

**ONTARIO POWER GENERATION INC.**  
**ANNUAL INFORMATION FORM**  
**FOR THE YEAR ENDED DECEMBER 31, 2021**

March 10, 2022



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# 1 PRESENTATION OF INFORMATION

References in this Annual Information Form (AIF) to the “Company”, the “Corporation” or “OPG” are made to Ontario Power Generation Inc. Unless otherwise noted, the information contained in this AIF is as at or for the year ended December 31, 2021. Amounts are expressed in Canadian dollars unless otherwise indicated. The Glossary found at the end of this AIF contains certain terms defined throughout this AIF and abbreviations and acronyms that may not be otherwise defined in this document. This AIF is dated March 10, 2022.

Certain portions of the Company’s annual Management’s Discussion and Analysis dated March 10, 2022 (MD&A) and audited consolidated financial statements as at and for the year ended December 31, 2021, are incorporated by reference into this AIF as stated below. The MD&A and annual consolidated financial statements are available on SEDAR at [www.sedar.com](http://www.sedar.com) and on the Company’s website at [www.opg.com](http://www.opg.com). ***The above information is not, unless otherwise specifically stated, incorporated by reference into this AIF.***

Financial information is presented in accordance with United States generally accepted accounting principles (US GAAP). The Company also uses certain non-GAAP financial performance measures which 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 under US GAAP. For a detailed description of each of the non-GAAP measures 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* in the MD&A.

## 2 CAUTION REGARDING FORWARD-LOOKING INFORMATION

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

All forward-looking statements involve inherent assumptions, risks and uncertainties. All forward-looking statements could be inaccurate to a material degree. In particular, forward-looking statements may contain assumptions such as those relating to OPG's generating station (GS) performance, availability and operating lives, fuel costs, surplus baseload generation (SBG), 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 and other business expansion opportunities, 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 of America (United States or US), the continued application and renewal of energy supply agreements (ESAs) and other contracts for non-regulated facilities, foreign currency exchange rates, commodity prices, wholesale electricity market prices, 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, the COVID-19 pandemic, changes in the Company's workforce, renewal of union collective agreements, business continuity events, the weather, climate change, technological change, 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, earnings before interest, income taxes, depreciation and amortization, gross margin, Total Generating Cost (TGC) per megawatt-hour (MWh), 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 AIF are made only as of the date of this AIF. Except as required by applicable securities laws, OPG does not undertake to publicly update these forward-looking statements to reflect new information, future events or otherwise.

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

## 3 CORPORATE STRUCTURE

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### 3.1 INCORPORATION AND HEAD OFFICE

OPG was formed in April 1999 through the restructuring of Ontario Hydro's integrated electricity business. OPG was established under the *Business Corporations Act* (Ontario) (OBCA) and is wholly owned by the Province of Ontario (Province or Shareholder). OPG's various articles of incorporation, amalgamation and amendment are publicly filed with the Ministry of Government and Consumer Services. OPG and the Province are parties to a Memorandum of Agreement (MOA) that sets out OPG's role and responsibilities. Further details on the MOA are discussed in the section, *Interest of Management and Others in Material Transactions* under the heading, *Relationship with the Province and the OEFC*.

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

## 4 DESCRIPTION OF THE BUSINESS

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### 4.1 OVERVIEW

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity. As at December 31, 2021, OPG owned and operated two nuclear generating stations, 66 hydroelectric generating stations, two thermal generating stations, one solar facility and four combined-cycle gas turbine (combined cycle) plants in Ontario, Canada. The combined cycle plants are natural gas-fired facilities owned and operated through the Company's wholly-owned subsidiary operating as Atura Power. Through the Company's US-based wholly-owned subsidiary, OPG Eagle Creek Holdings LLC (Eagle Creek), OPG also wholly or jointly owned and operated 87 hydroelectric generating stations and held minority interests in 14 hydroelectric and two solar facilities in the US as at December 31, 2021. In addition, OPG owns two nuclear generating stations in Ontario, the Bruce A GS and the Bruce B GS (Bruce nuclear generating stations), which are leased on a long-term basis to, and operated by Bruce Power L.P. (Bruce Power).

OPG's proportionate share of in-service generating capacity and electricity generation volume from co-owned and minority-held facilities is included in the Company's generation portfolio statistics set out in this AIF and the MD&A. The Bruce nuclear generating stations are not included in the Company's electricity generation and other operating statistics set out in this AIF and in the MD&A.

Including its share of the co-owned and minority-held facilities, as at December 31, 2021, OPG's total in-service generating capacity was 18,958 megawatts (MW), of which 18,270 MW is located in Ontario and the remainder in the United States. OPG's in-service generating capacity in Ontario represents approximately 48 percent of installed generation capacity in Ontario's electricity system as reported by the Independent Electricity System Operator (IESO). OPG's in-service generating capacity as at December 31, 2021 excludes Unit 3 of the Darlington nuclear GS (Darlington GS). The unit, which has a generating capacity of 878 MW, was taken offline in September 2020 and is currently undergoing refurbishment as part of the four-unit Darlington Refurbishment project. In February 2022, OPG commenced the refurbishment of Unit 1 of the Darlington GS, following the unit's safe shutdown. For the year ended December 31, 2021, OPG's electricity generation in Ontario accounted for approximately 53 percent of the total energy generated and delivered to Ontario's electricity system, as reported by the IESO.

OPG operates in Ontario under electricity generation licences issued by the OEB, with expiry dates ranging from 2023 to 2038. OPG expects the licences to be renewed in the future.

OPG's core business operations primarily consist of nuclear electricity generation, renewable electricity generation, thermal electricity generation and management of nuclear by-products. OPG reports operating results in five business segments to provide information that is aligned with how management assesses business performance and, ultimately, how management decisions are made. The composition of OPG's reportable business segments effective as at December 31, 2021 is as follows:

- Regulated – Nuclear Generation;
- Regulated – Nuclear Sustainability Services;
- Regulated – Hydroelectric Generation;
- Contracted Hydroelectric and Other Generation; and
- Atura Power.

Set out below is a brief description of each of the business segments. Further information and the operating results for each of the business segments are included in the sections, *Business Segments* and *Discussion of Operating Results by Business Segment* in the MD&A.

The *Ontario Energy Board Act*, 1998 and *Ontario Regulation 53/05* provide that OPG receives regulated prices for electricity generated from the Darlington and Pickering nuclear generating stations, and the 54 hydroelectric facilities in Ontario prescribed for rate regulation (collectively, prescribed facilities or regulated facilities). OPG's regulated prices for these facilities are determined by the OEB. The operating results of these facilities are reported in the Regulated – Nuclear Generation and Regulated – Hydroelectric Generation business segments. The OEB is an independent, quasi-judicial tribunal that regulates market participants in Ontario's natural gas and electricity industries, and reports to the Legislature of the Province through the Ontario Ministry of Energy. OPG is Ontario's only electricity generator subject to rate regulation by the OEB. In November 2021, the Province amended *Ontario Regulation 53/05* to prescribe a small modular reactor (SMR) facility at the Darlington New Nuclear project (DNNP) site as a regulated facility by the OEB. Expenditures for a SMR at the DNNP site are included in the Regulated – Nuclear Generation business segment.

In the fourth quarter of 2021, the Regulated – Nuclear Waste Management business segment was renamed to the Regulated – Nuclear Sustainability Services business segment. This business segment reports the results of the Company's operations associated with the management of used nuclear fuel and low and intermediate level irradiated materials (referred to as low and intermediate level waste or L&ILW), the decommissioning of OPG's nuclear generating facilities, the management of nuclear fixed asset removal and nuclear waste management segregated funds (Nuclear Segregated Funds) and related activities including the inspection and maintenance of waste storage facilities.

The operating results of OPG's non-regulated generating facilities are reported in the Contracted Hydroelectric and Other Generation and Atura Power business segments. The Contracted Hydroelectric and Other Generation segment includes 12 hydroelectric stations, two thermal stations and one solar facility located in Ontario, as well as 87 wholly or jointly owned and operated hydroelectric generating stations located in the United States. The Atura Power business segment reports the results of Atura Power's operations, which include a fleet of four combined cycle plants in Ontario as well as business development activities related to low-carbon hydrogen production. Atura Power participates in the Ontario electricity market separately from OPG's other operations. In the fourth quarter of 2021, the Contracted Gas Generation business segment was renamed to the Atura Power business segment.

All of OPG's non-regulated assets in Ontario are subject to ESAs with the IESO or other long-term contracts. These contracts are generally designed to provide for recovery of operating costs and capital investment in the underlying facilities and a return on invested capital, subject to the facilities continuing to meet their contractual obligations. The IESO is a non-profit corporate entity governed by an independent board of directors appointed by the Province and is responsible for operating the electricity market and directing the operation of the bulk electrical system in Ontario.

While a number of the Company's generating facilities in the US are subject to energy and capacity supply contracts, and OPG continues to pursue new agreements where appropriate, the majority of OPG's facilities in the US currently earn revenue from wholesale electricity markets. Although revenue from the generating facilities supplying energy and capacity into US wholesale 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.

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

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## 4.2 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. OPG's strategic objectives describe the Company's long-term goals and areas of strategic focus. OPG's strategic objectives are as follows:

- People Powering the Future;
- Value Through Innovation and Efficiency;
- Putting Customers and Communities First; and
- Energy Industry Leader.

OPG's business imperatives describe the foundational elements of OPG's business, and represent areas in which OPG needs to continue to demonstrate excellence to enable achievement of its strategic objectives. OPG's business imperatives are as follows:

- Operational Excellence;
- Project Excellence;
- Financial Strength; and
- Social Licence.

The Company's strategic objectives are underpinned by OPG's commitment to being a leader in climate change action and workplace equity, diversity and inclusion (ED&I). OPG integrates Environmental, Social and Governance (ESG) principles throughout its corporate strategy and employs ESG considerations in its business conduct and decision-making. The company's commitment to leadership in climate change action and ED&I are two examples of this ongoing consideration.

For additional information regarding corporate strategic objectives and business imperatives, refer to the section, *The Company* under the heading, *Corporate Strategy* in the MD&A.

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## 4.3 ELECTRICITY INDUSTRY AND ELECTRICITY MARKETS

The electricity industry broadly comprises the following areas:

- Generation – the production of electricity;
- Transmission – the transfer of electricity across high-voltage power lines from generating facilities to local areas including cities and communities;
- Distribution – the delivery of electricity within local areas to homes and businesses using low-voltage power lines; and
- Energy markets and other services – the administration and development of an electricity wholesale market and the procurement of ancillary services ensuring efficient operation and allowing for the purchase and sale of electricity or equivalent financial products.

Electricity can be generated by large scale, multi-unit centralized facilities, or aggregated across multiple smaller sources of varying sizes, such as wind and solar farms, that have been integrated into the power system. Generating sources are either connected directly to the transmission system or embedded in distribution networks. Distributed generation involves production of electricity closer to end users and away from larger scale production facilities that require more transmission.

Sources are usually classified by:

- (i) the type of fuel used;
- (ii) capacity, typically expressed in MW; and
- (iii) dispatch mode (whether or not the electricity generated by a particular facility is dispatched to meet peak, intermediate or baseload demand).

The energy produced by a facility is generally expressed as its output over the time the facility operates, typically in terms of MWh.

