dividend to the Province's Consolidated Revenue Fund *(Note 24)* | **-** | (283) |
| **Cash flow provided by financing activities** | **854** | 895 |
| Effect of exchange rate changes on cash, cash equivalents and restricted cash | **4** | 1 |
| Net increase in cash, cash equivalents and restricted cash | **185** | 79 |
| **Cash, cash equivalents and restricted cash, beginning of year** | **313** | 234 |
| **Cash, cash equivalents and restricted cash, end of year** | **498** | 313 |

*See accompanying notes to the consolidated financial statements*

# CONSOLIDATED BALANCE SHEETS

| As at December 31<br>*(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Assets** | | |
| **Current assets** | | |
| Cash, cash equivalents and restricted cash *(Note 6)* | **498** | 313 |
| Equity securities | **169** | 153 |
| Receivables from related parties *(Note 26)* | **468** | 483 |
| Nuclear fixed asset removal and nuclear waste management funds *(Note 13)* | **40** | 19 |
| Fuel inventory | **233** | 294 |
| Materials and supplies | **92** | 103 |
| Regulatory assets *(Note 9)* | **486** | 490 |
| Prepaid expenses | **136** | 116 |
| Income tax recoverable | **8** | - |
| Other current assets | **117** | 167 |
| | **2,247** | 2,138 |
| **Property, plant and equipment** *(Note 8)* | **35,909** | 32,209 |
| Less: accumulated depreciation | **9,862** | 9,222 |
| | **26,047** | 22,987 |
| **Intangible assets** *(Note 8)* | **566** | 467 |
| Less: accumulated amortization | **258** | 211 |
| | **308** | 256 |
| **Goodwill** *(Note 10)* | **163** | 107 |
| **Other assets** | | |
| Nuclear fixed asset removal and nuclear waste management funds *(Note 13)* | **18,252** | 17,464 |
| Loan receivable *(Note 5)* | **917** | - |
| Financing receivables *(Note 26)* | **-** | 1,788 |
| Long-term materials and supplies | **392** | 347 |
| Regulatory assets *(Note 9)* | **6,770** | 6,769 |
| Investments subject to significant influence *(Note 27)* | **250** | 339 |
| Other long-term assets | **58** | 57 |
| | **26,639** | 26,764 |
| | **55,404** | 52,252 |

*See accompanying notes to the consolidated financial statements*

# CONSOLIDATED BALANCE SHEETS

| As at December 31<br>*(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Liabilities** | | |
| **Current liabilities** | | |
| Accounts payable, accrued charges and other payables | **1,109** | 1,170 |
| Short-term debt *(Note 12)* | **164** | 322 |
| Long-term debt due within one year *(Note 11)* | **693** | 368 |
| Income taxes payable | **-** | 37 |
| Regulatory liabilities *(Note 9)* | **103** | 36 |
| | **2,069** | 1,933 |
| **Long-term debt** *(Note 11)* | **7,533** | 7,188 |
| **Other liabilities** | | |
| Fixed asset removal and nuclear waste management liabilities *(Note 13)* | **22,081** | 21,225 |
| Pension liabilities *(Note 16)* | **3,568** | 3,642 |
| Other post-employment benefit liabilities *(Note 16)* | **3,099** | 2,697 |
| Long-term accounts payable and accrued charges | **276** | 250 |
| Deferred revenue | **400** | 410 |
| Deferred income taxes *(Note 14)* | **1,154** | 1,018 |
| Regulatory liabilities *(Note 9)* | **949** | 762 |
| | **31,527** | 30,004 |
| **Equity** | | |
| Common shares [1] *(Note 19)* | **5,126** | 5,126 |
| Class A shares [2] *(Note 19)* | **787** | 787 |
| Contributed surplus *(Note 5)* | **39** | - |
| Retained earnings | **8,418** | 7,292 |
| Accumulated other comprehensive loss *(Note 15)* | **(277)** | (243) |
| **Equity attributable to the Shareholder** | **14,093** | 12,962 |
| Equity attributable to non-controlling interest | **182** | 165 |
| **Total equity** | **14,275** | 13,127 |
| | **55,404** | 52,252 |

[1] 256,300,010 common shares outstanding at a stated value of $5,126 million as at December 31, 2019 and 2018.

[2] 18,343,815 Class A shares outstanding at a stated value of $787 million as at December 31, 2019 and 2018.

Commitments and Contingencies *(Notes 11, 14, 16 and 21)*

*See accompanying notes to the consolidated financial statements*

On behalf of the Board of Directors:

**Wendy Kei (signed)**
Board Chair

**Ani Hotoyan-Joly (signed)**
Director

# CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDER'S EQUITY

| **Years Ended December 31**<br>*(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **Common shares** *(Note 19)* | **5,126** | 5,126 |
| **Class A shares** *(Note 19)* | | |
| Balance at beginning of year | **787** | 519 |
| Issuance of Class A shares | **-** | 268 |
| Balance at end of year | **787** | 787 |
| **Contributed surplus** *(Note 19)* | | |
| Balance at beginning of year | **-** | - |
| Gain on deconsolidation of Fair Hydro Trust *(Note 5)* | **39** | - |
| Balance at end of year | **39** | - |
| **Retained earnings** | | |
| Balance at beginning of year | **7,292** | 6,396 |
| Reclassification of cumulative unrealized losses on equity securities to opening retained earnings | **-** | (9) |
| Adjustment to recognize income tax effects of intercompany transfer of assets to opening retained earnings | **-** | (7) |
| | **7,292** | 6,380 |
| Net income attributable to the Shareholder | **1,126** | 1,195 |
| Dividend to the Province's Consolidated Revenue Fund *(Note 24)* | **-** | (283) |
| Balance at end of year | **8,418** | 7,292 |
| **Accumulated other comprehensive loss, net of income taxes** | | |
| Balance at beginning of year | **(243)** | (295) |
| Reclassification of cumulative unrealized losses on equity securities to opening retained earnings | **-** | 9 |
| | **(243)** | (286) |
| Other comprehensive (loss) income | **(34)** | 43 |
| Balance at end of year | **(277)** | (243) |
| **Equity attributable to the Shareholder** | **14,093** | 12,962 |
| **Equity attributable to non-controlling interest** | | |
| Balance at beginning of year | **165** | 165 |
| Non-controlling interest arising from acquisition *(Note 4)* | **12** | - |
| Income attributable to non-controlling interest | **17** | 18 |
| Distribution to non-controlling interest | **(17)** | (18) |
| Equity contribution from non-controlling interest *(Note 29)* | **5** | - |
| Balance at end of year | **182** | 165 |
| **Total equity** | **14,275** | 13,127 |

*See accompanying notes to the consolidated financial statements*

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

For the years ended December 31, 2019 and 2018

### 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, 2019, OPG and its wholly-owned subsidiaries owned and operated two nuclear generating stations, 66 hydroelectric generating stations, three thermal generating stations and one solar facility in Ontario, Canada. Through its wholly-owned subsidiaries in the United States (US), the Company also wholly or jointly owned and operated 85 hydroelectric generating stations and held minority shareholdings in 13 hydroelectric and two solar facilities in the United States. In addition, OPG and TC Energy Corporation co-own the 550 megawatts (MW) Portlands Energy Centre natural gas-fired combined cycle generating station (PEC), located in Ontario. OPG also owns two nuclear generating stations in Ontario, the Bruce A generating station (GS) and the Bruce B GS (together, the Bruce nuclear generating stations), which are leased on a long-term basis to Bruce Power L.P. As at December 31, 2019, OPG did not operate PEC, the Bruce nuclear generating stations, and the minority-held facilities in the United States.

### 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 prepared in accordance with 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 2018 comparative amounts have been reclassified from consolidated financial statements previously presented to conform to the 2019 consolidated financial statement presentation.

## 3. SIGNIFICANT ACCOUNTING POLICIES AND ESTIMATES

### a) New Accounting Standards Effective in 2019

Lease Accounting

In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-02, *Leases* (Topic 842) to replace existing lease accounting guidance under *Leases* (Topic 840). The update included comprehensive changes to existing guidance, particularly for lessees, with the aim of increasing transparency and comparability among organizations by requiring the recognition of right-of-use assets and lease liabilities on the balance sheet.

Effective January 1, 2019, OPG adopted Topic 842, utilizing the optional transition method wherein any cumulative impact from adopting the new standard is 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. In transitioning to Topic 842, the Company elected to adopt the package of practical expedients, which permitted OPG to continue the established classification of leases under Topic 840, and did not require a reassessment of the existence of leases within existing or expired contracts nor the treatment of related indirect costs for previously established leases. OPG also adopted the practical expedient within ASU No. 2018-01, *Land Easement Practical Expedient for Transition to Topic 842*, permitting the Company not to undertake an evaluation of existing or expired land easements under this accounting standard prior to its adoption. Any new land easements entered into following adoption of the new standard, along with modification of existing land easements, will be assessed under Topic 842.

A contract is determined to contain a lease if it consists of an identified asset, and the customer in the arrangement has the right to control the use of the asset for a period of time in exchange for consideration. Property, plant or equipment that is physically distinct or whose capacity is substantially received by the customer is representative of an identified asset. The customer’s right to control the use of an identified asset is signified by its rights to obtain substantially all of the economic benefits from the use of the asset and to direct the use of the asset, throughout the period of use. A customer is able to direct the use of the asset if they have the decision-making rights that will most impact the economic benefits derived. Unless explicitly stated, it is presumed an arrangement does not contain substantive substitution rights, wherein it is impractical for the supplier to substitute alternative assets throughout the period of use or obtain any economic benefits from substituting.

As a practical expedient for leasing arrangements in which OPG is the lessee, the lease and non-lease components, if any, are combined and accounted for as a single lease cost. Similarly, as a practical expedient for leasing arrangements in which OPG is the lessor, the Company combines the lease and any non-lease components, and accounts for it as a single lease component. OPG does not account for any non-lease components separately from the combined component.

For arrangements in which OPG is the lessor, the Company has excluded all taxes assessed by a governmental authority on the lease revenue producing transaction, from the consideration in the contract and from variable payments not included in the consideration in the contract.

As permitted by the short-term lease exemption in the standard, OPG has elected not to apply the recognition requirements prescribed by Topic 842 for its short-term leases. Such arrangements include leases that have a term of 12 months or less at the commencement date and do not contain an option to purchase the underlying asset that the entity is reasonably certain to exercise.

When determinable, the rate implicit in the lease is used as the discount rate to calculate the present value of the lease payments related to arrangements in which the Company is the lessee. Otherwise, the incremental borrowing rate is used, which represents the rate of interest OPG would have to pay to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. The incremental borrowing rate for each lease is determined on inception of the leasing arrangement by obtaining an appropriate reference rate, to which any financing spread and lease specific adjustments are applied. The discount rate is reassessed if the respective lease liability is required to be re-measured because of changes in key assumptions or modifications in the underlying contract.

As at January 1, 2019, on implementation of Topic 842, the Company recognized:

| *(millions of dollars)* | **January 1, 2019** | **Balance Sheet Line Item** |
|---|---|---|
| Right-of-use asset | | |
| Current | **15** | Other current assets |
| Non-current | **59** | Property, plant and equipment |
| | **74** | |
| Operating lease liabilities | | |
| Current | **15** | Accounts payable, accrued charges and other payables |
| Non-current | **63** | Long-term accounts payable and accrued charges |
| | **78** | |

### 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 are 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.

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% |
| Ontario Charging Network L.P. | Canada | Limited Partnership | 50.00% |
| South Fork II Associates, LP | United States | 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.

As of December 31, 2019, the Company's significant VIEs included the Nuclear Waste Management Organization (NWMO). Prior to deconsolidation as of May 9, 2019, significant VIEs also included the Fair Hydro Trust. In addition to these VIEs, OPG may enter into other partnership agreements or be deemed to be the primary beneficiary of other entities that are consolidated within OPG's consolidated financial statements.

<u>i) Nuclear Waste Management Organization</u>

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 used nuclear 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 used nuclear 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.

<u>ii) Fair Hydro Trust</u>

In 2017, the previous Government of Ontario passed legislation to establish Ontario's Fair Hydro Plan (Fair Hydro Plan) with the objective of deferring and refinancing a portion of the Global Adjustment costs charged to consumers over a longer period of time. Pursuant to the *Ontario Fair Hydro Plan Act, 2017* (the Fair Hydro Act or the Act), the Independent Electricity System Operator (IESO) deferred a portion of the Global Adjustment costs in 2017 and 2018. The Act allowed 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 Fair Hydro Trust (the Trust) was established to be the financing entity contemplated by the Fair Hydro Act. The majority unitholder and beneficiary of the Trust was a wholly-owned subsidiary of OPG. Immediately after the Trust's establishment, OPG entered into a management agreement with the Trust which provided OPG with the powers and duties of managing the Trust, including determining whether to acquire Investment Interest from the IESO. The Trust's financial position and results were consolidated into OPG's financial results up to May 9, 2019. 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).

On May 9, 2019, the Government of Ontario's Bill 87, *Fixing the Hydro Mess Act, 2019* (Fixing the Hydro Mess Act) received Royal Assent and came into force in November 2019. The new legislation amended various statutes related to energy in Ontario, including the Fair Hydro Act. Under the new legislation, the Province is responsible for paying existing funding obligations administered by the Trust, while OPG is responsible for paying the operating costs of the

Trust. As there will be no new Global Adjustment refinancing, and the Province is responsible for the existing funding obligations, including principal payments administered by the Trust, the Trust is prohibited from issuing any new funding obligations.

The new legislation removed certain elements of control of the Trust from the Company. As a result, OPG determined that it no longer has a variable interest in the Trust, and deconsolidated the Trust as of the date Royal Assent was received for the new legislation. As of May 9, 2019, OPG accounts for its continuing nominal equity investment in the Trust as an equity security held at fair value. Refer to Note 5 for further discussion of deconsolidation of the Trust.

### 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

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 acquisition costs are capitalized.

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

### f) Goodwill

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.

### g) 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.

### h) Loan Receivables

Loan receivables are financial assets with fixed or determined payments that are not quoted in an active market. Loan receivables are initially recorded at fair value, and subsequently recorded at amortized cost using the effective interest method. The loan receivable recorded on the consolidated balance sheet relates to subordinated notes issued by the Fair Hydro Trust to OPG.