Electricity is an essential commodity that cannot be stored without converting to other forms of energy, with some emerging technologies enabling storage capability for the purpose of time shifting. Electricity supply must instantaneously match demand to maintain the stability and reliability of the electrical power system. This is accomplished by coordinating the supply of and demand for electricity, a responsibility typically assigned to regional system operators or local balancing authorities. To ensure such balancing, some generators are needed to produce a constant supply of energy to meet ongoing energy needs (baseload generation), while others are needed to adjust energy output to match changes in demand (intermediate and peaking generation). Some generators such as wind and solar generate intermittently based on weather-related availability.

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

#### Ontario's Electricity Industry

OPG's predecessor, Ontario Hydro, served as a vertically integrated electric utility in Ontario. Following the adoption of a restructuring plan for Ontario's electricity industry pursuant to the *Energy Competition Act, 1998*, OPG purchased and assumed the electricity generation, wholesale energy and ancillary services businesses of Ontario Hydro effective April 1, 1999. Ontario's competitive electricity market was opened by the IESO in 2002. The market is used to manage the purchase and sale of wholesale electricity in the province.

The province's baseload electricity supply consists primarily of nuclear generating stations operated by OPG and Bruce Power and a number of baseload hydroelectric generating stations, with wind and solar generation available dependent on weather conditions. Facilities with intermediate and peaking generation capacity in Ontario include certain hydroelectric generating stations and thermal generating facilities, with the use of natural gas, oil and biomass as fuel.

Bruce Power commenced a multi-year refurbishment program for the Bruce nuclear generating stations in January 2020, with the first unit to undergo refurbishment, Unit 6 of the Bruce B GS. Units are temporarily removed from service when undergoing refurbishment. Refurbishment activities at the Bruce nuclear generating stations are expected to continue over the next decade.



Ontario's electricity demand as reported by the IESO was 133.8 terawatt hours (TWh) in 2021, excluding electricity exports out of the province. Economic restructuring, energy efficiency initiatives and increased output from embedded energy resources have enabled the province's electricity demand to remain stable over the past five years, with a decrease in 2020 due to the effects of the COVID-19 pandemic on electricity consumption patterns. Embedded generation reduces the demand supplied by grid-connected generation. Shorter-term fluctuations in electricity demand are impacted by variations in seasonal weather conditions.

#### Ontario's Electricity Market

Ontario's real-time energy supply needs are managed by a wholesale electricity market administered by the IESO, with a five minute Market Clearing Price and an Hourly Ontario Energy Price set by market offers or bids. The IESO receives hourly offers from electricity generators and importers to provide energy, along with bids to withdraw energy from a few flexible loads and exporters and then schedules the lowest-cost offers needed to meet demand every five minutes. OPG offers generation into the energy market and receive dispatch instructions from the IESO.

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

Surplus baseload generation is a system condition that occurs when electricity production that can be generated from baseload facilities exceeds demand. Baseload generation supply surplus in Ontario is managed by the IESO, mainly through generation reductions at hydroelectric and certain nuclear stations and other grid-connected renewable resources. The prevalence of SBG conditions is impacted by weather conditions which affect electricity demand, availability of wind and solar generation and, through the impact on water flows, the availability of baseload power. For additional information on SBG conditions, refer to the section, *Highlights* under the heading, *Electricity Generation* in the MD&A.

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

The IESO also administers the operating reserve markets and is responsible for procurement of other ancillary services. The objective of the operating reserve markets is to ensure that additional supply of energy is readily available to maintain power system reliability following an unforeseen event. Other ancillary services include regulation service, voltage control and reactive support, black start capability and other services required to maintain the reliability of the electricity system. OPG participates in the operating reserve markets and may provide other ancillary services to the IESO.

The IESO is progressing the final, detailed design stage 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.

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

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

### US Electricity Markets

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

Power generators in the restructured markets typically can sell electricity directly under bilateral contracts to retail customers or load serving entities or into wholesale markets administered by an independent regional system operator. There are seven regional system operators in the US covering the majority of national electricity consumption.

OPG's generating facilities in the US operate in both traditional and restructured markets. Restructured markets in which OPG's facilities operate are the Independent System Operator New England, Midcontinent Independent System Operator, New York Independent System Operator, PJM Interconnection LLC and California Independent System Operator. OPG's facilities operating in traditional markets are in regions overseen by the SERC Reliability Corporation (SERC). OPG's generating facilities in the US sell electricity through a combination of bilateral contracts with load serving entities and energy and capacity offers into the wholesale electricity markets.

In addition to administering the wholesale electricity markets and dispatching electricity to balance supply and demand, the regional system operators are responsible for ensuring reliable electricity system operation and resource adequacy. This includes ensuring the supply of ancillary services necessary for ongoing power system reliability, making system planning decisions and developing appropriate financial mechanisms to support availability of sufficient capacity to meet customers' needs. The Company's generating facilities in the US participate in the ancillary services and capacity markets in the jurisdictions in which they operate.

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

The *Public Utility Regulatory Policies Act of 1978* (PURPA) confers on qualifying generation projects (qualifying facilities) the right to sell power to an electric utility at the cost the utility would avoid by purchasing power from the qualifying generation project rather than generating it themselves or purchasing it from another source. Qualifying facilities also have the right to interconnect with an electric utility and receive relief from certain federal and state-level regulatory requirements. Qualifying projects include certain cogeneration facilities and certain small power production facilities, including those whose primary fuel source is renewable. Qualifying facilities that meet certain criteria are exempt from the requirement to obtain FERC market-based rate authorization. All of OPG's generating facilities in the US are either qualifying facilities and/or have obtained other necessary approvals and authorization (including market-based rate authorization) from FERC to operate and sell energy into the market. A number of bilateral contracts for these facilities are constituted by virtue of the facilities being qualifying facilities under the PURPA. The qualifying facility program is implemented at the state level and overseen by the FERC.

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

OPG Energy Trading (OPGET), a wholly-owned subsidiary of OPG, engages in US-based wholesale energy trading activities in the northeast US, including over-the-counter energy-related derivatives. OPGET retains FERC market-based rate authorization. OPG's US-based subsidiaries with hydroelectric operations engage in over-the-counter energy-related derivative markets as part of hedging activities.

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#### 4.4 REGULATED PRICING

The majority of OPG's electricity generation is from the Regulated – Nuclear Generation and Regulated – Hydroelectric Generation 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 (ROE) 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.

OPG's regulated prices comprise base regulated prices, rate riders to recover or repay approved regulatory deferral and variance account (regulatory account) balances and, as applicable, rate riders to recover or repay an interim period revenue shortfall or excess. An interim period revenue shortfall or excess arises in instances where a subsequent OEB decision results in a difference between final regulated prices retroactively effective for an interim period and the regulated prices in effect during that period on an interim basis. The OEB-authorized regulated prices for electricity generated from the regulated facilities for the period from January 1, 2020 to December 31, 2026 in effect as of the date of this AIF can be found in the section, *Revenue Mechanism for Regulated and Non-Regulated Generation* under the heading, *Regulated Generation* in the MD&A. The OEB-approved rate base levels, deemed equity percentage and formulaic rates of return on equity can be found in the section, *Core Business and Outlook* under the heading, *Financial Strength* in the MD&A.

### Base Regulated Prices

The base regulated prices in effect between June 1, 2017 and December 31, 2021 were established by the payment amounts order issued by the OEB in March 2018, reflecting the findings in the OEB's decision on OPG's 2017-2021 rate application issued in December 2017. The base regulated prices in effect beginning January 1, 2022 were established by the payment amounts order issued by the OEB in January 2022 reflecting the OEB's decisions and orders on OPG's 2022-2026 rate application issued during the second half of 2021. For further details on the outcomes of OPG's 2022-2026 rate application, refer to the section, *Rate Application Developments* under the heading, *Ontario Energy Board Decisions on OPG's Regulated Prices and Other Matters*.

For the regulated hydroelectric facilities, base regulated prices in effect from June 1, 2017 and December 31, 2021 were determined under an incentive ratemaking methodology by annually escalating the base regulated prices in effect prior to June 1, 2017, with some adjustments, using an OEB approved formula equal to an inflation factor based on indices published annually by the OEB, less a stretch factor adjustment. Pursuant to *Ontario Regulation 53/05*, the base regulated price for OPG's hydroelectric electricity generation (hydroelectric base regulated price) for the period from January 1, 2022 to December 31, 2026 has been set equal to the 2021 hydroelectric base regulated price.

The base regulated prices for OPG's nuclear electricity generation (nuclear base regulated price) beginning on June 1, 2017 are set using a rate smoothing approach that defers a portion, if any, 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 year is based on the OEB-allowed level of operating costs and a return of and on rate base, as reduced by a stretch factor amount under the custom incentive regulation framework for the nuclear facilities. 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. *Ontario Regulation 53/05* requires the OEB to authorize recovery of the amounts deferred in the Rate Smoothing Deferral Account, together with interest at a long-term debt rate reflecting OPG's cost of long-term borrowing approved by the OEB, over a period not to exceed ten years following the end of the Darlington Refurbishment project.

### Deferral and Variance Account Rate Riders

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 OPG's 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, 2019 to December 31, 2021 period were established by a combination of the OEB's March 2018 payment amounts order, and the OEB's decision and order issued in February 2019 on OPG's August 2018 deferral and variance account clearance application. The rate riders to recover or repay approved balances in regulatory accounts effective January 1, 2022 were established by the OEB's January 2022 payment amounts order. Descriptions of OPG's deferral and variance accounts can be found in Note 7 of OPG's 2021 audited consolidated financial statements.

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## **4.5 WATER RIGHTS**

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

### International Rivers

Six of OPG hydroelectric generating stations subject to OEB rate regulation are directly or indirectly supplied by two major international waterbodies, Lake Erie, via the Niagara River and Welland Canal, and the St. Lawrence River, and are subject to treaties between Canada and the United States relating to water use. These stations represent approximately 44 percent of OPG's total in-service hydroelectric generating capacity in Ontario.

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

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

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

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

### Canadian Interprovincial Rivers

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

### Ontario Interior Rivers

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

Eight of the 56 stations are located on the Trent and Rideau Waterways and are operated pursuant to licences from the Government of Canada. These licences with Parks Canada and are set to expire in December 2059. Ten of the 56 stations are not subject to leases or licences. A land use permit issued for the Peter Sutherland Sr. GS remains in effect while a waterpower lease for the site is prepared by the NDMNRF.

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

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

### Ontario Dams

OPG's Safe Operations Policy stipulates that OPG dams will meet all applicable dam safety legislation and take into consideration best practices as recommended in guidelines published by the Canadian Dam Association as well as other appropriate national and international risk management practices. In Canada, all non-federally owned dams fall under provincial jurisdiction, with the exception of dams situated in interprovincial and international boundary waters and canals. The majority of OPG's dams located in Ontario fall within the jurisdiction of the Province, with 20 dams falling within the jurisdiction of the Province of Québec and 13 dams associated with the Trent-Severn and Rideau Waterways falling under federal jurisdiction administered by Parks Canada. In addition, the International Joint Commission established under the *Boundary Waters Treaty of 1909* has an oversight role for dams and associated works on international boundary waters, including the St. Lawrence River and the Niagara River.

The Province regulates dams under the LRIA administered by the NDMNRF. The legislation requires NDMNRF approval for activities such as the construction, alteration, improvement or repair of dams. In 2011, the MNRF published a revised set of Technical Guidelines for dams, following a period of public consultation. The Technical Guidelines represent the current government standards for dam safety. OPG practices in the area of dam safety and public safety around dams exceed the minimum requirements outlined in the Technical Guidelines.