### i) 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.

### j) 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, 2019, the amortization periods of intangible assets are as follows:

| | |
|---|---|
| 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 |

Power purchase agreements (PPA) 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.

### k) 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 operations, maintenance and administration (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, 2019, the depreciation periods of PP&E are as follows:

| | |
|---|---|
| Nuclear generating stations and major components | 5 to 74 years [1] |
| 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 |

[1] As at December 31, 2019, 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 and solar 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.

### l) Asset Impairment

Long-lived assets with defined lives 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.

#### m) Rate Regulated Accounting

The *Ontario Energy Board Act, 1998* and *Ontario Regulation 53/05* provide that OPG receives regulated prices for electricity generated from the 54 prescribed hydroelectric generating stations in Ontario and the Darlington and Pickering nuclear generating stations located in Ontario (collectively, prescribed facilities or regulated facilities). OPG's regulated prices for these facilities are determined by the Ontario Energy Board (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 accumulated other comprehensive loss (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 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 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 interveners 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-related 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 accumulated other comprehensive income will be included in future regulated prices. 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 approval by the OEB, 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 9.

### n) Revenue Recognition

<u>i) Revenue from Contracts with Customers – Regulated Generation</u>

Provided OPG maintains a valid generation licence from the OEB, and continues to remain in compliance with the IESO Market Rules, its regulated nuclear and regulated hydroelectric generating facilities can continue to offer electricity into the wholesale energy market. OPG's current generation licence is valid until 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 energy market in Ontario. The Company has determined that this performance obligation is satisfied over time; OPG utilizes the output method 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 for 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 application for 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 may defer a portion of the approved nuclear revenue requirement for future collection in the Rate Smoothing Deferral Account, with the objective of making more stable changes in OPG's overall production-weighted average regulated price year over year, consistent with the requirements of *Ontario Regulation 53/05*. The nuclear revenue requirement for each of the years is based on the OEB-allowed level of operating costs and a return of and 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. See Note 9 for further information on the March 2018 payment amounts order and the Rate Smoothing Deferral Account.

<u>ii) Revenue from Contracts with Customers – Non-regulated Generation and Other Revenue</u>

All of OPG's non-regulated generating facilities in Ontario are subject to energy supply agreements (ESAs) with the IESO or other long-term contractual arrangements. The majority of these facilities are subject to an ESA with the IESO.

Revenue from the generating stations subject to an ESA with the IESO 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 generating 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 for electricity generated under ESAs with the IESO 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 generating facilities in the US are either subject to PPAs for the supply of energy and capacity into the respective market, or receive the spot market price. The counterparties to PPAs currently in effect are primarily local electric utilities based in the United States. 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 obligations 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. 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 United States. 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.

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, heavy water detritiation services and nuclear waste management services. Revenues under these agreements are recognized as services are provided or when products are delivered, satisfying OPG's performance obligation.

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

iii) 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.

### o) 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 irradiated waste (L&ILW) are charged to OM&A expenses. Variable expenses relating to the management and storage of used nuclear 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 number of significant assumptions used in the calculation of Nuclear Liabilities are subject to inherent uncertainty and judgment as nuclear fixed asset removal and nuclear waste management programs evolve. As a result, changes to the underlying operational and technical factors and other assumptions underlying these estimates could change significantly over time, and may result in material changes to increase or decrease the costs for these programs.

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.

### p) 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 used nuclear fuel bundles and certain costs of used nuclear fuel storage incurred after the nuclear generating stations are shut down. 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 nuclear 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, or 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 18, with realized and unrealized gains and losses recognized in OPG's consolidated statements of income.

### q) Financing Receivables

OPG's financing receivables consisted of the 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 were 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 followed the effective interest method. Effective May 9, 2019, OPG no longer consolidates the Trust and thus derecognized the financing receivables. Refer to Note 5 for further discussion of deconsolidation of the Trust.

### r) 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 derivative liabilities at fair value, with changes in the fair value recorded in the consolidated statements of income. Refer to Note 17 for a discussion of OPG's risk exposures and the derivative instruments used to manage these risks.

### s) 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 18 for a discussion of fair value measurements and the fair value hierarchy.

### t) Equity Securities

Equity securities held by OPG are measured at fair value, with gains and losses due to changes in fair value recognized 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 cost.

### u) Foreign Currency Translation

The functional currency of all of OPG's significant subsidiaries is the Canadian dollar, except for subsidiaries based in the US, 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 a component of other comprehensive income or loss (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.

### v) 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.

### w) 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.

### x) Pension and Other Post-Employment Benefits

OPG's post-employment benefit programs covering most of the regular employees include a contributory defined benefit registered pension plan, a defined benefit supplementary pension plan, other post retirement benefits (OPRB) including group life insurance and health care benefits and long-term disability (LTD) benefits. Certain post-employment defined benefit programs are also provided by the NWMO, OPG's subsidiary operating the Brighton Beach GS, and Cube Hydro Partners, LLC, all of which are consolidated into OPG's financial results. Eagle Creek Renewable Energy, LLC (Eagle Creek) and OPG's subsidiary operating the Brighton Beach GS sponsor defined contribution employee savings plans for eligible employees, under which employer and employees make contributions according to the plan terms. 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, as discussed below.

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 used in the determination of the projected benefit obligations are applied to the relevant projected cash flows. The expected rate of return on defined benefit pension 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 domestic and international equity securities, corporate and government fixed income 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 or its subsidiaries. Pension fund assets of defined benefit pension plans 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 for pension fund assets of the OPG defined benefit pension plan 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 defined benefit 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 defined benefit plan 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.

Where defined benefit costs are eligible for capitalization, only the service cost component is capitalized.

### y) 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 (OEFC). These payments are calculated in accordance with the *Income Tax Act* (Canada) and the *Taxation Act, 2007* (Ontario), as modified by the *Electricity Act, 1998* and related regulations. This results in OPG paying taxes similar to those imposed under the federal and Ontario tax acts.

OPG's US subsidiaries 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 deferred income tax 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 deferred income tax 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.

### z) Recent Accounting Pronouncements Not Yet Adopted

i) 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 continues to evaluate the impact of this update on the Company's disclosures for its post-employment benefit programs.

ii) 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 the 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). The update is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. Additional disclosures resulting from this update will be applied prospectively. OPG continues to assess its current fair value measurements to determine the impact from the changes in this update.

iii) Changes to Credit Losses on Financial Instruments

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments* (ASU 2016-13), an update to Topic 326, *Financial Instruments – Credit Losses*. ASU 2016-13 requires financial assets measured at amortized cost to be presented at the net amount expected to be collected, through an allowance for credit losses to be deducted from the amortized cost basis of the asset. Available-for-sale debt securities will also require the use of an allowance to record estimated credit losses. In November 2019, the FASB issued ASU 2019-11, *Codification Improvements to Topic 326, Financial Instruments – Credit Losses* which clarified that ASU 2016-13 is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years, with early adoption permitted. The revised guidance will be applied through a cumulative catch-up adjustment to retained earnings in the period of adoption. OPG is assessing the impact of this update on its consolidated financial statements.

iv) Changes to Income Tax Requirements

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes*, which affects general principles within Topic 740, *Income Taxes*. The FASB has stated that the ASU is being issued as part of its Simplification Initiative, which is meant to reduce complexity in accounting standards by improving certain areas of US GAAP. The new guidance eliminates certain exceptions related to the approach for intra-period tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. It also clarifies and simplifies other aspects of the accounting for income taxes. ASU 2019-12 is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years, with early adoption permitted. OPG is assessing the impact of this update on its consolidated financial statements.

## 4. ACQUISITIONS

### Acquisition of Cube Hydro Partners, LLC and affiliate Helix Partners, LLC

On October 7, 2019, OPG acquired 100 percent of the equity in Cube Hydro Partners, LLC and affiliate Helix Partners, LLC (collectively, Cube Hydro) at a purchase price of US$1.12 billion, inclusive of assumed debt and subject to customary working capital adjustments. Total consideration paid, net of assumed debt, was approximately US$845 million (C$1.12 billion), subject to the finalization of customary working capital and other adjustments. Cube Hydro is a hydropower platform with 385 MW of in-service generating capacity across 19 hydroelectric facilities located throughout the northeastern and southeastern United States and provides additional scale to US hydroelectric operations.

The Cube Hydro acquisition was accounted for as a business combination. The preliminary purchase price allocation of the acquisition is estimated as follows, using the exchange rate on the acquisition date of US$1.00 = C$1.3306:

| *(millions of Canadian dollars)* | |
|---|---|
| Current assets | **25** |
| Property, plant and equipment | **1,427** |
| Intangible assets | **52** |
| Goodwill | **64** |
| Other long-term assets | **7** |
| Total assets | **1,575** |
| Current liabilities | **14** |
| Long-term debt | **422** |
| Other long-term liabilities | **3** |
| Total liabilities | **439** |
| Non-controlling interest | **12** |
| Total purchase price | **1,124** |
| Cash acquired with Cube Hydro | **(23)** |
| Total purchase price, net of cash acquired | **1,101** |

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, subject to customary working capital and other adjustments. The Company continues 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 planned optimization initiatives, operational synergies with the Company's existing US hydroelectric operations, and improved competitive position for further growth opportunities. Goodwill recognized as a result of the acquisition is reported within the Contracted and Other Generation business segment.

The table below presents the consolidated pro forma revenue and net income for the 12-month period ended December 31, 2019 and 2018, assuming the acquisition of Cube Hydro had occurred and had been financed on January 1, 2018. 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, 2018. Non-recurring acquisition-related expenses are excluded from pro-forma net income.

| *(millions of Canadian dollars)* | **2019** | **2018** |
|---|---|---|
| Revenue | **6,106** | 5,643 |
| Net income attributable to the Shareholder | **1,094** | 1,178 |

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, 2018, nor does it purport to predict the results of operations for future periods.

### Acquisition of Brighton Beach Generating Station

On August 30, 2019, OPG acquired the remaining 50 percent interest in the combined-cycle natural gas-fired 560 MW Brighton Beach GS located in Windsor, Ontario from ATCO Power Canada Ltd. for $200 million, inclusive of assumed debt. The transaction has been treated as an asset acquisition, as substantially all of the fair value of the assets acquired is concentrated within the Brighton Beach GS.

The 50 percent interest OPG previously held in the Brighton Beach GS and reported as an investment subject to significant influence was derecognized upon the acquisition, forming a component of the cost of the asset acquisition when recognizing the 100 percent ownership of the facility. No gain or loss was recognized upon derecognition of the investment subject to significant influence. The assets acquired and liabilities assumed in connection with the acquisition were recognized at their relative fair values within OPG's consolidated balance sheet, on the date of acquisition, as follows:

| *(millions of Canadian dollars)* | |
|---|---|
| Current assets | **17** |
| Property, plant and equipment | **412** |
| Total assets | **429** |
| Current liabilities | **3** |
| Long-term debt | **153** |
| Deferred income taxes | **37** |
| Fixed asset removal liabilities | **12** |
| Other long-term liabilities | **7** |
| Total liabilities | **212** |
| Net assets | **217** |
| Derecognition of carrying value of previously held interest as an investment subject to significant influence | **(76)** |
| Cash acquired | **(10)** |
| Total purchase price of remaining 50%, net of cash acquired | **131** |

### Acquisition of Eagle Creek Renewable Energy, LLC

On November 27, 2018, OPG acquired 100 percent of the equity in Eagle Creek for a total cash purchase price of approximately US$298 million (C$386 million), which was net of assumed debt.

The Eagle Creek acquisition was accounted for as a business combination. The purchase price allocation of the acquisition is as follows, using the exchange rate on the acquisition date of US$1.00 = C$1.3289:

| *(millions of Canadian dollars)* | |
|---|---|
| Current assets | **39** |
| Property, plant and equipment | **500** |
| Intangible assets | **109** |
| Goodwill | **104** |
| Other long-term assets | **36** |
| Total assets | **788** |
| Current liabilities | **92** |
| Long-term debt | **284** |
| Deferred income taxes | **23** |
| Other long-term liabilities | **3** |
| Total liabilities | **402** |
| Total purchase price | **386** |
| Cash acquired | **(28)** |
| Total purchase price, net of cash acquired | **358** |

The determination of the fair value of assets acquired and liabilities assumed is based upon management's estimates and assumptions and reflects the fair value of consideration paid. The purchase price allocation has been completed as at December 31, 2019, with no adjustments.

Goodwill recognized as a result of the acquisition is reported within the Contracted and Other Generation business segment.

### Agreement to Acquire Portfolio of Natural Gas-Fired Assets in Ontario

In July 2019, OPG, under a new subsidiary, entered into a purchase agreement with affiliates of TC Energy Corporation to acquire a portfolio of combined-cycle natural gas-fired plants in Ontario for $2.87 billion, subject to customary working capital and other adjustments. The portfolio includes the 900 MW Napanee GS, the 683 MW Halton Hills GS, and the remaining 50 percent interest in the 550 MW PEC. The acquisition is subject to a number of closing conditions, including the receipt of various regulatory approvals and the commencement of commercial operations at the Napanee GS. In October 2019, both a pre-merger notification and a request for an Advance Ruling Certificate were filed with the Commissioner of Competition, and the review is currently in process.

## 5. DECONSOLIDATION OF THE FAIR HYDRO TRUST

Following the deconsolidation of the Trust on May 9, 2019, to reflect legislative changes contained in the Fixing the Hydro Mess Act, the carrying values of assets and liabilities of the Trust were derecognized from OPG's consolidated balance sheet, and OPG's continuing investment in the Trust was recorded at fair value as of the date of deconsolidation. The effect of the deconsolidation on OPG's consolidated balance sheet was as follows:

| | As of May 9, 2019 |
|---|---|
| **Assets** | |
| Financing receivables | **1,788** |
| Restricted cash | **39** |
| Total assets derecognized | **1,827** |
| | |
| **Liabilities** | |
| Long-term debt | **912** |
| Other net liabilities | **39** |
| Total liabilities derecognized | **951** |
| | |
| **Net assets derecognized** | **876** |
| Recognition of OPG's investment in subordinated debt issued by the Trust at fair value | **928** |
| | |
| **Gain on deconsolidation** | **52** |
| Deferred tax expense | **(13)** |
| **After tax gain on deconsolidation** | **39** |

On deconsolidation, the fair value of OPG's continuing investment in the subordinated debt issued by the Trust of $928 million reflected the fair value of its retained creditor interest in the Trust. The fair value of this receivable is based on indicative pricing from the market and is considered a Level 2 input. As the deconsolidation of the Trust was triggered by legislation introduced by the Province, the after-tax fair value gain of $39 million has been recognized directly within equity, representing a transaction involving entities under common control. As at December 31, 2019, the balance of the retained interest in the Trust is $917 million and is recorded as a loan receivable on the consolidated balance sheets.