The LRIA regulations and the Technical Guidelines allow the NDMNRF to enter into an agreement with a dam owner related to the application of the Technical Guidelines. In 2019, OPG entered into such an agreement with the NDMNRF which includes provisions allowing OPG to pilot 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.

The Quebec Ministry of Sustainable Development, Environment, and Fight Against Climate Change is responsible for the *Quebec Dam Safety Act (2002) and Regulations*. This legislation covers OPG's dams on the Ottawa River and, in addition to routine requirements for dam surveillance and emergency management, prescribes specific reporting requirements to the Ministry related to periodic dam safety reviews. OPG's last formal submission was made in December 2016, with the dam safety review reports accepted by the Ministry as meeting all of the requirements. The next submission is required in 2026.

Parks Canada published their guidance document related to dam safety, Directive for Dam Safety Program of Parks Canada Dams and Water Retaining Structures, in 2009. The document applies to OPG's dams located on federal waterways administered by Parks Canada, and closely aligns with the Canadian Dam Association guidelines.

Currently, there is no federal or provincial regulation with respect to public safety around dams that specifically addresses safety issues relating to changes in operating water levels, discharges from the hydroelectric or dam facilities and other waterways-based hazards posed by such facilities. The *Canadian Navigable Waters Act* (Canada) requires OPG to obtain approvals for the installation of all in-water works, such as safety booms and buoys associated with the Company's waterways public safety program.

#### United States Rivers and Dams

Any hydroelectric power plant that was constructed on or after August 26, 1935 and is located on navigable waters or federal lands, uses surplus waters from a federal dam, or affects interstate commerce in the US operates under the FERC's jurisdiction. The FERC authorizes hydropower projects either by issuing a licence or, in the case of some smaller projects, by determining that the project is exempt from licensing but authorized to operate. Licences typically are issued for terms ranging from 40 to 50 years. Before the end of each term, the licensee must apply for a new licence term. The relicensing process typically requires approximately five to six years to complete. All but one of OPG's 87 hydroelectric generating facilities in the US fall under FERC's jurisdiction. The FERC has issued licences to 70 of these generating facilities and has exempted 16 others from licensing. Twenty-five out of the 70 licensed facilities are currently in various stages of the relicensing process.

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

The FERC oversees dam and public safety associated with hydropower facilities within its jurisdiction. The FERC's requirements for ensuring dam safety include site specific requirements for dam surveillance and inspection, requirements for periodic independent third-party engineering evaluations of the safety of individual facilities, requirements for development of emergency action plans, and reporting requirements to the FERC. The FERC also has guidelines in place to assist owners in managing public safety around dams that include both physical controls in the form of fencing, safety booms, operational controls, and materials to educate the public and raise awareness of the hazards associated with the operation of the hydroelectric facilities. All but one of OPG's 87 hydroelectric facilities in the US are subject to the FERC's dam safety regulations, with one facility subject to regulation and oversight by the state of Wisconsin.

Additional details on OPG's dam safety and waterways public safety programs are found in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Workplace Safety and Public Safety – Dam Safety and Waterways Public Safety*.

## 4.6 BUSINESS OPERATIONS

### 4.6.1 Nuclear Generation

#### Overview of Nuclear Generating Facilities

OPG owns and operates two nuclear generating stations, the results of which are reported in the Regulated – Nuclear Generation business segment. The following are the two nuclear generating stations OPG owned and operated as at December 31, 2021:

Generating Station	Location	Operating Units	In-Service Capacity (MW)
Darlington <sup>1</sup>	Clarington, Ontario	3	2,634
Pickering <sup>2</sup>	Pickering, Ontario	6	3,094

<sup>1</sup> As at December 31, 2021, the Darlington GS comprises three operating units and one unit, Unit 3, which is undergoing refurbishment since September 2020. Unit 1 has commenced refurbishment in February 2022. All four Darlington units have been in service since the early-1990s. As at December 31, 2021, the total in-service generating capacity of the three operating units was 2,634 MW. Each unit has a generating capacity of 878 MW.

<sup>2</sup> The Pickering nuclear GS (Pickering GS) comprises six operating units and two units in a permanent safe shutdown state. Four of the eight Pickering GS units originally went into service in the 1970s. A decision was made by Ontario Hydro in the late 1990s to place these four units in voluntary lay-up. In 2003 and 2005, respectively, two of the four laid-up units were returned to commercial operation, with the two remaining units placed in a permanent safe shutdown state. The other four operating units have been in service since the mid-1980s.

Both the Darlington and Pickering nuclear generating stations have been designed to operate at full power as baseload generating facilities. The generating performance of OPG's nuclear generating stations is expressed using the Unit Capability Factor, which is the amount of energy a generating unit is capable of producing expressed as a percentage of its maximum output assuming no external constraints such as transmission limitations. Unit Capability Factor results for the Darlington and Pickering nuclear generating stations are discussed in the section, *Discussion of Operating Results by Business Segment* under the heading, *Regulated – Nuclear Generation Segment* in the MD&A. There are currently no regulatory accounts that mitigate the impact of generation performance of the nuclear stations on OPG's revenue from the base regulated prices.

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

#### Nuclear Generation Technology

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

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



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

There are currently no heavy water plants in Canada. OPG believes that its existing inventory of heavy water will be sufficient to replenish supplies as a result of normal operating losses at its nuclear generating stations, including the refurbishment of the Darlington GS. OPG also believes that sufficient quantities of heavy water are available for possible changes in operating conditions or for potential new nuclear generating facilities.

#### Nuclear Fuel Procurement

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

#### Nuclear Regulation

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

A fundamental principle in nuclear regulation is that the licensee bears the responsibility for safe operation, with the CNSC setting safety objectives in areas such as radiation protection and physical security for nuclear generating stations and the transport of radioactive materials. The CNSC verifies compliance with the licence and performs audits and inspections of the licensee's performance against these objectives. The CNSC issues guidance documents to assist licensees in complying with regulatory requirements. Requirements specified in these guidance documents have been incorporated into the design and operating documents for OPG's nuclear generating stations.

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

All of OPG's nuclear power reactor operating licences and waste facility operating licences are current and up to date. In October 2021, the CNSC approved OPG's application to renew its ten-year site preparation licence for the potential construction of new nuclear reactors at the Company's DNNP site with up to 4,800 MW of generating capacity. Current licences have been granted by the CNSC and are in effect for the following facilities:

Facility	Licence Type	Date Issued	Expiry Date
Darlington Waste Management Facility <sup>1</sup>	Operating	March 30, 2016	April 30, 2023
Darlington Nuclear Generating Station	Operating	January 1, 2016	November 30, 2025
Western Waste Management Facility <sup>2</sup>	Operating	June 1, 2017	May 31, 2027
Pickering Nuclear Generating Station <sup>3</sup>	Operating	September 1, 2018	August 31, 2028
Pickering Waste Management Facility	Operating	September 1, 2018	August 31, 2028
Darlington New Nuclear Project <sup>4</sup>	Site Preparation	October 12, 2021	October 11, 2031

<sup>1</sup> An application for the renewal of the Darlington Waste Management Facility operating licence was submitted to the CNSC in December 2021. The licence renewal process continues in 2022.

<sup>2</sup> The Western Waste Management Facility is located at the Bruce nuclear generating stations' site.

<sup>3</sup> The Pickering GS licence allows for commercial operation of the station to December 31, 2024.

<sup>4</sup> Construction and operation of new nuclear reactors at the DNNP site is subject to the CNSC's regulatory approval through a separate application and licensing process, which would include public participation.

Further details on the operating licence for the Pickering GS and OPG's optimized operations plan for the station are discussed in the section, *General Development of the Business* under the heading, *Nuclear Business Developments – Optimized Operations Plan for Pickering Nuclear Generating Station*.

The Canadian nuclear sector is subject to rigorous regulatory oversight by the CNSC, which includes the requirement for OPG to implement and maintain a fitness for service program for pressure tubes, including limits on hydrogen equivalent concentration. In July 2021, during Bruce Power's fuel channel inspection program, higher-than-anticipated hydrogen equivalent concentration was measured on two nuclear units at the Bruce nuclear generating stations. Results showed higher concentration in a limited, localized volume in the upper portion of the pressure tube. Although OPG does not operate the Bruce nuclear generating stations, in late July 2021, the CNSC issued an order requiring both OPG and Bruce Power to seek authorization from the CNSC prior to the restart of nuclear units following any outage that results in the cool down of the heat transport system. Following a review of evidence and the approval process, in November 2021, the CNSC confirmed that OPG satisfied the terms of the order, and consequently, OPG's nuclear generating units are no longer subject to the order and have the CNSC's authorization to restart nuclear units following any planned or unplanned outages.

The CNSC publishes an annual report on the regulatory oversight and safety performance for nuclear power generating sites. The report assesses how well licensees are meeting regulatory requirements and program expectations in areas such as human performance, radiation and environmental protection, and emergency management and fire protection at Canada's nuclear power plants and waste management facilities. The most recent annual report, for the 2019 year, was issued by the CNSC in the fourth quarter of 2021. In the CNSC's 2019 report, CNSC staff determined that all 14 Safety and Control Areas for the Darlington GS, the Pickering GS and the Darlington, Pickering and Western waste management facilities met CNSC staff's expectations.

In 2017, the CNSC approved regulatory document *REGDOC 2.2.4 – Fitness for Duty – Managing Alcohol and Drug Use* for use at Canadian high-security nuclear power plants. This regulatory document sets out requirements for managing fitness for duty of workers in relation to alcohol and drug use, including for-cause alcohol and drug testing for workers in safety-sensitive and safety-critical positions, and random alcohol and drug testing for workers holding safety-critical positions. Following a public consultation period on the change to the regulatory document, the CNSC staff recommended a revised regulatory document to the CNSC for approval, and in November 2020, the CNSC approved the regulatory document *REGDOC 2.2.4 – Fitness for Duty, Vol. II: Managing Alcohol and Drug Use* (version 3) (REGDOC 2.2.4) for use at Canadian high-security nuclear sites, with an effective date of January 22, 2022. In July 2021, OPG put into effect a fitness for duty policy on managing alcohol and drug use, which implements the requirements of REGDOC 2.2.4, with the exception of random testing, which was required to begin by January 22, 2022. On January 21, 2022, following a request for an injunction filed by unions representing workers in the nuclear industry, the Federal Court of Canada ordered that the implementation of random and pre-placement testing under REGDOC 2.2.4 is stayed, and that OPG is restrained from implementing or continuing these types of testing, pending the final disposition of the unions' Application for Judicial Review.

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

#### Nuclear Generating Station Life

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

#### Nuclear Facility Planning

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

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

OPG's practices impacting the performance of its operating nuclear stations are audited regularly by WANO, with identified areas for improvement acted upon with priority.

In the fourth quarter of 2019, OPG hosted a 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.

In the fourth quarter of 2020, OPG hosted a WANO peer evaluation for the Darlington 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 results of the evaluation maintained Darlington's excellent standing.

In the fourth quarter of 2021, OPG hosted a WANO peer 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 station continues to operate at high levels of safety.

In November 2021, the Darlington GS received an Excellence Award from the Institute of Nuclear Power Operations, the highest achievement award in nuclear safety and reliability. The Darlington GS received this award for the fifth consecutive time, as a result of the Company's 2020 WANO peer review evaluation. The Excellence Award recognizes nuclear power plants that have achieved the top performance category in the nuclear industry. The continued safe and reliable operation of the Pickering GS was also recognized in October 2020 with an Excellence Award from the Institute of Nuclear Power Operations.