OPG's continuing involvement with the Trust as Financial Services Manager is limited to paying the operating costs incurred by the Trust. Up to the date Royal Assent was received for the new legislation, these transactions were eliminated on consolidation and had no impact on OPG's consolidated statements of income. Following the deconsolidation of the Trust, these transactions represent expenses in OPG's consolidated financial statements.

## 6. CASH, CASH EQUIVALENTS AND RESTRICTED CASH

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

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Cash and cash equivalents | **479** | 196 |
| Restricted cash | **19** | 117 |
| Total cash, cash equivalents and restricted cash | **498** | 313 |

Restricted cash is held primarily for prescribed purposes, including debt service, insurance, general collateral purposes and other contractual arrangements or represents proceeds from green bond issuances held in segregated accounts to finance or re-finance eligible investments as defined by OPG's Green Bond Framework. As at December 31, 2019, the restricted cash balance was $19 million (2018 − $117 million). As at December 31, 2019, there was no restricted cash balance related to green bond issuances (2018 − $84 million).

## 7. RIGHT-OF-USE ASSETS AND LEASE LIABILITIES

The Company has entered into operating lease arrangements for office space to house key operational activities and personnel. OPG is also party to water power leases and Parks Canada licences that provide the Company with a right-of-use to the underlying lands on which most of its hydroelectric generating stations in Ontario are constructed. In addition, the Company leases vehicles and rail cars for use at its generating stations. OPG does not have any sales-type or direct financing lease arrangements.

While the Company's office leases are subject to fixed base rental charges, the arrangements also contain variable payments to reimburse lessors for provision of common area maintenance services during each year of the lease term. Payments in connection with OPG's water power leases and Parks Canada licences are entirely variable, based on the amount of electricity produced by the hydroelectric generating stations during each year of the lease term. These variable amounts are not included in the measurement of OPG's lease liabilities, but are recognized as a variable lease expense when incurred. Lease payments related to the Company's leased vehicles qualify for the short-term lease recognition exemption given the nature of the arrangement and therefore no right-of-use asset or liability has been recognized.

In leasing arrangements where OPG has the option to extend the lease term, payments associated with renewing the leases are not included in the measurement of the associated lease liabilities or right-of-use assets as they are not reasonably certain of being exercised. Similarly, in leasing arrangements where OPG has the option to terminate the lease prior to the end of the term, payments associated with terminating these leases are not included in the measurement of the lease liabilities or right-of-use assets as they are not reasonably certain of being exercised. OPG has not provided residual value guarantees within its leases, nor is the Company subject to any restrictions or covenants as a result of entering into these leasing arrangements.

For the year ended December 31, the Company incurred the following:

| *(millions of dollars)* | 2019 |
|---|---|
| Variable lease costs | **74** |
| Fixed lease costs | **16** |
| Short-term lease costs | **5** |
| Total operating lease expenses | **95** |
| | |
| Cash outflows related to operating lease liabilities | **17** |

For the year ended December 31, 2019, OPG entered into new operating lease arrangements resulting in the recognition of $7 million of right-of-use assets and related operating lease liabilities. The Company had a weighted-average remaining lease term of 6.8 years and a weighted-average discount rate in its leasing arrangements of 3.26 percent as at December 31, 2019.

A maturity analysis of the leasing arrangements in which the Company is the lessee has been summarized below, along with a reconciliation to OPG's operating lease liabilities:

| *(millions of dollars)* | 1 Year | 2 Years | 3 Years | 4 Years | 5 Years | Thereafter | Total |
|---|---|---|---|---|---|---|---|
| Operating lease payments | 14 | 12 | 11 | 7 | 6 | 13 | **63** |
| Impact of discounting | | | | | | | **(8)** |
| Total operating lease liabilities | | | | | | | **55** |

OPG held corresponding current and long-term operating lease liabilities of $14 million and $41 million, respectively, as at December 31, 2019. Current and long-term right-of-use assets under operating lease arrangements were $12 million and $38 million, respectively, as at December 31, 2019.

In addition to its lease arrangement with Bruce Power related to the Bruce nuclear generating stations, OPG leases various real estate assets to third-party customers under operating lease arrangements in which the Company is the lessor, providing customers with the right-of-use to assets including land and office space. The Company receives mostly fixed rental payments in connection with these agreements. However, some arrangements contain variable lease payments that are indexed to the applicable Consumer Price Index (CPI), with rents being subject to changes in the index over the course of the lease term. The arrangements do not contain any options to purchase the underlying asset from the Company that the lessee is reasonably certain to exercise. As the underlying asset in many of these arrangements is land, the Company expects to derive, at a minimum, the current fair value from these assets at the end of the lease term. Where applicable, OPG undertakes preventative and ongoing maintenance programs, combined with periodic major upgrades, to maintain the residual values of the underlying assets at the end of the lease term. Given the durability of such assets and their ability to hold or even appreciate in value, OPG considers the residual value risk from these leasing arrangements to be nominal.

An analysis of the leasing arrangements in which the Company is the lessor has been summarized below:

| *(millions of dollars)* | 1 Year | 2 Years | 3 Years | 4 Years | 5 Years | Thereafter | Total |
|---|---|---|---|---|---|---|---|
| Undiscounted *operating* lease receipts | 41 | 9 | 37 | 4 | 34 | 654 | **779** |

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

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

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Nuclear generating stations | **13,124** | 12,437 |
| Regulated hydroelectric generating stations | **9,915** | 9,702 |
| Contracted and other generating stations | **6,491** | 4,527 |
| Other property, plant and equipment | **403** | 355 |
| Construction in progress | **5,976** | 5,188 |
| | **35,909** | 32,209 |
| Less: accumulated depreciation | | |
| Generating stations | **9,699** | 9,069 |
| Other property, plant and equipment | **163** | 153 |
| | **9,862** | 9,222 |
| | **26,047** | 22,987 |

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

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Darlington Refurbishment | **5,366** | 4,552 |
| Other | **610** | 636 |
| | **5,976** | 5,188 |

Interest capitalized to construction in progress during 2019 was $221 million (2018 – $191 million), at an average rate of four percent (2018 – five percent).

Intangible assets as at December 31 consist of the following:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Nuclear generating stations | **44** | 28 |
| Regulated hydroelectric generating stations | **7** | 7 |
| Contracted and other generating stations | **173** | 119 |
| Computer software and other intangible assets | **290** | 263 |
| Development in progress | **52** | 50 |
| | **566** | 467 |
| Less: accumulated amortization | | |
| Generating stations | **38** | 28 |
| Computer software and other intangible assets | **220** | 183 |
| | **258** | 211 |
| | **308** | 256 |

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

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Depreciation | **681** | 617 |
| Amortization of intangible assets | **41** | 35 |
| Amounts recognized in regulatory deferral and variance accounts | **92** | 86 |
| Amortization of regulatory assets and regulatory liabilities *(Note 9)* | **259** | 46 |
| | **1,073** | 784 |

## 9. REGULATORY ASSETS AND REGULATORY LIABILITIES

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

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Regulatory assets | | |
| *Variance and deferral accounts authorized by the OEB* | | |
| Pension & OPEB Cash Versus Accrual Differential Deferral Account | **885** | 783 |
| Pension and OPEB Cost Variance Account | **490** | 673 |
| Hydroelectric Surplus Baseload Generation Variance Account | **448** | 449 |
| Bruce Lease Net Revenues Variance Account | **165** | 141 |
| Rate Smoothing Deferral Account | **104** | - |
| Other variance and deferral accounts [1] | **62** | 118 |
| | **2,154** | 2,164 |
| Interim Period Revenue Shortfall | **167** | 519 |
| Pension and OPEB Regulatory Asset *(Note 16)* | **3,667** | 3,514 |
| Deferred Income Taxes | **1,268** | 1,062 |
| Total regulatory assets | **7,256** | 7,259 |
| Less: current portion | **486** | 490 |
| Non-current regulatory assets | **6,770** | 6,769 |
| Regulatory liabilities | | |
| *Variance and deferral accounts authorized by the OEB* | | |
| Pension & OPEB Cash Payment Variance Account | **348** | 220 |
| Hydroelectric Water Conditions Variance Account | **216** | 191 |
| Impact Resulting from Changes to Pickering Station End-of-Life Dates (December 31, 2017) Deferral Account | **251** | 124 |
| Changes in Station End-of-Life Dates (December 31, 2015) Deferral Account | **92** | 103 |
| Other variance and deferral accounts [2] | **145** | 160 |
| Total regulatory liabilities | **1,052** | 798 |
| Less: current portion | **103** | 36 |
| Non-current regulatory liabilities | **949** | 762 |

[1] Represents 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.

[2] Represents 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, the Pension & OPEB Cash Versus Accrual Differential Carrying Charges Account and the Capacity Refurbishment Variance Account.

In the March 2018 payment amounts order on OPG's application for regulated prices for the 2017-2021 period, the OEB approved OPG's request to recover a net 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 approval provided for the recovery or repayment of the December 31, 2015 balances in all of the Company's variance and deferral 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. 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 OEB 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 OPG's nuclear and regulated hydroelectric electricity production.

In February 2019, the OEB issued a decision and order that approved a full settlement agreement reached by OPG and interveners on OPG's requested disposition of regulatory accounts in an application filed in August 2018. The decision and order approved recovery of a net total of $1,322 million comprising certain amounts recorded in the Pension & OPEB Cash Versus Accrual Differential Deferral Account as at December 31, 2017, other regulatory account balances accumulated between January 1, 2016 and December 31, 2017 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 rate riders on nuclear and regulated hydroelectric electricity production over the January 1, 2019 to December 31, 2021 period. The remaining approved balances will be collected after 2021. The income tax impacts approved for recovery were previously recorded as part of the regulatory asset for deferred income taxes.

The specific approvals in the OEB's February 2019 decision and order included:

- 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.

During the years ended December 31, 2019 and 2018, amortization of regulatory assets and regulatory liabilities for regulatory account balances approved for disposition was recorded on a straight-line basis, based on the portion of the balances authorized to be collected by the respective OEB decision and orders during the applicable period. OPG did not recover or repay any regulatory account balances and therefore did not record any amortization related to these accounts during the period from January 1, 2018 to February 28, 2018.

Differences in recovery or repayment of the approved balances due to differences between forecasted electricity production used to set the rate riders and actual electricity production upon which the rate riders are collected are 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.

During the years ended December 31, 2019 and 2018, OPG recognized regulatory assets and regulatory liabilities for additions recorded in the regulatory accounts consistent with the applicable OEB decision and orders, relative to amounts reflected in the regulated prices in effect during those periods.

Where authorized by the OEB, OPG recorded interest on unamortized balances in the regulatory accounts at an OEB-prescribed interest rate ranging from 2.18 to 2.45 percent per annum during the year ended December 31, 2019 (2018 – 1.50 to 2.17 percent per annum).

The changes in the regulatory assets and liabilities during 2019 and 2018 are as follows:

| *(millions of dollars)* | **Pension & OPEB Cash Versus Accrual Differential Deferral** | **Pension and OPEB Cost Variance** | **Hydro-electric Surplus Baseload Generation Variance** | **Bruce Lease Net Revenues Variance** | **Rate Smoothing Deferral Account** | **Pension & OPEB Cash Payment Variance** | **Hydro-electric Water Conditions Variance** | **Changes to Pickering Station End-of-Life Dates Deferral** | **Changes in Station End-of-Life Dates Deferral** | **Interim Period Revenue Shortfall** | **Pension and OPEB Regulatory Asset** | **Deferred Income Taxes** | **Other Variance and Deferral (net)** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **(a)** | **(b)** | **(c)** | **(d)** | **(e)** | **(f)** | **(g)** | **(h)** | **(i)** | **(j)** | **(k)** | **(l)** | **(m)** | |
| Net regulatory assets (liabilities) January 1, 2018 | 614 | 716 | 360 | 121 | (63) | (140) | (150) | - | (103) | 544 | 3,855 | 897 | (14) | 6,637 |
| Increase (decrease) | 169 | - | 94 | 12 | 62 | (73) | (40) | (124) | - | (25) | (341) | 165 | (32) | (133) |
| Interest | - | - | 7 | 1 | 1 | (3) | (3) | - | - | - | - | - | - | 3 |
| Amortization | - | (43) | (12) | 7 | - | (4) | 2 | - | - | - | - | - | 4 | (46) |
| Net regulatory assets (liabilities) December 31, 2018 | 783 | 673 | 449 | 141 | - | (220) | (191) | (124) | (103) | 519 | 3,514 | 1,062 | (42) | 6,461 |
| Increase (decrease) | **153** | **-** | **98** | **4** | **102** | **(130)** | **(61)** | **(127)** | **-** | **(352)** | **153** | **206** | **(46)** | **-** |
| Interest | **-** | **-** | **10** | **3** | **2** | **(6)** | **(5)** | **-** | **-** | **-** | **-** | **-** | **(2)** | **2** |
| Amortization | **(51)** | **(183)** | **(109)** | **17** | **-** | **8** | **41** | **-** | **11** | **-** | **-** | **-** | **7** | **(259)** |
| Net regulatory assets (liabilities) December 31, 2019 | **885** | **490** | **448** | **165** | **104** | **(348)** | **(216)** | **(251)** | **(92)** | **167** | **3,667** | **1,268** | **(83)** | **6,204** |

### a) 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 related to OPG's application for 2017-2021 regulated prices. 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. 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 in 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.

### b) 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 determined on an accrual basis and related tax impacts for the regulated business, 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 would be limited to the Company's estimated 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.

### c) 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.

### d) 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 Bruce nuclear generating stations 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 the Bruce nuclear generating 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.

### e) Rate Smoothing Deferral Account

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, for future collection, a portion of annual OEB-approved revenue requirements 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 the annual deferred portion, if any, to be determined in a manner that makes more stable changes in OPG's overall production-weighted regulated price 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.

The March 2018 payment amounts order set a rate smoothing approach and resulting nuclear base regulated prices such that $102 million of approved nuclear revenue requirement was deferred in the Rate Smoothing Deferral Account for future collection in 2019 and $391 million is to be deferred in 2020. The OEB determined that no portion of the nuclear revenue requirement was to be deferred for 2017, 2018 and 2021.

In the fourth quarter of 2017, OPG recognized a regulatory liability and a corresponding reduction in revenue for the Rate Smoothing Deferral Account to reflect management's best estimate of the impact of rate smoothing for 2017, based on the draft payment amounts order filed by OPG in January 2018 following the issuance of the OEB's December 2017 decision. As the final rate smoothing approach approved in the March 2018 payment amounts order did not result in any amounts being recorded in the deferral account for 2017, the Company reversed the regulatory liability for the Rate Smoothing Deferral Account in the first quarter of 2018.

### f) 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.

### g) Hydroelectric Water Conditions Variance Account

The Hydroelectric Water Conditions Variance Account records 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.

### h) 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 Darlington and Pickering 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, 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.

### i) 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 Darlington and Pickering 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.

### j) Interim Period Revenue Shortfall

The Interim Period Revenue Shortfall regulatory asset as at December 31, 2019 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 electricity generation during 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 from 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 rate riders are collected.

In the fourth quarter of 2017, OPG recognized a regulatory asset and a corresponding increase to revenue for the Interim Period Revenue Shortfall to reflect management's best estimate of new regulated prices for the June 1, 2017 to December 31, 2017 period, based on the draft payment amounts order filed by OPG in January 2018. As the final regulated prices approved in the March 2018 payment amounts order varied from those proposed by OPG in the draft payment amounts order, the Company partially reversed the regulatory asset for the Interim Period Revenue Shortfall in the first quarter of 2018.

### k) 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 15.

### l) 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 14.

### m) Other Variance and Deferral Accounts

As at December 31, 2019 and 2018, regulatory assets and regulatory liabilities for other variance and deferral accounts included amounts for:

| **Regulatory asset** | **Description** |
|---|---|
| Nuclear Liability Deferral Account | Pursuant to *Ontario Regulation 53/05*, the OEB has authorized this account in connection with changes to OPG's liabilities for used nuclear fuel management and nuclear decommissioning and L&ILW management associated with the Darlington and Pickering nuclear generating stations. The deferral account records the revenue requirement impact associated with changes in these liabilities arising from an approved reference plan, in accordance with the terms of the ONFA. |
| Nuclear Deferral and Variance Over/Under Recovery Variance Account<br><br>Hydroelectric Deferral and Variance Over/Under Recovery Variance Account | These accounts record differences in recovery of the approved balances in the variance and deferral accounts due to differences between forecasted electricity production used to set rate riders for recovery or repayment of these balances and the actual electricity production upon which the rate riders are collected. |
| Nuclear Development Variance Account | This account records variances between 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. |
| Fitness for Duty Deferral Account | This account, effective June 1, 2017, records OPG's costs related to implementing the Canadian Nuclear Safety Commission's (CNSC) new fitness for duty requirements. |
| Niagara Tunnel Project Pre-December 2008 Disallowance Variance Account | This 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 account captures the revenue requirement impact of the portion of the original disallowance related to Niagara Tunnel project capital costs reversed by the OEB in the January 2016 decision. |

| Regulatory Liability | Description |
|---|---|
| Ancillary Services Net Revenue Variance Account | This account has been authorized by the OEB to capture differences between actual net revenue earned from ancillary services provided by the Company's regulated generating facilities to maintain the reliability of the electricity system and the forecast amounts of such revenue approved by the OEB in setting regulated prices. |
| Income and Other Taxes Variance Account | This account records 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. |
| Hydroelectric Incentive Mechanism Variance Account | This 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. |
| SR&ED ITC Variance Account | This account records the income tax expense impact for the nuclear generating 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. |
| Pension and OPEB Forecast Cash versus Accrual Differential Carrying Charges Variance Account | This account, established on a generic basis by the OEB's 2017 policy report on regulatory treatment of pension and OPEB costs, records asymmetric carrying charges in favour of customers on differences between pension and OPEB accrual costs recovered in regulated prices and cash payments made in respect of pension and OPEB. For OPG, the account currently records carrying charges on amounts recovered from the Pension & OPEB Cash Versus Accrual Differential Deferral Account as approved by the OEB's February 2019 decision and order. |
| Capacity Refurbishment Variance Account | Pursuant to *Ontario Regulation 53/05*, the OEB has authorized this account to capture variances from forecasts reflected in regulated prices for capital and non-capital costs incurred to increase the output of, refurbish or add operating capacity to one or more of OPG's regulated generated facilities, including cost variances related to the refurbishment of the Darlington nuclear GS, life extension initiatives at the Pickering GS and other projects. |

## 10. GOODWILL

All goodwill pertains to the Contracted and Other Generation business segment. The goodwill recorded as at December 31 is as follows:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Opening balance, January 1 | **107** | - |
| Acquisition of Eagle Creek Renewable Energy *(Note 4)* | **-** | 104 |
| Acquisition of Cube Hydro *(Note 4)* | **62** | - |
| Foreign exchange differences | **(6)** | 3 |
| Closing balance, December 31 | **163** | 107 |

An annual goodwill impairment test is required to be performed as of the same date each year. In the fourth quarter of 2019, as per the Company's policy, the test was performed. The Company concluded that the fair value of the Contracted and Other Generation business segment exceeded its respective carrying value at the date of testing.

## 11. LONG-TERM DEBT AND NET INTEREST EXPENSE

Long-term debt consists of the following as at December 31:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Notes payable to the OEFC [1] | | |
| Senior Notes | | |
| bear interest at rates ranging from 2.96% to 5.40%; maturity dates ranging from 2020 to 2048 | **3,135** | 3,400 |
| Medium Term Note Program [1] | | |
| Senior Notes | | |
| bear interest at rates ranging from 2.98% to 4.25%; maturity dates ranging from 2027 to 2050 | **2,250** | 950 |
| UMH Energy Partnership [2] | | |
| Senior Notes | | |
| 7.59% due 2041 | **175** | 178 |
| PSS Generating Station Limited Partnership [3] | | |
| Senior Notes | | |
| 4.80% due 2067 | **245** | 245 |
| Lower Mattagami Energy Limited Partnership [4] | | |
| 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 [5] | | |
| Senior Notes | | |
| 3.36% due 2033 | **-** | 500 |
| 3.52% due 2038 | **-** | 400 |
| Brighton Beach Power Limited Partnership notes [6] | | |
| Senior Notes | | |
| bear interest at either a fixed rate of 6.92% or floating rates; maturity dates ranging from 2020 to 2024 | **116** | - |
| Eagle Creek [6] | | |
| Senior Notes | | |
| bear interest at fixed rates ranging from 3.68% to 4.62% or floating rates; maturity dates ranging from 2025 to 2030 | **307** | 323 |
| Cube Hydro [6] | | |
| Senior Notes | | |
| bear interest at fixed rates ranging from 4.75% to 5.08% or floating rates; maturity dates ranging from 2025 to 2035 | **385** | - |
| Other | **25** | 21 |
| | **8,233** | 7,612 |
| Less: net fair value premium (discount) | **20** | (31) |
| Less: unamortized bond issuance fees | **(27)** | (25) |
| Less: amounts due within one year | **(693)** | (368) |
| Long-term debt | **7,533** | 7,188 |

[1] These notes are direct unsecured obligations of OPG and rank *pari passu* with all of OPG's unsubordinated and unsecured obligations.

[2] 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.

[3] 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* with all of OPG's unsubordinated and unsecured obligations. 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.

[4] These notes are secured by the assets of the Lower Mattagami River project, including existing and new operating facilities.

[5] Senior debt owed by Fair Hydro Trust to external third parties ceased to be recognized in OPG's consolidated financial statements following deconsolidation of the Trust in May 2019. Refer to Note 5 for discussion on the deconsolidation of the Trust.

[6] These notes are secured by the corresponding assets of the respective subsidiary.

### Notes payable to OEFC

In July 2019, OPG established a new $800 million general corporate credit facility agreement with the OEFC expiring on December 31, 2021. The coupon rate will be set at the time OPG draws funds from the credit facility, based on the prevailing market rate at that time. In August 2019, OPG issued senior notes payable to the OEFC totalling $100 million against this facility, maturing in August 2039 with a coupon rate of 3.49 percent.

OPG repaid long-term debt of $365 million to the OEFC during the year ended December 31, 2019.

### Medium Term Note Program

In January 2019, OPG issued a green bond offering of $500 million under its Medium Term Note Program, maturing in 2049. The coupon interest rate on this bond is 4.25 percent.

In September 2019, OPG issued $800 million of senior notes payable under its Medium Term Note Program. The issuance consisted of $500 million of senior notes maturing in September 2029 with a coupon interest rate of 2.98 percent and $300 million of senior notes maturing in September 2050 with a coupon rate of 3.65 percent.

### Brighton Beach Power Limited Partnership Notes

In August 2019, OPG recognized long-term debt of $133 million owing by Brighton Beach Power LP following the acquisition of the remaining 50 percent in the Brighton Beach GS from ATCO Power Canada Ltd. The debt was recognized at fair value on the date of acquisition of $153 million, with the corresponding fair value premium recognized within long-term debt. The senior bond is payable in quarterly instalments, has a coupon rate of 6.92 percent and matures in March 2024.

### Cube Hydro Senior Notes

In October 2019, upon the acquisition of Cube Hydro, the Company assumed $385 million of long-term debt with maturity dates ranging from 2025 to 2035. The debt was recognized at fair value on the date of acquisition of $422 million, with the corresponding fair value premium recognized within long-term debt. The interest rates on these notes are either floating rates or fixed rates ranging from 4.75 percent to 5.08 percent.

### Net Interest Expense

The following table summarizes the net interest expense for the years ended December 31:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Interest on long-term debt [1] | **330** | 290 |
| Interest on short-term debt | **15** | 11 |
| Interest income | **(35)** | (8) |
| Interest capitalized to property, plant and equipment and intangible assets | **(221)** | (191) |
| Interest related to regulatory assets and regulatory liabilities [2] | **(25)** | (25) |
| Net interest expense | **64** | 77 |

1 Excludes interest on Fair Hydro Trust senior debt. As of May 9, 2019, OPG deconsolidated the Fair Hydro Trust. Refer to Note 5 for discussion on the deconsolidation of the Trust.

2 Includes interest to recognize the cost of financing regulatory account balances as authorized by the OEB, and interest costs deferred in certain regulatory accounts.

Interest paid in 2019 was $298 million (2018 – $279 million), of which $283 million (2018 – $265 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 Energy Partnership (UMH), Lower Mattagami Energy Limited Partnership (LME) and Lower Mattagami Limited Partnership (LMLP) against their debt as at December 31, 2019 was $3,554 million (2018 – $3,555 million). The total net book value of pledged assets of Eagle Creek against its debt was $486 million as at December 31, 2019 (2018 – $533 million). The total net book value of pledged assets of Cube Hydro against its debt was $714 million as at December 31, 2019.

The total net book value of the secured assets of the 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. Effective May 9, 2019, the Trust has been deconsolidated from OPG's consolidated financial statements.

## 12. SHORT-TERM DEBT

As at December 31, 2019, the Company had the following committed credit facilities and maturity dates:

| *(millions of dollars)* | | Amount | Maturity |
|---|---|---|---|
| **Bank facilities:** | | | |
| Corporate | | **1,000** | May 2023 and May 2024 [1] |
| Corporate | USD | **750** | November 2020 [2] |
| Lower Mattagami Energy Partnership | | **400** | August 2020 and August 2024 [3] |
| Cube Hydro | USD | **20** | October 2028 |
| OEFC facility [4] | | **700** | December 2021 |
| Securitization [5] | | **150** | November 2020 |

[1] $50 million of the total credit facility matures in May 2023 and $950 million matures in May 2024.

[2] This credit facility has a one-year extension option beyond the maturity date of November 2020.

[3] $100 million of the total credit facility matures in August 2020 and $300 million matures in August 2024. A letter of credit of $55 million was issued in July 2017 and remains outstanding as at December 31, 2019 under this facility (2018 - $55 million).

[4] Represents amounts available under the facility net of long-term debt issuances.

[5] Represents an agreement to sell an undivided co-ownership interest in the Company's current and future accounts receivable from the IESO to an independent trust. As of December 31, 2019, $150 million of letters of credit were issued under the securitization facility to support the Company's supplementary pension plans (2018 - $150 million).

The Company's short-term debt balances are comprised of the following as of December 31:

| *(millions of dollars)* | 2019 | 2018 |
|---|---|---|
| **Short-term debt:** | | |
| Lower Mattagami Energy Partnership | **114** | 140 |
| Commercial paper | **50** | 170 |
| Fair Hydro Trust | **-** | 12 |
| | **164** | 322 |

The weighted average interest rate on the LME and corporate short-term debt as of December 31, 2019 is 1.88 percent (2018 – 2.15 percent).

As of December 31, 2019, a total of $537 million of Letters of Credit had been issued (2018 – $475 million). This included $392 million for the supplementary pension plans, $55 million for Lower Mattagami Energy Partnership, $53 million for general corporate purposes, $19 million for Cube Hydro, $16 million for UMH Energy Partnership and $1 million for each of PSS Generating Station Limited Partnership and PEC.

## 13. 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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Liability for used nuclear fuel management | **13,061** | 12,523 |
| Liability for nuclear decommissioning and nuclear low and intermediate level waste management | **8,726** | 8,399 |
| Liability for non-nuclear fixed asset removal | **294** | 303 |
| Fixed asset removal and nuclear waste management liabilities | **22,081** | 21,225 |

The changes in the fixed asset removal and nuclear waste management liabilities for the years ended December 31 are as follows:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Liabilities, beginning of year | **21,225** | 20,421 |
| Increase in liabilities due to accretion [1] | **1,032** | 997 |
| Increase (decrease) in liabilities reflecting changes in the estimate of liabilities for thermal generating stations | **1** | (10) |
| Liabilities assumed on acquisition and construction of generating facilities | **19** | - |
| Increase in liabilities due to used nuclear fuel, nuclear waste management and other expenses [1] | **140** | 124 |
| Liabilities settled by expenditures on fixed asset removal and nuclear waste management during the year | **(336)** | (307) |
| Liabilities, end of year | **22,081** | 21,225 |

[1] 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, thermal and solar generating facilities, and other facilities. Costs will 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 used nuclear 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 approved by the Province in accordance with the ONFA (2017 ONFA Reference Plan). This update has been reflected in the Nuclear Liabilities since December 31, 2016.