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

The outage cycle determines the typical number of planned outages at each nuclear generating station in a particular year. The Darlington GS is on a 36-month outage cycle, where each of the four units typically undergoes an outage every three years, resulting in one or two outages per year for the station. The Pickering GS is on a 30-month outage cycle. In addition, the CNSC currently requires all units at each station to be shut down every 10 to 12 years to allow for inspection and maintenance on the station vacuum building, containment systems and other safety systems.

#### Nuclear Ancillary Operations

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

## *Medical Isotopes*

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

In 2021, Laurentis Energy Partners (LEP), a wholly-owned subsidiary of OPG, began to produce high-purity Helium-3 (He-3), a rare isotope used in quantum computing, neutron research, border security and medical imaging, from tritium stored at the Darlington GS. Helium-3 is a non-radioactive, stable gas and is extracted and purified from the tritium containers at the Darlington GS using a custom-designed tool. LEP provides technical, operational and management services related to nuclear and hydroelectric generation, production of medical isotopes and other innovative solutions.

For further details on OPG's new business developments in the area of medical isotopes, refer to the section *General Development of the Business* under the heading, *New Business Developments – Collaboration for Production of Medical Isotopes*.

## Bruce Power Refurbishment and Bruce Lease Agreement

OPG leases the four-unit Bruce A (Units 1 to 4) and the four-unit Bruce B (Units 5 to 8) nuclear generating stations and associated lands and facilities to Bruce Power on a long-term basis. The stations are located in the Municipality of Kincardine, Ontario on the shore of Lake Huron. Units 1 and 2 at the Bruce A GS were refurbished by Bruce Power under a refurbishment agreement with the IESO and returned to service in 2012. Under an updated refurbishment agreement between the IESO and Bruce Power announced in December 2015, Bruce Power is proceeding with the refurbishment of the six un-refurbished units of the Bruce nuclear generating stations. In order to facilitate Bruce Power's refurbishment plans, the lease agreement between Bruce Power and OPG (Bruce Lease) and related agreements were amended to extend Bruce Power's future options to renew the lease up to the end of 2064.

While Bruce Power is responsible for operating all of the leased units, OPG is responsible for the management of the used nuclear fuel and L&ILW associated with the Bruce nuclear generating facilities, as well as the decommissioning of the facilities at the Bruce nuclear generating stations' site. These obligations on the part of OPG are recovered from Bruce Power through annual rent payments and volumetric fees for nuclear waste management under the Bruce Lease and related agreements. Pursuant to the lease agreement, Bruce Power must return the two Bruce nuclear generating stations to OPG together, in a defueled and de-watered state. OPG also receives fees from Bruce Power for heavy water detritiation and certain other services.

Any L&ILW resulting from the refurbishment of the Bruce nuclear generating units that is determined to be non-routine per the existing waste management contract between Bruce Power and OPG requires an additional agreement to compensate OPG for managing these materials. In 2018, OPG and Bruce Power executed a supplemental agreement to enable OPG to recover costs associated with the receipt, storage and disposal of non-routine steam generator and re-tube waste relating to the Unit 6 refurbishment at the Bruce B GS.

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

#### 4.6.2 Renewable Generation

##### Overview of Hydroelectric Generating Facilities

OPG's hydroelectric generation fleet comprises 66 owned and operated hydroelectric generating stations in Ontario and, through Eagle Creek, 87 wholly or jointly owned and operated hydroelectric generating stations located throughout the United States.

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

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

As at December 31, 2021, OPG's regulated hydroelectric facilities in Ontario had a total in-service generating capacity of 6,420 MW and the non-regulated hydroelectric facilities in Ontario had a total in-service generating capacity of 1,058 MW. OPG's hydroelectric stations in Ontario range in age from the Peter Sutherland Sr. GS which commenced commercial operations in 2017 to the DeCew Falls I GS, which is over 120 years old. Certain hydroelectric stations have shared operations, including the R.H. Saunders and Chats Falls generating stations, which operate under joint operating agreements with the New York Power Authority and Hydro-Québec, respectively.

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

Generating Facility	Expiry Date
Lac Seul and Ear Falls generating stations	February 2059
Healey Falls GS	April 2060
Sandy Falls, Wawaitin, Lower Sturgeon and Hound Chute generating stations	December 2060
Little Long, Harmon, Smoky Falls and Kipling generating stations <sup>1</sup>	January 2064
Peter Sutherland Sr. GS	March 2067

<sup>1</sup> These facilities are also known as the Lower Mattagami generating stations.

The generating performance of OPG's hydroelectric generating stations in Ontario is expressed using plant availability. Hydroelectric availability is represented by the percentage of time the generating unit is capable of providing service, whether or not it is actually generating electricity, compared to the total time for the respective period, weighted by unit capacity. Hydroelectric plant availability results for the Regulated – Hydroelectric Generation and the Contracted Hydroelectric and Other Generation business segments are discussed in the section, *Discussion of Operating Results by Business Segment* under the headings, *Regulated – Hydroelectric Generation Segment* and *Contracted Hydroelectric and Other Generation Segment*, respectively, in the MD&A.

OPG operates and maintains Ontario-based hydroelectric facilities in regional operations groups. The hydroelectric stations operated and maintained by each of the two regional operations groups, the Western Region and the Eastern Region, as at December 31, 2021 are as follows:

Region	River System	Generating Stations		In-Service Capacity (MW)
Eastern	Abitibi River	• Abitibi Canyon	• Otter Rapids	4,413
	Madawaska River	• Arnprior • Barrett Chute • Calabogie	• Mountain Chute • Stewartville	
	Matabitchuan River	• Matabitchuan		
	Mattagami River	• Harmon * • Kipling * • Little Long * • Lower Sturgeon *	• Sandy Falls * • Smoky Falls * • Wawaitin *	
	Montreal River	• Chute • Hound Chute *	• Lower Notch	
	New Post Creek	• Peter Sutherland Sr. *		
	Ottawa River	• Chats Falls • Chenaux	• Des Joachims • Otto Holden	
	South River	• Bingham Chute • Elliot Chute	• Nipissing	
	St. Lawrence River	• R.H. Saunders		
	Sturgeon River	• Crystal Falls		
	Wanapitei River	• Coniston • McVittie	• Stinson	
Western	Aguasabon River	• Aguasabon		3,065
	Beaver River	• Eugenia		
	English River	• Caribou Falls • Ear Falls *	• Lac Seul * • Manitou Falls	
	Kamanistikwia River	• Kakabeka Falls	• Silver Falls	
	Mississippi River	• High Falls		
	Muskoka River	• Big Eddy • Hanna Chute • Ragged Rapids	• South Falls • Trethewey Falls	
	Niagara River	• Sir Adam Beck I • Sir Adam Beck II	• Sir Adam Beck Pump	
	Nipigon River	• Alexander • Cameron Falls	• Pine Portage	
	Rideau River	• Merrickville		
	Severn River	• Big Chute		
	Trent River	• Auburn • Frankford • Hagues Reach • Healey Falls * • Lakefield	• Meyersburg • Ranney Falls • Seymour • Sidney • Sills Island	
	Welland River	• DeCew I	• DeCew II	
	Winnipeg River	• Whitedog Falls		

\* Subject to an ESA.

OPG wholly or jointly owns and operates 87 hydroelectric generating stations and 89 dams located on 50 river systems throughout the United States. The results of these stations are reported in the Contracted Hydroelectric and Other Generation business segment. These facilities had a total in-service generating capacity of 678 MW, excluding minority-held facilities, as at December 31, 2021. OPG's energy and capacity contracts in the US have expiration dates ranging from 2022 to 2041.

OPG operates and maintains its US-based hydroelectric generating stations across 19 states in the following six operational divisions as at December 31, 2021:

Operational Division	States	Number of Generating Stations	In-Service Capacity (MW)
East	<ul style="list-style-type: none"> <li>• Massachusetts</li> <li>• New York</li> </ul>	15	81
Mid-Atlantic	<ul style="list-style-type: none"> <li>• New Jersey</li> <li>• New York</li> <li>• West Virginia</li> </ul>	12	64
Midwest	<ul style="list-style-type: none"> <li>• California</li> <li>• Colorado</li> <li>• Illinois</li> <li>• Michigan</li> </ul>	31	84
Northeast	<ul style="list-style-type: none"> <li>• Minnesota</li> <li>• Oregon</li> <li>• Wisconsin</li> <li>• Washington</li> </ul>	18	92
Southeast	<ul style="list-style-type: none"> <li>• Maine</li> <li>• North Carolina</li> <li>• Virginia</li> </ul>	6	234
West Pennsylvania	<ul style="list-style-type: none"> <li>• New Hampshire</li> <li>• Ohio</li> </ul>	5	123

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

#### Hydroelectric Facility Planning

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

OPG continues to execute on a turbine and generator overhaul program for its hydroelectric generating units across Ontario. Over the next 20 years, the estimated \$2.5-billion program will ensure that the Company's hydroelectric fleet can secure decades of clean hydroelectric generation that will help OPG meet the province's future clean power needs and meet the Company's climate change goals.

OPG currently operates five staffed control centres across Ontario that provide remote control and monitoring for all of OPG's Ontario-based hydroelectric generating facilities. These remote control centres are designed to minimize the number of staffed control rooms throughout the province, reduce control system failures and increase the amount of information available for production planning.

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



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

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

### Water Management

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

### Gross Revenue Charge and Water Rental Payments

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

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

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

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

Water rental payments are made to the Government of Québec, as prescribed by an agreement ratified by the Governments of Ontario and Quebec pertaining to the sharing of the water powers of the Ottawa River. Water rental charges payable to the Province of Québec and the GRC payments are each based on one-half of the energy produced at three regulated OPG hydroelectric generating stations located on the Ottawa River. The current rate amending agreement was signed in 2020 and is in effect until 2043. Under the agreement, OPG also provides compensation to Hydro-Québec for the generating value at OPG's stations on the Ottawa River attributed to the water diverted into the Ottawa River through the Dozois Reservoir in Québec. OPG shares in the operation and maintenance costs of the dam enabling the Dozois diversion.

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

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

Further details on water rights can be found under the heading, *Water Rights*.

#### Overview of Nanticoke Solar Facility

Solar generating facilities collect and convert the sun's emitted light into electricity. OPG owned and operated one solar facility, in Ontario, as at December 31, 2021:

Generating Facility	Location	In-Service Capacity (MW)
Nanticoke	Nanticoke, Ontario	44

The Nanticoke solar facility, placed in service in 2019, operates under a Large Renewable Procurement I (LRP I) contract with the IESO through Nanticoke Solar LP (NSLP) and is located at the former coal-fired Nanticoke GS site and adjacent lands. The LRP I contract for the facility expires in March 2039. The facility is operated and maintained under OPG's Western Region operations group. The results of the Nanticoke solar facility are reported in the Contracted Hydroelectric and Other Generation business segment.

### 4.6.3 Thermal Generation

#### Overview of Thermal Generating Facilities

OPG's thermal facilities are comprised of the following as at December 31, 2021:

Generating Station	Location	Fuel Type	In-Service Capacity (MW)	Contract Expiry Date <sup>1</sup>
Atikokan <sup>2</sup>	Atikokan, Ontario	Biomass	205	July 2024
Brighton Beach <sup>2</sup>	Windsor, Ontario	Natural Gas	570	July 2024
Lennox <sup>3</sup>	Greater Napanee, Ontario	Oil or Natural Gas	2,100	April 2029
Portlands Energy Centre <sup>4</sup>	Toronto, Ontario	Natural Gas	562	April 2029
Halton Hills	Halton Hills, Ontario	Natural Gas	683	August 2030
Napanee	Greater Napanee, Ontario	Natural Gas	900	March 2040

<sup>1</sup> All contracts are ESAs with the IESO with the exception of the Brighton Beach GS, which operates under an energy conversion agreement with Shell Energy North America (Canada) Inc.