For the purposes of calculating OPG's Nuclear Liabilities, as at December 31, 2019, 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 nuclear fuel into the assumed long-term disposal repository, followed by extended monitoring.

A number of significant assumptions used in the calculation of the accrued liabilities are subject to inherent uncertainty and judgement. 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 materially over time.

### Liability for Used Nuclear Fuel Management Costs

The liability for used nuclear fuel management represents the cost of managing the 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 nuclear 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 used nuclear fuel waste. To estimate its liability for used nuclear 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 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 assumptions used to establish the obligation for these costs currently include an L&ILW deep geologic repository (DGR) facility to be constructed on the lands adjacent to the Western Waste Management Facility in Kincardine, Ontario and operated by OPG. In light of the SON community vote on January 31, 2020, not to support OPG's proposed L&ILW DGR at this site, the Company has begun a process to evaluate potential alternative solutions for the safe long-term management of the L&ILW and to assess the potential corresponding impact to the ARO. Due to significant uncertainties associated with potential alternative solutions and the estimation of their cost at the present time, including factors beyond the Company's control, no adjustment to the ARO was recorded as of December 31, 2019. OPG will continue to evaluate the underlying assumptions and cost estimates for the L&ILW management liability based on available information.

### 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 25 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.

As required under the ONFA reference plans in effect, OPG' has been making contributions to the Used Fuel Segregated Fund based on 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 nuclear 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.

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 approved by the Province effective January 1, 2017, 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 is currently scheduled to be completed at 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. Based on the most recent annual report, OPG expects that 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 2020-2022 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 2020-2022 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.

Investments in the Nuclear Segregated Funds include a diversified portfolio of equity and fixed income securities, pooled funds, infrastructure, real estate and other investments. As the Nuclear Segregated Funds are invested to fund long-term liability requirements, the portfolio asset mix is structured to achieve the required return over a long-term horizon. While short-term fluctuations in the 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 fund asset recognized on the consolidated balance sheets 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, the above results in OPG recognizing annual earnings on the fund 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. The same treatment is applied when the Decommissioning Segregate Fund is in an overfunded status of greater than 120 percent, if the Used Fuel Segregated Fund is fully funded. When the Decommissioning Segregated Fund is underfunded, the earnings on the fund reflect actual fund returns based on the market value of the assets.

As at December 31, 2019 and 2018, 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, 2019 and 2018 was 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.

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 used nuclear fuel bundles at approximately $17.4 billion in present value dollars as at December 31, 2019. 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 generating 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 has the sole right 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 on the fund by recording an amount due to the Province, such that the fund asset recognized on the consolidated balance sheets is equal to the cost estimate of the funding liability per the most recently approved ONFA reference plan. When the fund is overfunded, 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.

Based on the 2017 ONFA Reference Plan, the Used Fuel Segregated Fund was in a marginally overfunded position as at December 31, 2019 and a marginally underfunded position as at December 31, 2018. The due to the Province amount recognized for the fund as at December 31, 2019 related to the committed return adjustment and the marginally overfunded position of the fund. The due to the Province amount recognized as at December 31, 2018 related solely to the committed return adjustment.

### Nuclear Segregated Funds

The nuclear fixed asset removal and nuclear waste management funds as at December 31 consist of the following:

| | **Fair Value** | |
|---|---|---|
| *(millions of dollars)* | **2019** | **2018** |
| Decommissioning Segregated Fund | **10,253** | 9,033 |
| Due to Province – Decommissioning Segregated Fund | **(2,384)** | (1,514) |
| | **7,869** | 7,519 |
| Used Fuel Segregated Fund [1] | **13,490** | 11,946 |
| Due to Province – Used Fuel Segregated Fund | **(3,067)** | (1,982) |
| | **10,423** | 9,964 |
| Total Nuclear Segregated Funds | **18,292** | 17,483 |
| Less: current portion | **(40)** | (19) |
| Non-current Nuclear Segregated Funds | **18,252** | 17,464 |

[1] The NFWA Trust represents $4,399 million as at December 31, 2019 (2018 – $3,973 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:

| | **Fair Value** | |
|---|---|---|
| *(millions of dollars)* | **2019** | **2018** |
| Cash and cash equivalents and short-term investments | **243** | 213 |
| Real assets | **3,855** | 3,211 |
| Pooled funds | **2,964** | 2,685 |
| Marketable equity securities | **10,353** | 8,998 |
| Fixed income securities | **6,295** | 5,845 |
| Net receivables/payables | **33** | 27 |
| | **23,743** | 20,979 |
| Less: Due to Province | **(5,451)** | (3,496) |
| | **18,292** | 17,483 |

The historical cost, gross unrealized aggregate appreciation and gross unrealized depreciation of investments, gross unrealized foreign exchange gains and fair value of the Nuclear Segregated Funds as at December 31, 2019 and 2018 are summarized as follows:

| | 2019 | | |
|---|---|---|---|
| *(millions of dollars)* | **Decommissioning Segregated Fund** | **Used Fuel Segregated Fund** | **Total** |
| Historical cost | **8,279** | **11,062** | **19,341** |
| Gross unrealized gains (losses) | | | |
| Aggregate appreciation | **2,007** | **2,455** | **4,462** |
| Aggregate depreciation | **(209)** | **(273)** | **(482)** |
| Foreign exchange | **176** | **246** | **422** |
| | **10,253** | **13,490** | **23,743** |
| Less: Due to Province | **(2,384)** | **(3,067)** | **(5,451)** |
| Total fair value | **7,869** | **10,423** | **18,292** |
| Less: current portion | **(6)** | **(34)** | **(40)** |
| Non-current fair value | **7,863** | **10,389** | **18,252** |

| | 2018 | | |
|---|---|---|---|
| *(millions of dollars)* | **Decommissioning Segregated Fund** | **Used Fuel Segregated Fund** | **Total** |
| 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 |
| | 9,033 | 11,946 | 20,979 |
| 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 | 7,514 | 9,950 | 17,464 |

Net realized and unrealized gains or losses from investments in the Nuclear Segregated Funds for the years ended December 31 are summarized as follows:

| *(millions of dollars)* | 2019<br>Decommissioning Segregated Fund | <br>Used Fuel Segregated Fund | <br>Total |
|---|---|---|---|
| **Net realized gains** | | | |
| Net realized gains excluding foreign exchange | **233** | **297** | **530** |
| Net realized foreign exchange gains | **17** | **24** | **41** |
| Net realized gains | **250** | **321** | **571** |
| **Net unrealized gains** | | | |
| Net unrealized losses excluding foreign exchange | **996** | **1,299** | **2,295** |
| Net unrealized foreign exchange losses | **(192)** | **(260)** | **(452)** |
| Net unrealized gains | **804** | **1,039** | **1,843** |

| *(millions of dollars)* | 2018<br>Decommissioning Segregated Fund | <br>Used Fuel Segregated Fund | <br>Total |
|---|---|---|---|
| **Net realized gains** | | | |
| Net realized gains excluding foreign exchange | 378 | 472 | 850 |
| Net realized foreign exchange gains | 36 | 50 | 86 |
| Net realized gains | 414 | 522 | 936 |
| **Net unrealized losses** | | | |
| Net unrealized gains excluding foreign exchange | (825) | (1,102) | (1,927) |
| Net unrealized foreign exchange gains | 192 | 268 | 460 |
| Net unrealized losses | (633) | (834) | (1,467) |

The change in the Nuclear Segregated Funds for the years ended December 31 is as follows:

| *(millions of dollars)* | Fair Value<br>2019 | <br>2018 |
|---|---|---|
| Decommissioning Segregated Fund, beginning of year | **7,519** | 7,166 |
| Increase (decrease) in fund due to return on investments | **1,243** | (38) |
| Decrease in fund due to reimbursement of eligible expenditures | **(23)** | (28) |
| (Increase) decrease in due to Province | **(870)** | 419 |
| Decommissioning Segregated Fund, end of year | **7,869** | 7,519 |
| Used Fuel Segregated Fund, beginning of year | **9,964** | 9,558 |
| Increase (decrease) in fund due to return on investments | **1,614** | (72) |
| Decrease in fund due to reimbursement of eligible expenditures | **(70)** | (69) |
| (Decrease) increase in due to Province | **(1,085)** | 547 |
| Used Fuel Segregated Fund, end of year | **10,423** | 9,964 |

The earnings from the Nuclear Segregated Funds recognized in the consolidated statements of income during the years ended December 31, 2019 and 2018 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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Decommissioning Segregated Fund | **373** | 381 |
| Used Fuel Segregated Fund | **529** | 475 |
| Bruce Lease Net Revenues Variance Account | **(8)** | (2) |
| Earnings on nuclear fixed asset removal and nuclear waste management funds | **894** | 854 |

## 14. 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 electricity 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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Income before income taxes | **1,333** | 1,354 |
| Combined Canadian federal and provincial statutory enacted income tax rates | **26.5%** | 26.5% |
| Statutory income tax rates applied to accounting income | **353** | 359 |
| (Decrease) increase in income taxes resulting from: | | |
| Income tax expense deferred in regulatory assets and regulatory liabilities | **(121)** | (106) |
| Scientific Research and Experimental Development investment tax credits | **(32)** | (30) |
| Manufacturing and processing credit | **(20)** | (21) |
| Equity accounted investment tax adjustments | **(12)** | 21 |
| Dividend tax refund | **-** | (87) |
| Other | **22** | 5 |
| | **(163)** | (218) |
| Income tax expense | **190** | 141 |
| Effective rate of income taxes | **14.3%** | 10.4% |

Significant components of the income tax expense for the year ended December 31 are as follows:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Current income tax expense | **281** | 162 |
| Deferred income tax recovery | **(91)** | (21) |
| Income tax expense | **190** | 141 |

The income tax effects of temporary differences that give rise to deferred income tax assets and deferred income tax liabilities as at December 31 are as follows:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Deferred income tax assets: | | |
| Fixed asset removal and nuclear waste management liabilities | **5,508** | 5,298 |
| Other assets and liabilities | **2,575** | 2,224 |
| | **8,083** | 7,522 |
| Deferred income tax liabilities: | | |
| Property, plant and equipment and intangible assets | **(2,829)** | (2,419) |
| Nuclear fixed asset removal and nuclear waste management funds | **(4,573)** | (4,371) |
| Other assets and liabilities | **(1,835)** | (1,750) |
| | **(9,237)** | (8,540) |
| Net deferred income tax liabilities | **(1,154)** | (1,018) |

As at December 31, 2019, OPG has tax losses in the US of $1,534 million expiring as follows: $3 million – 2033; $1 million – 2035; $3 million – 2036; $4 million – 2037; $13 million – 2038; $28 million – 2039; $1,482 million – Indefinite. During 2019, OPG acquired $99 million of goodwill that is tax deductible (2018 – $85 million).

During 2019, OPG recorded an increase in the deferred income tax liability for income taxes that are expected to be recovered through regulated prices charged to customers of $206 million (2018 – $165 million) and a corresponding increase to the regulatory asset for deferred income taxes. As a result, the deferred income tax expense for 2019 and 2018 was not impacted.

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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **January 1:** | | |
| Deferred income tax liabilities on temporary differences related to regulated operations | **795** | 671 |
| Deferred income tax liabilities on temporary differences related to the regulatory asset for deferred income tax liabilities | **267** | 226 |
| | **1,062** | 897 |
| **Changes during the year:** | | |
| Increase in deferred income tax liabilities on temporary differences related to regulated operations | **154** | 124 |
| Increase in deferred income tax liabilities on temporary differences related to the regulatory asset for deferred income tax liabilities | **52** | 41 |
| Balance as at December 31 | **1,268** | 1,062 |

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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Unrecognized tax benefits, beginning of year | **82** | 78 |
| Additions based on tax positions related to the current year | **19** | 21 |
| Reductions for tax positions of prior years | **(22)** | (17) |
| Unrecognized tax benefits, end of year | **79** | 82 |

As at December 31, 2019, OPG's unrecognized tax benefits were $79 million (2018 – $82 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, 2019, OPG had recorded interest on unrecognized tax benefits of $10 million (2018 – $9 million). OPG considers its significant tax jurisdiction to be Canada for its Canadian entities and the US for its US subsidiaries. OPG remains subject to income tax examination for years after 2015 in Canada, while certain of its wholly owned US subsidiaries are subject to federal and state income tax examinations for tax years after 2014 and 2013 respectively.

OPG paid $300 million in income taxes, net of tax refunds, during 2019 (2018 – $202 million).

## 15. ACCUMULATED OTHER COMPREHENSIVE LOSS

The changes in the balance of each component of AOCL, net of income taxes, are as follows:

| | | | **2019** | | |
|---|---|---|---|---|---|
| *(millions of dollars)* | **Unrealized Gains and Losses on Cash Flow Hedges** | **Pension and OPEB** | **Equity Securities** | **Currency Translation Adjustment** | **Total** |
| AOCL, beginning of year | **(48)** | **(208)** | **-** | **13** | **(243)** |
| Actuarial loss on remeasurement of liabilities for pension and OPEB | **-** | **(14)** | **-** | **-** | **(14)** |
| Translation of foreign operations | **-** | **-** | **-** | **(44)** | **(44)** |
| Amounts reclassified from AOCL | **15** | **9** | **-** | **-** | **24** |
| Other comprehensive income (loss) for the year | **15** | **(5)** | **-** | **(44)** | **(34)** |
| AOCL, end of year | **(33)** | **(213)** | **-** | **(31)** | **(277)** |

| | 2018 | | | | |
|---|---|---|---|---|---|
| *(millions of dollars)* | **Unrealized Gains and Losses on Cash Flow Hedges** | **Pension and OPEB** | **Equity Securities** | **Currency Translation Adjustment** | **Total** |
| AOCL, beginning of year | (66) | (220) | (9) | - | (295) |
| Reclassification of cumulative unrealized losses on equity securities to opening retained earnings | - | - | 9 | - | 9 |
| | (66) | (220) | - | - | (286) |
| Net gain on cash flow hedges | 1 | - | - | - | 1 |
| Actuarial gain and past service credits on remeasurement of liabilities for pension and OPEB | - | 1 | - | - | 1 |
| Translation of foreign operations | - | - | - | 13 | 13 |
| Amounts reclassified from AOCL | 17 | 11 | - | - | 28 |
| Other comprehensive income for the year | 18 | 12 | - | 13 | 43 |
| AOCL, end of year | (48) | (208) | - | 13 | (243) |

The significant amounts reclassified out of each component of AOCL, net of income taxes, during the years ended December 31 are as follows:

| | Amount Reclassified from AOCL | | |
|---|---|---|---|
| *(millions of dollars)* | **2019** | **2018** | **Statement of Income Line Item** |
| Amortization of losses from cash flow hedges | | | |
| Losses | **17** | 19 | Net interest expense |
| Income tax recovery | **(2)** | (2) | Income tax expense |
| | **15** | 17 | |
| Amortization of amounts related to pension and OPEB | | | |
| Actuarial losses | **12** | 15 | See (1) below |
| Income tax recovery | **(3)** | (4) | Income tax expense |
| | **9** | 11 | |
| Total reclassifications for the year | **24** | 28 | |

[1] These AOCL components are included in the computation of pension and OPEB costs (see Note 16 for additional details).

## 16. 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 for the OPG pension plan:

| | **Target** |
|---|---|
| Asset Class | |
| Fixed Income Assets | 33% |
| Return Enhancing Assets | 26% |
| Real Assets | 25% |
| Return Diversifying Assets | 13% |
| Special Opportunities | 3% |

The plan may use derivative instruments 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 OPG 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 portfolios that are included as part of the total pension fund assets as at December 31, 2019. 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 OPG 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 18 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:

| | 2019 | | | |
|---|---|---|---|---|
| *(millions of dollars)* | **Level 1** | **Level 2** | **Level 3** | **Total** |
| Cash and cash equivalents | **386** | **-** | **-** | **386** |
| Short-term investments | **-** | **12** | **-** | **12** |
| Fixed income | | | | |
| Corporate debt securities | **-** | **1,918** | **-** | **1,918** |
| Government bonds | **31** | **2,855** | **-** | **2,886** |
| Equities | | | | |
| Canadian | **628** | **351** | **-** | **979** |
| US | **882** | **-** | **-** | **882** |
| Global | **819** | **-** | **-** | **819** |
| Pooled funds | **497** | **770** | **-** | **1,267** |
| Forward exchange contracts | **-** | **18** | **-** | **18** |
| Futures contracts | **1** | **-** | **-** | **1** |
| | **3,244** | **5,924** | **-** | **9,168** |
| Investments measured at NAV [1] | | | | **5,749** |
| | | | | **14,917** [2] |

| | 2018 | | | |
|---|---|---|---|---|
| *(millions of dollars)* | **Level 1** | **Level 2** | **Level 3** | **Total** |
| 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 |
| | 3,858 | 5,151 | - | 9,009 |
| Forward exchange contracts | - | (81) | - | (81) |
| Futures contracts | (5) | - | - | (5) |
| Investments measured at NAV [1] | | | | 4,790 |
| | | | | 13,713 [2] |

[1] 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.

[2] The table above excludes pension fund receivables and payables.

### Defined Benefit Plan Costs and Liabilities

Details of OPG's consolidated pension and OPEB obligations, pension fund assets and costs, together with the key used in determining these amounts, are presented in the following tables:

| | Registered and Supplementary Pension Plans | | Other Post-Employment Benefits | |
|---|---|---|---|---|
| | **2019** | **2018** | **2019** | **2018** |
| *Weighted Average Assumptions – Benefit Obligations at Year-End* | | | | |
| Discount rate for projected benefit obligation | **3.12 %** | 3.83 % | **3.14 %** | 3.84 % |
| Salary schedule escalation rate - initial rate [1] | **1.70 %** | 2.00 % | **1.70 %** | 2.00 % |
| - thereafter | **2.25 %** | 2.50 % | **2.25 %** | 2.50 % |
| Rate of cost of living increase to pensions | **1.75 %** | 2.00 % | **n/a** | n/a |
| Initial health care trend rate | **n/a** | n/a | **3.83 %** | 3.82 % |
| Ultimate health care trend rate | **n/a** | n/a | **4.05 %** | 4.05 % |
| Year ultimate health care trend rate reached | **n/a** | n/a | **2040** | 2040 |
| Rate of increase in disability benefits | **n/a** | n/a | **1.75 %** | 2.00 % |

n/a – assumption not applicable.

[1] Average rate per year to December 31, 2026 for 2019 and per year to December 31, 2024 for 2018.

| | Registered and Supplementary Pension Plans | | Other Post-Employment Benefits | |
|---|---|---|---|---|
| | **2019** | **2018** | **2019** | **2018** |
| *Weighted Average Assumptions – Costs for the Year* | | | | |
| Expected return on plan assets, net of expenses | **6.00 %** | 6.00 % | **n/a** | n/a |
| Discount rate for current service cost | **3.93 %** | 3.69 % | **3.85 %** | 3.64 % |
| Discount rate for interest on projected benefit obligation | **3.56 %** | 3.25 % | **3.61 %** | 3.35 % |
| Discount rate for interest on current service cost | **3.80 %** | 3.54 % | **3.75 %** | 3.55 % |
| Salary schedule escalation rate - initial rate [1] | **2.00 %** | 1.90 % | **2.00 %** | 1.90 % |
| - thereafter | **2.50 %** | 2.50 % | **2.50 %** | 2.50 % |
| Rate of cost of living increase to pensions | **2.00 %** | 2.00 % | **n/a** | n/a |
| Initial health care trend rate | **n/a** | n/a | **3.82 %** | 5.80 % |
| Ultimate health care trend rate | **n/a** | n/a | **4.05 %** | 4.32 % |
| Year ultimate health care trend rate reached | **n/a** | n/a | **2040** | 2030 |
| Rate of increase in disability benefits | **n/a** | n/a | **2.00 %** | 2.00 % |
| Expected average remaining service life for employees (years) | **12** | 12 | **13** | 13 |

n/a – assumption not applicable.

[1] Average rate per year to December 31, 2024 for 2019 and per year to December 31, 2021 for 2018.

| (millions of dollars) | Registered Pension Plans 2019 | Registered Pension Plans 2018 | Supplementary Pension Plans 2019 | Supplementary Pension Plans 2018 | Other Post-Employment Benefits 2019 | Other Post-Employment Benefits 2018 |
|---|---|---|---|---|---|---|
| *Components of Cost Recognized for the Year* | | | | | | |
| Current service costs | **311** | 330 | **8** | 8 | **71** | 80 |
| Interest on projected benefit obligation | **609** | 567 | **13** | 12 | **102** | 107 |
| Expected return on plan assets, net of expenses | **(825)** | (820) | **-** | - | **-** | - |
| Amortization of net actuarial loss [1] | **156** | 197 | **6** | 7 | **-** | 7 |
| Recognition of LTD past service credits | **-** | - | **-** | - | **(1)** | - |
| Recognition of LTD net actuarial loss (gain) | **-** | - | **-** | - | **11** | (2) |
| Costs recognized [2] | **251** | 274 | **27** | 27 | **183** | 192 |

[1] The amortization of 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 9.

[2] Excludes the impact of regulatory variance and deferral accounts discussed in Note 9.

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:

| (millions of dollars) | 2019 | 2018 |
|---|---|---|
| Registered pension plans | **251** | 274 |
| Supplementary pension plans | **27** | 27 |
| Other post-employment benefits | **183** | 192 |
| Pension & OPEB Cash Payment Variance Account *(Note 9)* | **130** | 73 |
| Pension & OPEB Cash Versus Accrual Differential Deferral Account *(Note 9)* | **(153)** | (169) |
| Pension and other post-employment benefit costs | **438** | 397 |

The consolidated pension and OPEB obligations and pension fund assets measured as at December 31 are as follows:

| (millions of dollars) | Registered Pension Plans 2019 | 2018 | Supplementary Pension Plans 2019 | 2018 | Other Post-Employment Benefits 2019 | 2018 |
|---|---|---|---|---|---|---|
| *Change in Plan Assets* | | | | | | |
| Fair value of plan assets at beginning of year | **13,765** | 14,263 | **-** | - | **-** | - |
| Contributions by employer | **180** | 197 | **18** | 16 | **96** | 95 |
| Contributions by employees | **91** | 100 | **-** | - | **-** | - |
| Actual return on plan assets, net of expenses | **1,606** | (20) | **-** | - | **-** | - |
| Benefit payments | **(719)** | (775) | **(18)** | (16) | **(96)** | (95) |
| Acquisitions | **3** | - | **-** | - | **-** | - |
| Fair value of plan assets at end of year | **14,926** | 13,765 | **-** | - | **-** | - |
| *Change in Projected Benefit Obligations* | | | | | | |
| Projected benefit obligations at beginning of year | **17,068** | 17,344 | **353** | 356 | **2,799** | 3,190 |
| Employer current service costs | **311** | 330 | **8** | 8 | **71** | 80 |
| Contributions by employees | **91** | 100 | **-** | - | **-** | - |
| Interest on projected benefit obligation | **609** | 567 | **13** | 12 | **102** | 107 |
| Benefit payments | **(719)** | (775) | **(18)** | (16) | **(96)** | (95) |
| Past service credits | **-** | - | **-** | - | **(19)** | (6) |
| Net actuarial loss (gain) | **759** | (498) | **31** | (7) | **341** | (477) |
| Acquisitions | **5** | - | **-** | - | **5** | - |
| Projected benefit obligations at end of year | **18,124** | 17,068 | **387** | 353 | **3,203** | 2,799 |
| Funded status – deficit at end of year | **(3,198)** | (3,303) | **(387)** | (353) | **(3,203)** | (2,799) |

The following table provides the pension and OPEB liabilities and their classification on the consolidated balance sheets as at December 31:

| (millions of dollars) | Registered Pension Plans 2019 | 2018 | Supplementary Pension Plans 2019 | 2018 | Other Post-Employment Benefits 2019 | 2018 |
|---|---|---|---|---|---|---|
| Current liabilities | **-** | - | **(17)** | (14) | **(104)** | (102) |
| Non-current liabilities | **(3,198)** | (3,303) | **(370)** | (339) | **(3,099)** | (2,697) |
| Total liabilities | **(3,198)** | (3,303) | **(387)** | (353) | **(3,203)** | (2,799) |

The accumulated benefit obligations for the registered pension plans and supplementary pension plans as at December 31, 2019 are $16,808 million and $361 million, respectively (2018 – $15,803 million and $330 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 9, for the years ended December 31, on a pre-tax basis:

| | **Registered Pension Plans** | | **Supplementary Pension Plans** | | **Other Post-Employment Benefits** | |
|---|---|---|---|---|---|---|
| *(millions of dollars)* | **2019** | **2018** | **2019** | **2018** | **2019** | **2018** |
| *Changes in plan assets and benefit obligations recognized in OCI* | | | | | | |
| Current year net actuarial (gain) loss | **(22)** | 342 | **31** | (7) | **330** | (475) |
| Current year past service credits | **-** | - | **-** | - | **(18)** | (6) |
| Amortization of net actuarial loss | **(156)** | (197) | **(6)** | (7) | **-** | (7) |
| Total (increase) decrease in OCI | **(178)** | 145 | **25** | (14) | **312** | (488) |
| Less: (decrease) increase in Pension and OPEB Regulatory Asset *(Note 9)* | **(161)** | 126 | **23** | (13) | **291** | (454) |
| Net (increase) decrease in OCI (pre-tax) | **(17)** | 19 | **2** | (1) | **21** | (34) |

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:

| | **Registered Pension Plans** | | **Supplementary Pension Plans** | | **Other Post-Employment Benefits** | |
|---|---|---|---|---|---|---|
| *(millions of dollars)* | **2019** | **2018** | **2019** | **2018** | **2019** | **2018** |
| *Unamortized amounts recognized in AOCL* | | | | | | |
| Past service credits | **-** | - | **-** | - | **(20)** | (2) |
| Net actuarial loss (gain) | **3,617** | 3,795 | **127** | 102 | **226** | (104) |
| Total recognized in AOCL | **3,617** | 3,795 | **127** | 102 | **206** | (106) |
| Less: Pension and OPEB Regulatory Asset *(Note 9)* | **3,356** | 3,517 | **119** | 96 | **192** | (99) |
| Net recognized in AOCL (pre-tax) | **261** | 278 | **8** | 6 | **14** | (7) |

Details of the unamortized net actuarial loss and unamortized past service credits as at December 31 are as follows:

| | **Registered Pension Plans** | | **Supplementary Pension Plans** | | **Other Post-Employment Benefits** | |
|---|---|---|---|---|---|---|
| *(millions of dollars)* | **2019** | **2018** | **2019** | **2018** | **2019** | **2018** |
| Net actuarial (gain) loss not yet subject to amortization due to use of market-related values | **(190)** | 180 | **-** | - | **-** | - |
| Net actuarial loss (gain) not subject to amortization due to use of the corridor | **1,813** | 1,707 | **39** | 35 | **224** | (104) |
| Net actuarial loss subject to amortization | **1,994** | 1,908 | **88** | 67 | **2** | - |
| Unamortized net actuarial loss (gain) | **3,617** | 3,795 | **127** | 102 | **226** | (104) |
| Unamortized past service credits | **-** | - | **-** | - | **(20)** | (2) |

The following table provides the components of OPG's AOCL and the offsetting Pension and OPEB Regulatory Asset as at December 31 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, respectively, in 2020, on a pre-tax basis:

| *(millions of dollars)* | **Registered Pension Plans** | **Supplementary Pension Plans** | **Other Post-Employment Benefits** |
|---|---|---|---|
| Past service credits | **-** | **-** | **(2)** |
| Net actuarial loss | **162** | **7** | **-** |
| Total increase (decrease) in OCI | **162** | **7** | **(2)** |
| Less: estimated decrease (increase) in Pension and Regulatory Asset | **150** | **6** | **(2)** |
| Net increase in OCI (pre-tax) | **12** | **1** | **-** |

The most recently filed actuarial valuation, for funding purposes, of the OPG registered pension plan, as at January 1, 2019, was filed with the Financial Services Regulatory Authority of Ontario in September 2019. The next filed funding valuation must have an effective date no later than January 1, 2022. For 2020, the Company's required contribution to the OPG registered pension plan is expected to be $181 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, 2019, 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, 2019 consistent with the new funding valuation for the registered pension plan, OPG conducted a comprehensive actuarial valuation for accounting purposes of the OPG defined benefit pension and OPEB plans in 2019. The results of this valuation were reflected in the 2019 year-end obligations reflecting appropriate assumptions for accounting purposes as at December 31, 2019.