<sup>2</sup> Negotiations to extend the energy supply contract with IESO is underway consistent with Ontario Minister of Energy's letter to the IESO dated November 10, 2021.

<sup>3</sup> In December 2021, the Lennox ESA was renewed and extended to April 30, 2029.

<sup>4</sup> The ESA includes an option for Atura Power or the IESO to exercise, in 2028, an extension of the expiry date of the ESA to 25 years should certain conditions be met.

These stations, which typically 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 are an important component of maintaining the current and future reliability of the electricity system. The electricity generation from these assets is also necessary to enable variable sources of renewable generation in the province such as wind and solar. The continued operation of the stations provides Ontario with over 5,000 MW of generation capacity. In the fourth quarter of 2021, the ESA for the Lennox GS was renewed with a new expiry date of April 2029, enabling the facility to continue providing its electricity generating capacity to Ontario.

The Atikokan GS is the largest generating station in North America fueled by 100 percent biomass, while the Lennox GS is Canada's largest oil/gas-fueled power plant. The Atikokan and Lennox generating stations are operated and maintained under OPG's Western Region operations group. The results of these generating stations are reported in OPG's Contracted Hydroelectric and Other Generation business segment.

The generation performance of OPG's thermal generating stations reported in the Contracted Hydroelectric and Other Generation business segment is measured using the Thermal Equivalent Forced Outage Rate (EFOR). EFOR is measured by the ratio of time a generating unit is forced out of service by unplanned events, including any forced deratings, compared to the amount of time the generating unit was available to operate. EFOR results for the thermal stations are discussed in the section, *Discussion of Operating Results by Business Segment* under the heading, *Contracted Hydroelectric and Other Generation Segment* in the MD&A.

The Brighton Beach GS, Halton Hills GS, Napanee GS and Portlands Energy Centre are operated by Atura Power and their results are reported in the Atura Power business segment. These facilities are combined cycle plants that use natural gas-fueled turbines combined with heat recovery steam generators to drive steam turbines to produce electricity. Each station's design includes two natural gas-fueled generators and one steam turbine. The generating performance of Atura Power's combined cycle plants is measured using Thermal Availability. Thermal Availability is calculated on a three-year rolling average basis and is measured as the percentage of time a generating unit is capable of providing service, whether or not it is actually generating electricity, compared to the total time for the respective period, averaged by the number of facilities owned and operated through Atura Power. Thermal Availability results for the combined cycle plants are discussed in the section, *Discussion of Operating Results by Business Segment* under the heading, *Atura Power Segment* in the MD&A.

#### Thermal Fuel Procurement

Due to the relatively low capacity factor of the Lennox GS, natural gas is purchased on the spot market, other than a small volume of fixed term natural gas required for non-generation operational services. Oil for the Lennox GS is contracted for and purchased in compliance with the Lennox ESA inventory limits. Fuel selection at the station is based on market and fuel economics.

Annual procurement of biomass fuel quantities for the Atikokan GS is pre-determined by the station's ESA. Agreements are in place with suppliers for the purchase of all biomass fuel pellets needed to provide fuel for the Atikokan GS for the remaining duration of its ESA. The wood pellets used at the station are produced from sustainably managed forests.

Pursuant to the Brighton Beach GS energy conversion agreement, Shell Energy North America (Canada) Inc. owns and trades the electricity produced by the facility in return for the supply of gas and the fees payable under the agreement. For the Halton Hills GS, Napanee GS and Portlands Energy Centre, Atura Power has contracted for long-term gas transportation, storage and delivery services. Commodity purchases are made daily to meet the production profile requirements for these facilities.

#### Thermal Facility Planning

Facility planning approaches for thermal facilities are designed to identify necessary capital and operating and maintenance expenditures for each thermal facility. These approaches aim to sustain facility availability for the remaining service life through station reinvestment within constraints imposed by technical, financial, safety and system requirements, as well as regulatory and contractual limits. Periodic engineering reviews of major systems are conducted to identify performance issues, provide reinvestment recommendations where appropriate and ensure that regulatory, safety and operating standards continue to meet expectations. Thermal outage planning leverages agile asset management programs to prioritize equipment risks and optimize work program timing. Projects are undertaken at thermal stations that are expected to achieve an appropriate return within the service life of the stations. Where feasible and economic, opportunities are sought to reduce GHG emissions at the combined cycle plants.

## Decommissioning of Former Thermal Generating Stations

OPG has recognized and carries on its balance sheet a liability to cover future expenditures to decommission and dismantle each of its thermal generating stations at the end of their estimated service lives. This provision is not funded and is estimated on the basis of station closure. The estimates for these liabilities are based on a review of required decommissioning, clean-up and restoration activities, underlying economic assumptions and anticipated timing of these activities in line with current end-of-life assumptions. OPG has a comprehensive program to ensure the safe, secure and environmentally responsible decommissioning of the thermal stations. Refer to the section, *General Developments of the Business* under the heading, *Thermal Business Developments* for further details on OPG's thermal decommissioning activities.

### **4.6.4 Nuclear Sustainability Services**

#### Overview

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

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

The results of the Company's nuclear waste management operations are reported in the Regulated – Nuclear Sustainability Services business segment and consist of the following activities:

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

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

#### Federal Government Policy

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

informed and willing host community. The NWMO is currently undertaking a site selection process for the used fuel DGR and has indicated that it expects to complete the process by about 2023.

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

In November 2020, the Canadian government launched a process to review and modernize Canada's approach to the management of Canada's nuclear by-products, consisting of two elements. The first element is to review Canada's existing Radioactive Waste Policy framework, with public participation and the goal of ensuring that the framework is consistent with international standards and best practices. The second element is to develop Canada's integrated strategy for the safe management of irradiated wastes, which, at the federal government's request, is being led by the NWMO. In February 2022, Natural Resources Canada issued a draft policy, Modernizing Canada's Policy for Radioactive Waste Management and Decommissioning, for public comment. The NWMO has stated that its recommendations for the Integrated Strategy for Radioactive Waste are expected to be presented to the federal government in 2022, informed by the NWMO's engagement process and the modernized Radioactive Waste Policy direction from Natural Resources Canada. OPG is participating in the federal government and NWMO's engagement processes and is monitoring developments related to the Integrated Strategy for Radioactive Waste as part of its process to explore solutions for the safe long-term management of the Company's L&ILW. OPG also continues to advance initiatives to safely and efficiently reduce the environmental footprint of L&ILW requiring long-term disposal by maximizing opportunities for processing, volume reduction, and recycling of clean materials.

#### Current Practices and Assumptions

##### *Station Decommissioning*

OPG's planning assumption for the decommissioning of its nuclear generating stations is a deferred dismantlement strategy. Under this strategy, each station will be defueled and de-watered immediately after it has ceased operations and prepared for the period of safe storage and monitoring. OPG intends to monitor the station for approximately 30 years while in safe storage, after which time the station will be dismantled and the site restored over a period of approximately ten years. This strategy has been communicated to the CNSC through regular updates of OPG's preliminary decommissioning plans and liability estimates for the nuclear generating stations. OPG's nuclear operating licences have been issued based on, amongst other considerations, CNSC's understanding of this strategy.

##### *Used Nuclear Fuel*

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

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

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

### *Low and Intermediate Level Waste*

The majority of OPG's L&ILW is stored at the Western Waste Management Facility (WWMF). A smaller volume of ILW is stored at each of the waste management facilities at the Darlington and Pickering sites.

Prior to 2020, OPG's planning assumption for the long-term management of L&ILW was the placement of these materials in a separate L&ILW DGR facility to be constructed on the lands adjacent to the WWMF and operated by OPG. In light of the January 2020 vote by members of the Saugeen Ojibway Nation (SON) not to support OPG's proposed L&ILW DGR at this site, the Company upheld its earlier commitment not to proceed with the project without SON's support. In June 2020, the federal Minister of the Environment and Climate Change accepted OPG's request to formally terminate the federal environmental assessment process for the project, which was subsequently cancelled. OPG is exploring alternative solutions for the safe long-term management of L&ILW and will engage with key stakeholders, Indigenous communities and interested municipalities on any new site selection process. OPG will continue to evaluate underlying assumptions and estimates based on available information, including developments related to the federal government's ongoing review of Canada's Radioactive Waste Policy framework and development of an integrated strategy for the long-term management of irradiated wastes in Canada. In the meantime, the updated cost estimates used to establish the Company's obligations for the long-term management of L&ILW are based on a conceptual long-term disposal strategy assumption.

### Funding Mechanisms

On April 1, 1999, Ontario Hydro's obligation for nuclear facilities decommissioning and nuclear waste management was transferred to OPG. The responsibility for funding the obligations for nuclear facilities decommissioning and the long-term nuclear waste management between the Province and OPG is described in the ONFA. The key provisions of the ONFA are:

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

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

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

measurement of the underlying costs, including from factors beyond the Company's control, which may increase or decrease materially over time.

The limits to OPG's financial exposure under the ONFA with respect to the life cycle cost of long-term management of the first 2.23 million bundles of used nuclear fuel are as follows (all amounts are expressed in January 1, 1999 present value dollars):

- (i) OPG will bear all costs up to \$4.6 billion;
- (ii) OPG and the Province will share, on an equal basis, costs incurred between \$4.6 billion and \$6.6 billion;
- (iii) OPG will be responsible for 10 percent of the costs incurred between \$6.6 billion and \$10 billion, and the Province will be responsible for the remaining 90 percent; and
- (iv) the Province will be wholly responsible for any costs above \$10 billion.

OPG's funding liability for these used fuel costs under the ONFA is capped at \$5.9 billion in January 1, 1999 present value dollars, which is equivalent to approximately \$19.5 billion in December 31, 2021 present value dollars. OPG is responsible for all incremental costs relating to the management of used nuclear fuel bundles in excess of the 2.23 million threshold. As at December 31, 2021, approximately 2.90 million bundles of used fuel had been produced. The 2.23 million fuel bundles threshold represents the estimated total life cycle bundles based on the initial estimated useful lives of the nuclear stations assumed in the ONFA.

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

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 the funds are managed to achieve, in the long-term, the target return rate based on the discount rate specified in the ONFA, the rates of return earned in a given period may be subject to various external factors including financial market conditions and changes in the Ontario Consumer Price Index, both of which can be volatile and cause short-term fluctuations in the Company's financial results. OPG jointly oversees the investment management of the Nuclear Segregated Funds with the Province.

In accordance with *Ontario Regulation 53/05*, the OEB is required to ensure that OPG recovers the revenue requirement impact of its nuclear waste management and nuclear decommissioning liabilities arising from the current approved ONFA reference plan. This includes costs related to the portion of OPG's liabilities associated with the Bruce nuclear generating stations. The OEB has authorized regulatory accounts to record the impact associated with changes in OPG's nuclear waste management and nuclear decommissioning liabilities relative to amounts reflected in regulated prices. Under the OEB-approved cost recovery methodologies, OPG's net income is exposed to the rate of return risk for the portion of the Nuclear Segregated Funds related to the Darlington and Pickering nuclear generating stations.

### *Contributions to the Nuclear Segregated Funds*

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

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

Based on the approved ONFA reference plan for the years 2017-2021, OPG has not been required to make overall contributions to either of the Nuclear Segregated Funds. An updated ONFA reference plan, for the years 2022 to 2026, was approved by the Province in March 2022, with an effective date of January 1, 2022 (2022 ONFA Reference Plan). Based on the life cycle funding liabilities per the 2022 ONFA Reference Plan, both the Decommissioning Segregated Fund and the Used Fuel Segregated Fund continue to be fully funded. Therefore, while an updated contribution schedule based on the 2022 ONFA Reference Plan is subject to the Province's approval, no overall contribution requirements to either of the Nuclear Segregated Funds are anticipated based on this update. Contributions to either or both funds may be required in the future should the funds be in an underfunded position when a new ONFA reference plan is prepared. Such may be the case as a result of future variability in fund asset performance due to volatility inherent in financial markets and economic conditions, as well as changes in funding liability estimates or the tax treatment of fund earnings. OPG's required contributions could increase, for example, if cost estimates increased, if the operating lives of the nuclear stations were revised, if fund assets earned less than the target rate of return, or if the income earned in the funds became subject to income tax.

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

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

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

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



## Provincial Guarantee

In accordance with the NSCA, the CNSC requires OPG to have sufficient funds available to discharge its existing nuclear waste management and nuclear decommissioning obligations. The CNSC process requires the CNSC financial guarantee requirement to be updated once every five years and for OPG to provide an annual report to the CNSC on the assumptions, asset values and resulting financial guarantee requirements. The CNSC financial guarantee requirement calculation takes into account used nuclear fuel and L&ILW 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 2022 year 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 2022 year, 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.

## 4.7 ENVIRONMENTAL, SOCIAL, GOVERNANCE AND SUSTAINABILITY

### Overview of Environmental, Social, Governance and Sustainability

OPG integrates the principles of ESG as a framework through which it can evaluate and drive improvements in the environmental and social impacts of its operations. The implementation of the framework is supported by a system of organizational controls, procedures and governance. The OPG Board of Directors (Board) has, as part of its mandate, the responsibility to oversee OPG's approach to ESG work and reporting. This includes issues, risks and opportunities that fall under the three pillars of Environmental, Social and Governance, illustrated below. The categories represented below under each of the pillars are not all encompassing and are reassessed on an ongoing basis.



OPG recognizes that operating in a sustainable and inclusive manner is directly connected to business success and is expected by the customers, the Company's stakeholders and Shareholder. As Ontario's largest clean energy provider, the Company strives to be a leader in sustainability and climate change action through the implementation of operational and growth strategies that minimize the Company's environmental footprint, support reductions in GHG emissions, and increase resilience to climate change impacts, while taking into account impacts on customers. Central to OPG's ESG and Sustainability focus is its commitment to becoming a global ED&I best practice leader by 2030.

### 4.7.1 Environment

OPG has implemented an environmental management system (EMS) in accordance with the Company's Environmental Policy. 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 EMS is reviewed annually to ensure that it remains appropriate to the purpose and context of the Company's operations. Environmental performance targets are set as part of the annual business planning process and are based on past performance and external benchmarking to promote continuous improvement. The most significant environmental aspects of OPG's

operations include: spills, chemical and thermal emissions to water, water flow and level changes, radiological emissions, generation of L&ILW, displacement of fossil fuels, enhancement and disruption of wildlife habitat, and fish impingement and entrainment.

Details regarding OPG's Environmental Policy can be found in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Environmental* in the MD&A. 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](http://www.opg.com). ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website is incorporated by reference herein.***

#### Environmental Compliance

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

#### Protection of Fish

As part of its ongoing operations, OPG employs a number of measures to protect fish and fish habitat that may be impacted by its activities. The typical threats to fish are impingement and entrainment, migration barriers and station thermal emissions. A variety of compensatory measures may be used, including: water flow alterations, trap and transport programs, a fish ladder, stocking programs, a fish diversion system, top-draw hydroelectric dam gates, station effluent temperature limits and habitat creation. In addition, OPG is working with other electricity producers and fisheries regulators to research potential eel passage technologies at hydroelectric facilities. OPG is also working with its industry partners and Fisheries and Oceans Canada on the implementation of fish and fish habitat protection measures under the *Fisheries Act* amendments made in 2019 and is developing a compliance strategy.

#### Biodiversity and Habitat Stewardship

The generation of electricity can have an impact on biodiversity, either directly through habitat loss and fragmentation or indirectly through emissions to the environment. OPG is committed to managing its sites in a manner that strives to maintain significant natural areas and associated species of concern. OPG also works with its community and Indigenous partners to support off-site regional ecosystems, biodiversity and climate change adaptation through science-based habitat stewardship. OPG's regional biodiversity program strategically funds and promotes efforts to protect and restore biodiversity in areas of Ontario where genetic, species or ecosystem diversity has been most impacted, and substantive threats remain.

#### Climate Change

OPG recognizes the importance of developing and implementing effective climate change adaptation measures to ensure ongoing safe, reliable and cost effective operation of its generating fleet over the medium and long-term. Through its business strategies, the Company is also focused on maximizing the significant decarbonizing potential of its assets and the broader electricity sector as a means of mitigating climate change.

OPG's Climate Change Plan was released in November 2020 and commits the Company to being a North American clean energy leader and a driver of efficient, economy-wide decarbonization. The Climate Change Plan outlines OPG's goals and a range of solutions to help achieve decarbonization while balancing economic and environmental benefits and electricity system needs. For further details on the Climate Change Plan, refer to the section, *General Development of the Business* under the heading, *General Developments – Climate Change Plan*.

OPG monitors and reports GHG emissions from its facilities in accordance with the regulatory requirements set out by the Ontario Ministry of the Environment, Conservation and Parks, and Environment and Climate Change Canada.

#### Radiological Emissions

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

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

#### Awards and Recognitions

In June 2021, OPG was named, for the ninth consecutive year, as one of the Best 50 Corporate Citizens in Canada by Corporate Knights. The annual corporate rankings are based on performance data covering resource, employee and financial management, clean revenue and investment, and supplier performance with an emphasis on transparency, in order to recognize companies leading in sustainability.

In November 2021, OPG's Climate Change Plan was recognized by the Canadian Electricity Association (CEA) with a Sustainable Electricity award for Continuous Performance Improvement. OPG was also recognized with a CEA Centre of Excellence Net-Zero by 2050 award for its SMR project at the DNNP site, which supports OPG's goals to help achieve decarbonization while balancing economic and environmental benefits and electricity system needs. For further details on OPG's SMR development activities, refer to the section, *General Development of the Business* under the heading, *New Business Developments – Development of Nuclear Small Modular Reactors*.

#### **4.7.2 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 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.

#### Workplace Health and Safety

OPG is committed to achieving excellent performance in the area of workplace safety 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 2021, 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.

Since early 2020, OPG has been monitoring and responding to the global outbreak of COVID-19, and taking action to protect the health and safety of the Company's employees, partners and communities against its spread. In December 2021, OPG was recognized with an Essential Service Employer Pandemic Hero award for supporting the mental health of its employees during the COVID-19 pandemic. This national award was created by the Ontario Shores Centre for Mental Health Sciences, the Canadian Mental Health Association, and the Mental Health Commission of Canada. For further details of OPG's response to COVID-19, refer to the section, *General Development of the Business* under the heading, *General Developments – Response to COVID-19 Pandemic*.

Additional details of OPG's workplace health and safety programs and performance are discussed in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Safety* in the MD&A.

#### Nuclear Radiation Safety

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

Radiation exposures to station personnel and the public are limited by station design and adherence to approved operating procedures. Over the years, OPG has been a leader in applying the principles of keeping radiation doses as low as reasonably achievable. OPG's internal operating limits for occupational exposure are set well below the regulatory limits to ensure that the regulatory limits are not exceeded. OPG's operating targets for radiological emissions are set at even more restrictive levels and typically represent small fractions of the regulatory limits. For further details of OPG's annual dose exposure to the public, refer to the section, *Environmental, Social, Governance and Sustainability* under the heading, *Safety* in the MD&A.

In June 2020, OPG's Pickering Radiation Protection team was presented with the 2020 John S. Hewitt Team Achievement Award from the Canadian Nuclear Society and the Canadian Nuclear Association. The award recognized the team's creation, implementation and industry sharing of a new indicator that measures radiation protection human performance.

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

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 Darlington and Pickering nuclear generating stations, in order to provide detailed guidance and direction. The Province approved the latest PNERP Master Plan in 2017 and subsequently published the Implementing Plans for the Darlington and Pickering nuclear generating stations. 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.

#### Dam Safety and Waterways Public Safety

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

In addition to effectively managing the safety of dams against catastrophic failure, OPG has developed a number of technical standards and procedures concerning public safety around dams, and materials to educate the public and increase awareness of the safety risks associated with the operation of the hydroelectric facilities. This includes the implementation of control measures in the form of signage, safety booms, buoys, fencing and audible alerts at the appropriate facilities. These measures are actively managed to maintain their effectiveness. OPG's water safety public education program in Ontario includes educational advertisements on various media platforms and engagement of agencies and stakeholders, such as the NDMNRF, Ontario Provincial Police, Life Saving Society, Ontario Waterpower Association and others.

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

In the US, dam safety for hydropower dams is regulated by the FERC, which has published detailed guidelines supporting the regulations on dam safety. The FERC's regulatory regime includes a system of oversight that includes annual inspections by the regulator and a number of routine submissions as well as periodic dam safety reviews. Consistent with the FERC regulations, OPG's subsidiaries in the US have in place Owners Dam Safety Programs (ODSPs) to govern dam and public safety processes and operations. The ODSPs document the commitment to dam and public safety, define roles and responsibilities and set out how various aspects of the program are managed. The ODSPs are subject to independent audit to ensure the managed system remains effective in addressing potential risks posed by the facilities. OPG is advancing investments in waterway and dam safety upgrades at its US-based facilities in order to ensure a continuous improvement path toward the Company's Ontario-based assets.

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

#### **4.7.3 Human Capital**

##### Workforce Resourcing Strategies

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.

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, successful delivery of major projects, including the Darlington Refurbishment project, and advancement of business growth opportunities, including SMRs. 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, which is expected to lead to a reduction in the Company's workforce.

As part of the strategy to develop and engage employees and to build leadership talent in support of the Company's long-term success, OPG has an active succession planning program, 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.

### Employees

OPG's average number of regular employees and average number of seasonal, casual construction and non-regular employees (Other Employees) during the year ended December 31, 2021 was as follows:

Business Segment	Regular Employees	Other Employees <sup>1</sup>	Total Employees
Regulated – Nuclear Generation <sup>2</sup>	5,837	2,391	8,228
Regulated – Hydroelectric Generation	1,129	81	1,210
Contracted Hydroelectric and Other Generation	744	52	796
Atura Power	127	13	140
Other	206	62	268
<b>Total</b>	<b>8,043</b>	<b>2,599</b>	<b>10,642</b>

<sup>1</sup> Includes term-based unionized employees that may be hired in place of regular unionized employees for positions likely to be eliminated in the future as a result of the shutdown of the Pickering GS, pursuant to collective agreements.

<sup>2</sup> Includes employees associated with the Regulated – Nuclear Sustainability Services business segment.