The supplementary pension plans are not funded, but are secured by Letters of Credit totalling $392 million as at December 31, 2019 (2018 – $364 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, 2019 are as follows:

| *(millions of dollars)* | **Registered Pension Plans** | **Supplementary Pension Plans** | **Other Post-Employment Benefits** |
|---|---|---|---|
| 2020 | 715 | 17 | 104 |
| 2021 | 748 | 17 | 106 |
| 2022 | 748 | 18 | 108 |
| 2023 | 791 | 18 | 110 |
| 2024 | 780 | 18 | 113 |
| 2025 through 2029 | 4,363 | 97 | 631 |

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, 2019 as follows:

| *(millions of dollars)* | **Registered Pension Plans** [1] | **Supplementary Pension Plans** [1] | **Other Post-Employment Benefits** [1] |
|---|---|---|---|
| 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 | (56) | (1) | (2) |
| 0.25% decrease | 59 | 1 | 2 |
| Inflation [2] | | | |
| 0.25% increase | 107 | 1 | - |
| 0.25% decrease | (100) | (1) | - |
| Salary increases | | | |
| 0.25% increase | 25 | 4 | - |
| 0.25% decrease | (24) | (3) | - |
| Health care cost trend rate | | | |
| 1% increase | n/a | n/a | 39 |
| 1% decrease | n/a | n/a | (44) |

n/a – change in assumption not applicable.
[1] Excludes the impact of regulatory accounts.
[2] 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 2019 OPEB costs of $36 million (2018 – $45 million) or a decrease in the service and interest components of the 2019 OPEB costs of $26 million (2018 – $32 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, 2019 of $550 million (2018 – $461 million) or a decrease in the projected benefit obligation for OPEB as at December 31, 2019 of $422 million (2018 – $354 million).

## 17. 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, movements in foreign currency that affect the Company's assets, liabilities and forecasted transactions, and fluctuations in commodity prices. Select derivative instruments are used to manage such risks. Derivatives are used as hedging instruments, as well as for trading purposes.

### 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 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.

### 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 denominated in, or tied to, US dollars. To manage this risk, the Company employs various financial instruments such as forwards and other derivative contracts, in accordance with approved corporate risk management policies. Additionally, volatility in the Canadian/US foreign exchange rate also impacts OPG's financial results from certain of its subsidiaries, whose operations are based exclusively in the United States.

### Commodity Prices

OPG is exposed to fluctuations in commodity prices. Changes in the market prices of nuclear fuels, oil, gas and biomass 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.

A number 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 portion of OPG's overall revenue, the Company may enter into derivative instruments from time to time to further mitigate this risk.

### Credit

The Company's credit risk exposure is primarily a function of its electricity and other sales. The majority of OPG's revenue is derived from electricity 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, 2019 was $1 million (2018 – less than $1 million).

The fair value of the derivative instruments totalled a net liability of $11 million as at December 31, 2019 (2018 − $5 million).

The following table shows the pre-tax amounts related to derivative instruments recorded in AOCL and net income for the years ended December 31:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **Cash flow hedges (recorded in AOCL)** | | |
| Reclassification of losses to net interest expense | **17** | 19 |
| **Commodity derivatives (recorded in net income)** | | |
| Realized losses in revenue | **(14)** | (16) |
| Unrealized gains in revenue | **3** | 2 |

Existing pre-tax net losses of $15 million deferred in AOCL as at December 31, 2019 are expected to be reclassified to net income within the next 12 months.

## 18. 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. Various other fund investments are valued at the unit values supplied by the 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:

| | Fair Value | | Carrying Value [1] | | |
|---|---|---|---|---|---|
| *(millions of dollars)* | **2019** | **2018** | **2019** | **2018** | **Balance Sheet Line Item** |
| Nuclear Segregated Funds (includes current portion) [2] | **18,292** | 17,483 | **18,292** | 17,483 | Nuclear fixed asset removal and nuclear waste management funds |
| Loan receivable – from Fair Hydro Trust | **945** | - | **917** | - | Loan receivable |
| Financing receivables – Fair Hydro Trust [3] | **-** | 1,868 | **-** | 1,788 | Financing receivables |
| Investment in Hydro One shares | **169** | 153 | **169** | 153 | Equity securities |
| Payable related to cash flow hedges | **(24)** | (32) | **(24)** | (32) | Long-term accounts payable and accrued charges |
| Long-term debt – OPG (includes current portion) | **(9,163)** | (6,924) | **(8,226)** | (6,656) | Long-term debt |
| Long-term debt – Fair Hydro Trust [3] | **-** | (913) | **-** | (900) | Long-term debt |
| Other financial instruments | **22** | 28 | **22** | 28 | Various |

[1] 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, accrued charges and other payables approximate their fair values due to the immediate or short-term maturity of these financial instruments.

[2] 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.

[3] Financing receivables of, and long-term debt owed by the Fair Hydro Trust to external third parties ceased to be recognized in OPG's consolidated financial statements following deconsolidation of the Trust in May 2019. Refer to 5 for further discussion.

The fair value of 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.

As a result of the deconsolidation of the Fair Hydro Trust following the Fixing the Hydro Mess Act receiving Royal Assent, OPG recognized its subordinated debt investment in the Trust as a loan receivable effective May 9, 2019. The loan receivable is valued using indicative pricing from the market for senior debt, adjusted for the incremental risks associated with the subordinated debt. These inputs are considered Level 2 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, 2019 and 2018:

| | 2019 | | | |
|---|---|---|---|---|
| *(millions of dollars)* | **Level 1** | **Level 2** | **Level 3** | **Total** |
| **Assets** | | | | |
| *Used Fuel Segregated Fund* | | | | |
| Investments measured at fair value, excluding investments measured at NAV | **6,021** | **5,333** | **-** | **11,354** |
| Investments measured at NAV [1] | | | | **2,136** |
| | | | | **13,490** |
| Due to Province | | | | **(3,067)** |
| Used Fuel Segregated Fund, net | | | | **10,423** |
| *Decommissioning Segregated Fund* | | | | |
| Investments measured at fair value, excluding investments measured at NAV | **4,575** | **3,959** | **-** | **8,534** |
| Investments measured at NAV [1] | | | | **1,719** |
| | | | | **10,253** |
| Due to Province | | | | **(2,384)** |
| Decommissioning Segregated Fund, net | | | | **7,869** |
| Equity securities | **169** | **-** | **-** | **169** |
| Other financial assets | **6** | **5** | **35** | **46** |
| **Liabilities** | | | | |
| Other financial liabilities | **(22)** | **(2)** | **-** | **(24)** |

| | 2018 | | | |
|---|---|---|---|---|
| *(millions of dollars)* | **Level 1** | **Level 2** | **Level 3** | **Total** |
| **Assets** | | | | |
| *Used Fuel Segregated Fund* | | | | |
| Investments measured at fair value, excluding investments measured at NAV | 5,245 | 4,926 | - | 10,171 |
| Investments measured at NAV [1] | | | | 1,775 |
| | | | | 11,946 |
| Due to Province | | | | (1,982) |
| Used Fuel Segregated Fund, net | | | | 9,964 |
| *Decommissioning Segregated Fund* | | | | |
| Investments measured at fair value, excluding investments measured at NAV | 3,962 | 3,635 | - | 7,597 |
| Investments measured at NAV [1] | | | | 1,436 |
| | | | | 9,033 |
| Due to Province | | | | (1,514) |
| Decommissioning Segregated Fund, net | | | | 7,519 |
| Equity securities | 153 | - | - | 153 |
| Other financial assets | 5 | 3 | 43 | 51 |
| **Liabilities** | | | | |
| Other financial liabilities | (19) | (4) | - | (23) |

[1] 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, 2019, 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.

| *(millions of dollars)* | **Other financial instruments** |
|---|---|
| Opening balance, January 1, 2019 | **43** |
| Unrealized losses included in revenue | **(4)** |
| Realized losses included in revenue | **(14)** |
| Purchases | **10** |
| Closing balance, December 31, 2019 | **35** |

**Investments Measured at Net Asset Value**

Nuclear Segregated Fund

Nuclear Segregated Fund investments classified as Level 3 consist of real estate, infrastructure, and agriculture investments within the alternative investment portfolio. The fair value of these investments is determined using financial information as provided by the general partners of the limited partnership funds in which the Nuclear Segregated Funds are invested. Direct investments are valued 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, 2019:

| *(millions of dollars except where noted)* | **Fair Value** | **Unfunded Commitments** | **Redemption Frequency** | **Redemption Notice** |
|---|---|---|---|---|
| Real Assets | | | | |
| Infrastructure | **2,311** | **795** | **n/a** | **n/a** |
| Real Estate | **1,382** | **754** | **n/a** | **n/a** |
| Agriculture | **163** | **24** | **n/a** | **n/a** |
| Pooled Funds | | | | |
| Short-term Investments | **43** | **n/a** | **Daily** | **1-5 days** |
| Fixed Income | **1,974** | **n/a** | **Daily** | **1-5 days** |
| Equity | **946** | **n/a** | **Daily** | **1-5 days** |
| Total | **6,819** | **1,573** | | |

The fair value of the pooled funds is classified as Level 2. Infrastructure, real estate and agriculture 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 these investments. The ownership interest in the respective funds are not redeemable. However, the Nuclear Segregated Funds may transfer any of their ownership interests to another party, as stipulated in the partnership agreements and/or shareholders' agreements. Cash distributions are 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 of the infrastructure funds in this class will be liquidated.

*Real Estate*

This class includes investments in institutional-grade real estate property. The investment objective is to provide a stable level of income with an 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 investments in the respective funds are not redeemable. However, the Nuclear Segregated Funds may transfer any of their ownership interests to another party, as stipulated in the partnership agreements and/or shareholders' agreements. For investments in private real estate corporations, shares may be redeemed through a pre-established redemption process. Cash distributions are 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 class will be liquidated.

*Agriculture*

This class includes a diversified portfolio of global farmland 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 in the respective funds are not redeemable. However, the Nuclear Segregated Funds may transfer any of their ownership interests to another party, as stipulated in the partnership agreements and/or shareholders' agreements. Cash distributions are 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 class 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.

## 19. SHARE CAPITAL

### Common Shares

As at December 31, 2019 and 2018, 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, 2019 and 2018, OPG had 18,343,815 Class A shares issued and outstanding at a stated value of $787 million.

## 20. 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, 2019 was 274.6 million (2018 – 273.2 million). There were no dilutive securities during the years ended December 31, 2019 and 2018.

## 21. 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 the 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 and served its Affidavit of Documents in November 2018. The parties exchanged documentary productions in September 2019. A pre-trial is scheduled for May 31, 2021 and a trial is scheduled to commence on November 8, 2021.

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 are 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, 2019, the total amount of guarantees OPG provided to these entities was $80 million (2018 − $81 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 2020 and 2029. As at December 31, 2019, 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

| *(millions of dollars)* | **2020** | **2021** | **2022** | **2023** | **2024** | **Thereafter** | **Total** |
|---|---|---|---|---|---|---|---|
| Fuel supply agreements | 154 | 150 | 101 | 92 | 25 | 14 | 536 |
| Contributions to the OPG registered pension plan [1] | 181 | 183 | - | - | - | - | 364 |
| Long-term debt repayment | 693 | 448 | 207 | 75 | 215 | 6,595 | 8,233 |
| Interest on long-term debt | 326 | 298 | 284 | 279 | 274 | 4,650 | 6,111 |
| Short-term debt repayment | 164 | - | - | - | - | - | 164 |
| Commitments related to Darlington Refurbishment project [2] | 288 | - | - | - | - | - | 288 |
| Operating licences | 44 | 45 | 46 | 47 | 48 | 49 | 279 |
| Operating lease obligations | 14 | 12 | 11 | 7 | 6 | 13 | 63 |
| Unconditional purchase obligations | 59 | 5 | - | - | - | - | 64 |
| Accounts payable and accrued charges | 938 | 13 | 1 | - | - | - | 952 |
| Other | 36 | 26 | 10 | 8 | 7 | 84 | 171 |
| Total | 2,897 | 1,180 | 660 | 508 | 575 | 11,405 | 17,225 |

[1] 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, 2019. The next actuarial valuation of the OPG registered pension plan must have an effective date no later than January 1, 2022. 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 2021 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.

[2] 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 nuclear generating stations to Bruce Power. Under the lease agreement, 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 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, 2019 was $2,822 million (2018 – $2,892 million). The net book value is largely comprised of asset retirement costs.

## 22. BUSINESS SEGMENTS

As at December 31, 2019, OPG has the following four reportable business segments:

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

### Regulated – Nuclear Generation Segment

The Regulated – Nuclear Generation business segment operates in Ontario, generating and selling electricity from the Darlington and Pickering nuclear generating stations, 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 from supplying ancillary services to the electricity system from the nuclear stations operated by OPG.

### 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 used nuclear 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 Darlington and Pickering 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 electricity produced from the Darlington and Pickering 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 the 54 regulated hydroelectric generating stations located across a number of major river systems in the province. Additionally, the business segment includes revenues from supplying ancillary services to the electricity system and other revenues from OPG's regulated hydroelectric stations.

### Contracted and Other Generation Segment

The Contracted and Other Generation business segment operates in Ontario and in the US, generating and selling electricity from the Company's non-regulated generating stations. The segment primarily includes generating facilities that are under ESA's with the IESO or other contracts. A number of facilities in the US supply energy and capacity into wholesale spot electricity markets. In Ontario, the current contracts for the thermal generating facilities are set to expire in 2022 and 2024, for the solar facility in 2039 and for the hydroelectric facilities over the 2059 to 2067 period. In the US, the current contracts have expiration dates raging from 2021 to 2039.