Most of OPG's workforce supports the Company's Ontario-based operations. As at December 31, 2021, approximately 86 percent of OPG's regular and term-based employees in Ontario were represented by a union. The Power Workers' Union (PWU) membership includes station operators, technicians, skilled trades, clerical staff and security personnel. The Society of United Professionals (Society) membership includes supervisors, professional engineers, scientists and other professionals. The current one-year collective agreement between the PWU and OPG expires on March 31, 2022. Negotiations for a new renewal collective agreement began in March 2022. The current two-year collective agreement between the Society and OPG expires on December 31, 2023. Additionally, there are two collective agreements between the PWU and Atura Power expiring on November 16, 2023 for the Brighton Beach GS and December 31, 2022 for Atura Power's other facilities. The Society does not represent employees in Atura Power.

Bargaining rights with the craft unions that perform construction work at OPG's generating facilities in Ontario 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, as applicable. Most of these collective agreements currently have multi-year terms that expire in 2025, with one agreement expiring in 2023. The EPSCA is a voluntary association of owners and contractors who perform work in Ontario's electrical power systems sector.

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.

#### 4.7.4 Equity, Diversity and Inclusion

OPG is committed to workplace ED&I as part of a culture in which all employees, contractors and business partners are treated with fairness and respect. OPG recognizes that ED&I is integral to building a diverse, committed, healthy and agile workforce in a dynamic and changing industry, and is therefore fundamental to achieving the Company's strategic goals.

With the support of its employees, host communities and business partners, the Company continues to advance its ED&I Promise to accelerate equity, celebrate diversity, and foster a culture of inclusion.

OPG's ED&I Promise captures the Company's ED&I priorities, as follows:

- Accelerate Equity – Ensure the Company's workforce is reflective of the communities we serve;
- Celebrate Diversity – Attract, retain and celebrate employees with unique backgrounds, skills and characteristics; and
- Foster a Culture of Inclusion – Create inclusive workplace cultures where everyone can connect, belong and grow.

The Company's commitment to ED&I is supported by corporate strategy and reinforced through the Company's Code of Business Conduct.

In March 2022, OPG will launch its 10-year ED&I Strategy externally. The ED&I Strategy provides a roadmap to guide the Company's journey towards ED&I excellence further by embedding ED&I principles and measuring ED&I outcomes in organizational processes and decision-making. In the third quarter of 2020, OPG's Board endorsed the ED&I Strategy, which was developed and executed internally over the past several years, and in 2021, stakeholders across the enterprise were engaged to ensure the Company's approach responds to and incorporates employee experiences and perspectives. The ED&I Strategy can be found on the Company's website [www.opg.com](http://www.opg.com).

Further details on OPG's ED&I commitment and initiatives are found in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Equity, Diversity and Inclusion* in the MD&A. Additional information related to the Company's commitment to advance diverse representation at the Board and senior management levels can be found in the section, *Corporate Governance* under the heading, *Diversity in Leadership*.

#### 4.7.5 Indigenous Relations

OPG owns and operates electricity generation assets within the treaty and traditional territories of Indigenous Peoples across Ontario. OPG's Indigenous Relations Policy and Reconciliation Action Plan formalize the Company's commitment to working with Indigenous communities to foster positive and mutually beneficial relationships that will create social and economic benefits through partnership and collaboration. OPG seeks to establish these relationships based on a foundation of respect, transparency and mutual responsibility. 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 proximate to the Company's present and future operations.

In August 2021, OPG received the Gold Designation under the Canadian Council for Aboriginal Business' Progressive Aboriginal Relations (PAR) program. PAR Gold companies demonstrate sustained leadership in Indigenous relations and a commitment to working with Aboriginal businesses and communities, through innovative programs and engagement, as determined by a jury of Indigenous professionals.

The Aboriginal and Treaty rights of Indigenous communities are recognized and affirmed in the *Constitution Act, 1982*. OPG may be subject to claims by Indigenous communities or other Indigenous groups and individuals. These claims may stem from project 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, or the absence of legal permits, rights-of-way or easements. Legal precedents created by court rulings may impact negotiations and resolution of past grievances. To date, OPG has resolved past grievance claims that resulted in Full Settlement Agreements with 21 First Nation communities.

For further details on OPG's Reconciliation Action Plan, refer to the section, *General Development of the Business* under the heading, *General Developments – OPG's Inaugural Reconciliation Action Plan*. Additional details on OPG's Indigenous Relations Policy, engagement and initiatives can be found in the section, *Environmental, Social, Governance and Sustainability* under the heading, *Indigenous Relations* in the MD&A.

### Partnerships

OPG currently has four commercial partnerships with Indigenous communities related to new generation developments. OPG's first such partnership became operational in 2009 as part of the Obishikokaang Waasiganikewigamig/Lac Seul hydroelectric GS project, with the Lac Seul First Nation becoming a 25 percent equity holder in the project. This first-of-its-kind partnerships was subsequently used by OPG as a model for developing other renewable energy projects in partnership with Indigenous communities.

The signing of the "Amisk-oo-Skow" Agreement with the Moose Cree First Nation in 2010 marked OPG's second generation-development partnership with an Indigenous community. Through a wholly-owned corporation, Moose Cree First Nation owns a 25 percent interest in the Lower Mattagami River hydroelectric generation project.

In 2015, OPG and Coral Rapids Power Corporation, a corporation wholly owned by the Taykwa Tagamou Nation, partnered to develop the Peter Sutherland Sr. hydroelectric GS, through PSS Generating Station LP.

OPG and a subsidiary of the Six Nations of Grand River Development Corporation partnered to develop the Nanticoke solar facility, through NSLP, in 2016. The Six Nations of Grand River Development Corporation, through its subsidiary, and the Mississaugas of the Credit First Nation, through a wholly owned corporation, own 15 percent and 5 percent interests, respectively, in NSLP.

Additionally, in 2019, OPG completed a renewable micro grid in partnership with the Kiashke Zaaging Anishinaabek, also known as the Gull Bay First Nation, to help the community to reduce its diesel use.

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## 4.8 INSURANCE

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

OPG also purchases or requires contractors to purchase discretionary insurance for construction projects. For the Darlington Refurbishment project, the owner-controlled insurance program consists of wrap-up liability, course of construction and marine transit insurance.



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

The NLCA requires all operators of nuclear generating stations in Canada to maintain specified amounts of nuclear liability insurance purchased from a federal government approved insurer or other equivalent forms of financial security approved by the federal government. Under the NLCA, OPG is currently required to maintain \$1 billion per incident of nuclear liability insurance for each of its nuclear installations as defined by the NLCA, for which there is no deductible amount. The Darlington GS site and the Pickering GS site are considered to be two separate nuclear installations under the NLCA. OPG is also required to maintain \$13 million per incident of nuclear liability insurance for the WWMF. OPG is not responsible for purchasing nuclear liability insurance for the Bruce nuclear generating stations as Bruce Power is required to purchase such insurance. OPG continues to maintain nuclear liability insurance or other forms of financial security that have been approved by the federal government equal to the required liability limits.

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

The Government of Canada is undertaking its first five-year review of the \$1 billion liability limit for power reactors under the NLCA, and its enabling regulations. The existing \$1 billion liability limit for power reactors must be re-assessed at least once every five years and, based on the assessment, the Government of Canada may increase the amount by regulation. Any requirement to increase the liability limit would take effect after the review and apply to all of Canada's operators of nuclear power reactors, including OPG.

## 5 GENERAL DEVELOPMENT OF THE BUSINESS

The following is a summary of key developments in OPG's business since January 2019.

### 5.1 ACQUISITION DEVELOPMENTS

Date	Description of Development
<b>Eagle Creek</b>	
2019 - 2020	On October 7, 2019, through Eagle Creek, 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. Total consideration paid, net of assumed debt, was approximately US\$845 million (C\$1.12 billion). Cube Hydro was a hydropower platform with 385 MW of in-service generating capacity across 19 hydroelectric facilities located throughout the northeastern and southeastern US at acquisition date. The acquisition provided additional scale to the Company's US hydroelectric business acquired as part of Eagle Creek Renewable Energy, LLC in 2018 and the operations of the two platforms have now been merged. The combined organization operates under the Eagle Creek Renewable Energy name.
2021	On December 30, 2021, through Eagle Creek, OPG acquired a 48 MW hydroelectric facility located in Racine, Ohio from AEP Generation Resources Inc. at a purchase price of approximately US\$88 million (C\$112 million), subject to customary working capital and other adjustments. The Racine hydroelectric GS is operated by Eagle Creek.
<b>Brighton Beach Generating Station</b>	
2019	On August 30, 2019, OPG acquired the remaining 50 percent interest in the combined-cycle gas turbine 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 is operated under Atura Power. Further information on the facility can be found in the section, <i>Description of the Business</i> under the heading, <i>Business Operations – Thermal Generation</i> .
<b>Portfolio of Combined Cycle Plants in Ontario</b>	
2020	On April 29, 2020, OPG, under Atura Power, closed the previously announced acquisition of a portfolio of combined cycle plants in Ontario from TC Energy Corporation (TC Energy) for approximately \$2.8 billion. The portfolio included the Napanee GS, the Halton Hills GS and the remaining 50 percent interest in the Portlands Energy Centre. The acquisition closed following receipt of various regulatory approvals and the commencement of commercial operations at the Napanee GS. In connection with the closing of the acquisition, certain post-closing activities at the Napanee GS were identified as an obligation of TC Energy. Further information on the facilities can be found in the section, <i>Description of the Business</i> under the heading, <i>Business Operations – Thermal Generation</i> .
2021	In March 2021, Atura Power and TC Energy executed a settlement agreement for a reduction of \$220 million to the purchase price consideration in exchange for the settlement of certain post-closing terms and conditions, including TC Energy's obligations in respect of certain post-closing activities previously identified at the Napanee GS. The proceeds under the settlement agreement were received in March 2021.