The Contracted and Other Generation segment also includes OPG's share of equity income from its 50 percent ownership interest in PEC, which is operated under the terms of a 20-year Accelerated Clean Energy Supply contract with the IESO expiring in 2029, and from other co-owned and minority-held electricity generating facilities.

The business segment also includes revenues from supplying ancillary services to the electricity system and other revenues from the stations included in the segment.

OM&A expenses of the electricity generating 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 business segment was as follows for the year ended December 31:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| Regulated – Nuclear Generation | **48** | 37 |
| Regulated – Hydroelectric | **9** | 7 |
| Contracted and Other Generation | **5** | 4 |
| | **62** | 48 |

Change in Reportable Segments

Since the first quarter of 2019, OPG's financial results related to its role as the Financial Services Manager under the Fair Hydro Act, which, prior to the deconsolidation of the Fair Hydro Trust effective May 9, 2019, primarily comprised the financial results of the Trust, ceased being reported as a separate business segment in the Company's consolidated financial statements as a result of the legislative change introduced by the Government of Ontario that resulted in the Trust's deconsolidation. The financial results related to the Company's continued involvement with the Trust are now reported within the Other category. The 2018 comparative amounts have been reclassified from consolidated financial statements previously presented to conform to the 2019 consolidated financial statement presentation. For further discussion regarding deconsolidation of the Trust, refer to Note 5.

| **Segment Income (Loss) For the Year Ended December 31, 2019** | **Regulated** | | | **Unregulated** | | | |
|---|---|---|---|---|---|---|---|
| *(millions of dollars)* | **Nuclear Generation** | **Nuclear Waste Management** | **Hydro-electric** | **Contracted and Other Generation** | **Other** | **Elimination** | **Total** |
| Revenue | 3,806 | - | 1,517 | 637 | 6 | - | 5,966 |
| Leasing revenue | 25 | - | - | - | 16 | - | 41 |
| Other revenue | - | 144 | - | - | 71 | (200) | 15 |
| Total revenue | 3,831 | 144 | 1,517 | 637 | 93 | (200) | 6,022 |
| Fuel expense | 299 | - | 336 | 42 | - | - | 677 |
| Gross margin | 3,532 | 144 | 1,181 | 595 | 93 | (200) | 5,345 |
| Operations, maintenance and administration | 2,201 | 144 | 336 | 220 | 87 | (200) | 2,788 |
| Depreciation and amortization | 674 | - | 224 | 127 | 48 | - | 1,073 |
| Accretion on fixed asset removal and nuclear waste management liabilities | - | 1,007 | - | 6 | 6 | - | 1,019 |
| Earnings on nuclear fixed asset removal and nuclear waste management funds | - | (894) | - | - | - | - | (894) |
| Income from investments subject to significant influence | - | - | - | (40) | - | - | (40) |
| Property taxes | 25 | - | 1 | 14 | 2 | - | 42 |
| Other losses (gains) | - | - | 1 | (3) | (38) | - | (40) |
| Income (loss) before interest and income taxes | 632 | (113) | 619 | 271 | (12) | - | 1,397 |
| Net interest expense | | | | | | | 64 |
| **Income before income taxes** | | | | | | | 1,333 |
| Income tax expense | | | | | | | 190 |
| **Net income** | | | | | | | 1,143 |

| Segment Income (Loss) For the Year Ended December 31, 2018 (millions of dollars) | Regulated | | | Unregulated | | | |
|---|---|---|---|---|---|---|---|
| | Nuclear Generation | Nuclear Waste Management | Hydro-electric | Contracted and Other Generation | Other | Elimination | Total |
| Revenue | 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 | 50 | (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) |
| Income from investments subject to significant influence | - | - | - | (44) | - | - | (44) |
| Property taxes | 26 | - | 1 | 8 | 2 | - | 37 |
| Other losses (gains) | - | - | 5 | 1 | (304) | - | (298) |
| Income (loss) before interest and income taxes | 351 | (117) | 594 | 301 | 302 | - | 1,431 |
| Net interest expense | | | | | | | 77 |
| **Income before income taxes** | | | | | | | 1,354 |
| Income tax expense | | | | | | | 141 |
| **Net income** | | | | | | | 1,213 |

| Selected Consolidated Balance Sheets information as at December 31, 2019 *(millions of dollars)* | Regulated | | | Unregulated | | |
|---|---|---|---|---|---|---|
| | Nuclear Generation | Nuclear Waste Management | Hydro-electric | Contracted and Other Generation | Other | Total |
| Segment property, plant and equipment in-service, net | **6,518** | **-** | **7,460** | **5,853** | **240** | **20,071** |
| Segment construction in progress | **5,748** | **-** | **137** | **75** | **16** | **5,976** |
| Segment property, plant and equipment, net | **12,266** | **-** | **7,597** | **5,928** | **256** | **26,047** |
| Segment intangible assets in-service, net | **20** | **-** | **1** | **165** | **70** | **256** |
| Segment development in progress | **6** | **-** | **-** | **-** | **46** | **52** |
| Segment intangible assets, net | **26** | **-** | **1** | **165** | **116** | **308** |
| Segment goodwill | **-** | **-** | **-** | **163** | **-** | **163** |
| Segment fuel inventory | **196** | **-** | **-** | **37** | **-** | **233** |
| Segment materials and supplies inventory | | | | | | |
| Current | **91** | **-** | **-** | **1** | **-** | **92** |
| Long-term | **390** | **-** | **-** | **2** | **-** | **392** |
| Nuclear fixed asset removal and nuclear waste management funds (current and non-current portions) | **-** | **18,292** | **-** | **-** | **-** | **18,292** |
| Loan Receivable | **-** | **-** | **-** | **-** | **917** | **917** |
| Fixed asset removal and nuclear waste management liabilities | **-** | **(21,787)** | **-** | **(122)** | **(172)** | **(22,081)** |

| **Selected Consolidated Balance Sheets information as at December 31, 2018** *(millions of dollars)* | **Regulated** | | | **Unregulated** | | |
|---|---|---|---|---|---|---|
| | **Nuclear Generation** | **Nuclear Waste Management** | **Hydro-electric** | **Contracted and Other Generation** | **Other** | **Total** |
| 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) |

| **Segment Capital Expenditure Information** | **Regulated** | | | **Unregulated** | | |
|---|---|---|---|---|---|---|
| *(millions of dollars)* | **Nuclear Generation** | **Nuclear Waste Management** | **Hydro-electric** | **Contracted and Other Generation** | **Other** | **Total** |
| Year ended December 31, 2019 | | | | | | |
| Investment in property, plant and equipment and intangible assets | **1,581** | **-** | **204** | **129** | **77** | **1,991** |
| Net change in accruals and other non-cash items | | | | | | **67** |
| Investment in property, plant and equipment and intangible assets – cash flow | | | | | | **2,058** |
| Year ended December 31, 2018 | | | | | | |
| Investment in property, plant and equipment and intangible assets | 1,492 | - | 167 | 135 | 65 | 1,859 |
| Net change in accruals and other non-cash items | | | | | | (33) |
| Investment in property, plant and equipment and intangible assets – cash flow | | | | | | 1,826 |

## 23. NET CHANGES IN NON-CASH WORKING CAPITAL BALANCES

| *(millions of dollars)* | December 31 2019 | 2018 |
|---|---|---|
| Receivables from related parties | **15** | (114) |
| Fuel Inventory | **61** | 15 |
| Materials and supplies | **30** | 18 |
| Prepaid expenses | **(8)** | (1) |
| Other current assets | **67** | (10) |
| Income taxes | **(45)** | (43) |
| Accounts payable, accrued charges and other payables | **(21)** | (25) |
| Net changes to non-cash working capital balances | **99** | (160) |

## 24. 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, non-core assets 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.

## 25. 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.

## 26. 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 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:

| | 2019 | | 2018 | |
|---|---|---|---|---|
| *(millions of dollars)* | **Income** | **Expense** | **Income** | **Expense** |
| Hydro One | | | | |
| Electricity sales | **8** | **-** | 11 | - |
| Services | **-** | **9** | - | 7 |
| Dividends | **7** | **-** | 7 | - |
| Province of Ontario | | | | |
| Change in Decommissioning Segregated Fund amount due to Province [1] | **-** | **870** | - | (419) |
| Change in Used Fuel Segregated Fund amount due to Province [1] | **-** | **1,085** | - | (547) |
| Hydroelectric gross revenue charge | **-** | **109** | - | 108 |
| OEFC | | | | |
| Hydroelectric gross revenue charge | **-** | **218** | - | 219 |
| Interest expense on long-term notes | **-** | **136** | - | 149 |
| Income taxes | **-** | **343** | - | 267 |
| IESO | | | | |
| Electricity related revenue | **5,521** | **-** | 5,068 | - |
| Earnings from Fair Hydro Trust [2] | **24** | **-** | 63 | - |
| Fair Hydro Trust | | | | |
| Interest income [2] | **20** | **-** | - | - |
| | **5,580** | **2,770** | 5,149 | (216) |

[1] 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, 2019 and 2018, the Nuclear Segregated Funds were reported net of amounts due to the Province of $5,451 million and $3,496 million, respectively.

[2] The Fair Hydro Trust was deconsolidated from OPG's consolidated financial results effective May 9, 2019. As a result, certain transactions that were previously eliminated on consolidation, including interest income earned by OPG from its investment in the Trust's subordinated debt, are now treated as transactions with entities outside of OPG, and are disclosed as related party transactions with the Fair Hydro Trust. Earnings from Fair Hydro Trust are for the period prior to the deconsolidation and primarily comprise net interest income earned by the Trust from the IESO on financing receivables, which were consolidated within OPG's financial results up to May 9, 2019. Refer to Note 5 for discussion on the deconsolidation of the Trust.

Balances between OPG and its related parties are summarized below:

| *(millions of dollars)* | December 31 2019 | 2018 |
|---|---|---|
| Receivables from related parties | | |
| Hydro One | **1** | 1 |
| IESO − Electricity related receivables | **462** | 478 |
| Fair Hydro Trust [1] | **4** | - |
| IESO − Fair Hydro Trust [2] | **-** | 2 |
| PEC | **1** | 2 |
| Loan receivable | | |
| Fair Hydro Trust [2] | **917** | - |
| Financing receivables | | |
| IESO − Fair Hydro Trust [2] | **-** | 1,788 |
| Equity securities | | |
| Hydro One shares | **169** | 153 |
| Accounts payable, accrued charges and other payables | | |
| Hydro One | **2** | 4 |
| PEC | **1** | - |
| OEFC | **65** | 50 |
| Province of Ontario | **9** | 8 |
| IESO − Electricity related payables | **5** | 8 |
| IESO − Fair Hydro Trust [2] | **-** | 13 |
| Long-term debt (including current portion) | | |
| Notes payable to OEFC | **3,135** | 3,400 |

[1] Represents the receivable balance from interest income earned by OPG from its investment in the Trust's subordinated debt.

[2] The Fair Hydro Trust was deconsolidated from OPG's consolidated results effective May 9, 2019. As a result, certain balances are no longer recognized in OPG's consolidated balance sheet. Loan receivables from the Fair Hydro Trust represents OPG's investment in the subordinated debt issued by the Trust with a face value of $876 million, and is reported on OPG's consolidated balance sheet subsequent to the deconsolidation date. Refer to Note 5 for discussion on the deconsolidation of the Trust.

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, 2019, the Nuclear Segregated Funds held $1,426 million of Province of Ontario bonds (2018 – $1,399 million) and $11 million of Province of Ontario treasury bills (2018 – $2 million). As of December 31, 2019, the registered pension fund held $67 million of Province of Ontario bonds (2018 − $41 million) and $7 million of Province of Ontario treasury bills (2018 – nil). 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.

## 27. INVESTMENTS SUBJECT TO SIGNIFICANT INFLUENCE

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:

| *(millions of dollars)* | **2019** | **2018** |
|---|---|---|
| **PEC** | | |
| Current assets | **18** | 21 |
| Long-term assets | **209** | 225 |
| Current liabilities | **(5)** | (8) |
| Long-term liabilities | **(7)** | (6) |
| **Brighton Beach** [1] | | |
| Current assets | **-** | 7 |
| Long-term assets | **-** | 150 |
| Current liabilities | **-** | (18) |
| Long-term liabilities | **-** | (9) |
| Long-term debt | **-** | (58) |
| **Other** [2] | | |
| Aggregate net assets | **35** | 35 |
| Investments subject to significant influence | **250** | 339 |

[1] On August 30, 2019, OPG acquired the remaining 50 percent interest in the Brighton Beach GS and the balances were consolidated into OPG's consolidated financial statements. Refer to Note 4 for discussion on the acquisition.

[2] Represents minority interests in 13 entities in the US and 50 percent ownership interest in Ontario Charging Network L.P.

## 28. RESEARCH AND DEVELOPMENT

For the year ended December 31, 2019, research and development expenses of $51 million (2018 – $115 million) were charged to OM&A expenses.

## 29. NON-CONTROLLING INTEREST

### PSS Generating Station LP

PSS is a limited partnership between OPG and a corporation wholly owned by the Taykwa Tagamou Nation. The principal business of the partnership is the development, construction, ownership, operation and maintenance of the 28 MW Peter Sutherland Sr. hydroelectric GS on the New Post Creek. OPG owns approximately 67 percent of the equity interest in PSS. OPG consolidates the results of PSS in its consolidated financial statements and reports the equity interest of the other partner as non-controlling interest.

### Nanticoke Solar LP

Nanticoke Solar LP (NSLP), is a partnership between OPG, a corporation wholly owned by the Six Nations of the Grand River Development Corporation, and the Mississaugas of the Credit First Nation. The partnership operates a 44 MW solar facility at OPG's former Nanticoke GS site and adjacent lands. OPG owns 80 percent of the equity interest in NSLP. OPG consolidates the results of NSLP in its consolidated financial statements and reports the equity interest the other partners as non-controlling interest.

### Little Falls Hydroelectric Associates, LP

On October 7, 2019, OPG completed the acquisition of 100 percent of the equity in Cube Hydro. As a result, OPG acquired an 83 percent interest in Little Falls Hydroelectric Associates, LP, which operates the 14 MW Little Falls hydroelectric GS located in New York State, United States. OPG consolidates the results of Little Falls Hydroelectric Associates, LP in its consolidated financial statements and reports the equity interest of the other partners as non-controlling interest.