## 5.2 GENERAL DEVELOPMENTS

Date	Description of Development
<b>Renewal of Collective Agreements</b>	
<i>Power Workers' Union</i>	
2019	Following the expiry of a previous collective agreement between the PWU and OPG on March 31, 2018 and the Government of Ontario's direction, in December 2018, that a renewal collective agreement be concluded through a mediation/arbitration process, the mediation/arbitration process for the renewal collective agreement concluded on April 3, 2019 with the issuance of the arbitrator's decision. The arbitrator ordered the parties to implement the previously reached but not ratified tentative renewal agreement, with an expiry date of March 31, 2021.
2021 - 2022	In January 2021, a one-year renewal agreement between the PWU and OPG expiring on March 31, 2022 was ratified by the PWU membership. Negotiations for a renewal collective agreement began in March 2022. In December 2021, a two-year collective agreement expiring on November 16, 2023 was ratified by the PWU membership at Atura Power's Brighton Beach GS.
<i>Society of United Professionals</i>	
2019	A previous collective agreement between the Society and OPG expired on December 31, 2019 and negotiations to renew the collective agreement took place in the second quarter of 2019. In November 2019, after the parties were unable to reach an agreement during negotiations, they proceeded to interest mediation/arbitration and on November 5, 2019, the appointed arbitrator issued an arbitration award for a two-year collective agreement covering the period from January 1, 2020 to December 31, 2021.
2021	In anticipation of the expiry of the previous collective agreement between the Society and OPG on December 31, 2021, negotiations to renew the collective agreement took place in the second half of 2021. After the parties were unable to reach a full agreement during negotiations, they proceeded to interest mediation/arbitration. On December 6, 2021, the Society and OPG received the final interest arbitration award for a two-year collective agreement between the parties, covering the period from January 1, 2022 to December 31, 2023.
<b>OPG's Inaugural Reconciliation Action Plan</b>	
2021	In October 2021, OPG launched its inaugural Reconciliation Action Plan. Building on the Company's long-standing commitment to Indigenous communities, the action plan outlines the Company's overall goals and the supporting actions OPG will take to advance reconciliation in a number of key areas. OPG has set a goal of growing the Company's existing economic impact for Indigenous communities and businesses to \$1 billion over the next 10 years through ongoing operations, projects and initiatives. The Company will also develop strategic approaches to recruitment with the objective of increasing the representation of Indigenous employees across all levels at OPG. The action plan serves as a roadmap for how the Company will work with Indigenous communities, businesses and organizations as well as other key partners in advancing reconciliation.
<b>Response to the COVID-19 Pandemic</b>	
2020 - 2021	<p>OPG has been monitoring and responding to the global outbreak of COVID-19, the disease caused by a novel strain of coronavirus, and taking action to protect the health and safety of the Company's employees, partners and communities against its spread. Although OPG's core business has not been fundamentally affected by the pandemic, the Company has been focused on mitigating ongoing risks to its workers, communities and essential operations posed by COVID-19 and ensuring the continued safe and reliable supply of electricity from its generating facilities and effective execution of major projects.</p> <p>Beginning in March 2020 and through the height of the initial onset of the pandemic, OPG postponed the start of refurbishment execution activities on Unit 3 of the Darlington GS, which subsequently commenced in September 2020. In connection with the resulting changes to the Darlington Refurbishment project schedule, a planned cyclical maintenance outage for Unit 1 of the Darlington GS was deferred from the fall of 2020 to February 2021. Further details on OPG's response to the COVID-19 pandemic can be found in the section, <i>Risk Management</i> under the heading, <i>Risks to Achieving Operational Excellence – COVID-19 Pandemic</i> in the MD&amp;A.</p>

Date	Description of Development
<b>Climate Change Plan</b>	
2020	<p>In November 2020, OPG released its Climate Change Plan as part of the Company's commitment to being a North American clean energy leader. Aligned with the Company's business strategies, the Climate Change Plan outlines OPG's goals and a range of solutions aimed at helping to drive efficient, economy-wide decarbonization, while balancing economic and environmental benefits and electricity system impacts. As part of the plan, OPG has set a goal of being a net-zero carbon company by 2040. In addition, OPG will strive to be a leading energy innovation company, advancing technologies and solutions to help the markets where it operates achieve net-zero carbon economies by 2050.</p> <p>Deploying a SMR at the DNNP site, investing in the electrification of the transportation sector, and increasing the generating capacity of hydroelectric generation assets are among the central elements of OPG's plan to displace further carbon emissions and achieve its net-zero carbon goals. Additionally, the plan identifies initial adaptation actions to strengthen the resilience of the Company's generating fleet to the impacts of climate change as part of the overall electricity system.</p> <p>For further details on the Climate Change Plan, refer to the section, <i>Environmental, Social, Governance and Sustainability</i> under the heading, <i>Climate Change</i> in the MD&amp;A. Further details on SMR development and electrification activities can be found under the heading, <i>New Business Developments</i>.</p>
<b>Clarington Campus Plan</b>	
2019	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.
2021	In September 2021, following a competitive procurement process, OPG selected a contractor to execute the engineering, procurement and construction for a new building as part of the Clarington corporate campus.
<b>Sale of Non-Core Real Estate Sites</b>	
2021 - 2022	OPG has executed agreements to sell the premises located at 800 Kipling Avenue in Toronto, Ontario, and 2655 Lakeshore Road, in the Town of Port Hope, Ontario, as part of a corporate real estate strategy to reduce the existing real estate footprint. The sales are expected to be completed in the first half of 2022. For further details, refer to the section <i>Core Business and Outlook</i> under the heading, <i>Operational Excellence – Sale of Non-Core Real Estate Sites</i> in the MD&A.

Date	Description of Development
<b>Ontario Fair Hydro Plan</b>	
	<p>In 2017, the previous Government of Ontario passed the <i>Ontario Fair Hydro Plan Act, 2017</i> (Fair Hydro Act) to establish Ontario's Fair Hydro Plan with the objective of deferring and refinancing a portion of the Global Adjustment costs charged to electricity consumers over a longer period of time. The legislation appointed OPG as the Financial Services Manager under the Fair Hydro Act and conveyed upon it statutory obligations, including the creation of one or more financing entities that may fund the Global Adjustment costs deferred by the IESO 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 Fair Hydro Trust (the Trust) was established as the financing entity contemplated by the Fair Hydro Act. The majority unitholder and beneficiary of the Trust is a wholly-owned subsidiary of OPG. 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. In order for the Trust to finance Investment Interest acquired from the IESO, it incurred senior debt from capital markets and subordinated debt from OPG.</p>
2019	<p>The <i>Fixing the Hydro Mess Act, 2019</i> received Royal Assent on May 9, 2019 and came into force in November 2019. This legislation amended various statutes related to energy in Ontario, including the Fair Hydro Act. Under this 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. On this basis, OPG deconsolidated the Trust from its consolidated financial results effective May 9, 2019.</p>

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### 5.3 RATE APPLICATION DEVELOPMENTS

Date	Description of Development
<b>Ontario Energy Board Decisions on OPG's Regulated Prices and Other Matters</b>	
2019	<p>On February 21, 2019, the OEB issued a decision and order that approved a full settlement agreement reached by OPG and intervenors on OPG's August 2018 requested disposition of regulatory accounts, which resulted in the approval to recover a net total of \$1.3 billion comprising balances recorded in these accounts 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 would be collected after 2021. The \$1.3 billion in approved balances included \$433 million that had been previously approved but not yet authorized for collection by the OEB.</p> <p>In making its February 2019 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 &amp; OPEB Cash Versus Accrual Differential Deferral Account.</p> <p>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.</p>
2020	<p>In March 2020, the OEB issued an order establishing a deferral account to record lost revenues and incremental costs related to the COVID-19 pandemic, effective March 24, 2020. The deferral account applied to OPG.</p> <p>In November 2020, the OEB issued an order establishing a variance account to record any regulatory earnings achieved by OPG's regulated operations for the 2021 year that are more than 300 basis points over the ROE levels reflected in the OEB-approved 2021 base regulated prices. The OEB's order stated that if there is a balance in the account for 2021, the OEB would subsequently hold a hearing to determine the portion of the balance, if any, that should be refunded to customers. The 2021 regulatory earnings will be finalized and reported to the OEB by July 31, 2022. OPG does not expect to exceed the 300 basis points threshold for 2021.</p> <p>In November 2020, the Province amended <i>Ontario Regulation 53/05</i> to establish a deferral account to record certain incurred costs associated with the shutdown of the Pickering GS. In accordance with the regulation, the Pickering Closure Costs Deferral Account will record any employment-related costs, and non-capital costs related to third party service providers incurred by OPG that arise from Pickering GS closure activities, whether such costs are incurred before or after the closure of a Pickering GS generating unit. The regulation requires the OEB to authorize recovery of amounts recorded in the deferral account over a period not to exceed ten years following the permanent cessation of electricity generation at the Pickering GS, subject to a prudence review.</p> <p>In November 2020, the Province amended <i>Ontario Regulation 53/05</i> to set OPG's hydroelectric base regulated price for the period from January 1, 2022 to December 31, 2026 equal to the 2021 hydroelectric base regulated price.</p> <p>In December 2020, the OEB approved the annual formulaic adjustment to increase the base regulated price for the regulated hydroelectric facilities to \$43.88/MWh effective January 1, 2021, as proposed by OPG.</p> <p>In December 2020, OPG filed a five-year application with the OEB for new base regulated prices for production from the nuclear facilities, determined under a custom incentive regulation framework, with a proposed effective date of January 1, 2022.</p>

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Date	Description of Development
2021 - 2022	<p>In August 2021, the OEB issued an oral decision approving a settlement agreement reached by OPG and intervenors on most of the issues in OPG's 2022-2026 application for new regulated prices (Settlement Agreement). In November 2021, the OEB issued a written decision on the unsettled issues in the application, along with written reasons for approving the Settlement Agreement. In January 2022, the OEB issued the final payment amounts order establishing regulated prices effective January 1, 2022 that reflect the Settlement Agreement and the OEB's findings on the unsettled issues (collectively, the OEB Decision).</p> <p>Significant outcomes in the OEB Decision included the following:</p> <ul style="list-style-type: none"> <li>• Approval of nuclear revenue requirements, net of stretch factor, totalling \$16.0 billion over the 2022-2026 period, compared to \$16.7 billion proposed in OPG's application. The OEB ordered deferral of a total of \$83 million of approved nuclear revenue requirements over the 2022-2023 period in the Rate Smoothing Deferral Account, with no such deferrals over the 2024-2026 period.</li> <li>• Approval of a nuclear rate base of \$13.0 billion by 2026. This includes in-service capital additions related to the Darlington Refurbishment project of approximately \$6.4 billion between 2022 and 2026, which comprises the forecasted return to service of Units 3, 1 and 4 of the Darlington GS upon refurbishment. The OEB Decision also provides for recovery of non-capital costs for the Darlington Refurbishment project forecasted over the 2022-2026 period.</li> <li>• Reduction of cost allowable in rate base for the Heavy Water Storage and Drum Handling Facility (HWSF), a pre-requisite project forming part of the Darlington Refurbishment project, by \$94 million plus the interest capitalized to the project between May 2017 and March 2020, based on a prudence review.</li> <li>• Continuation of the existing deemed capital structure of 45 percent equity and 55 percent debt.</li> <li>• Increase in total forecasted nuclear production of 2.8 TWh over the 2022-2026 period.</li> <li>• Recovery of forecasted pension and OPEB costs in the nuclear revenue requirements using the accrual method of accounting, and continuation of the previously approved methodology for recovery costs of nuclear waste management and nuclear decommissioning liabilities.</li> <li>• Recovery of a net total of \$644 million comprising amounts recorded in regulatory accounts as at December 31, 2019 and associated income tax impacts, including for the Pension &amp; OPEB Cash Versus Accrual Differential Deferral Account, without adjustments. The total net balance of \$644 million comprises \$787 million in recoverable balances previously approved but not yet authorized for collection by the OEB, and newly approved net refundable balances of \$143 million. Additionally, the OEB Decision reflects the settlement outcome that OPG will credit ratepayers with \$47 million related to net favourable financial impacts arising from the Company's pandemic response over 2020 and 2021.</li> <li>• Continuation of all applicable existing regulatory accounts, and establishment of new regulatory accounts, effective January 1, 2022, to record the financial impacts of transition to and implementation of International Financial Reporting Standards (IFRS) from US GAAP in the event that OPG adopts IFRS for financial reporting purposes to meet the requirements of <i>Securities Act</i> (Ontario), and the nuclear revenue requirement impact of capital expenditures and operating costs for OPG's planned new corporate campus in Clarington, Ontario. The OEB Decision also provides for establishment, on a final basis, of a new regulatory account, effective January 1, 2021, to record the revenue requirement impacts arising from changes to nuclear decommissioning and nuclear waste management liabilities and depreciation and amortization expenses as a result of changes to the accounting end-of-life assumptions for the Pickering GS.</li> <li>• Establishment of a mechanism for customers to share, on a 50 percent basis, in the regulatory earnings achieved by OPG's regulated operations that are more than 100 basis points over the ROE levels reflected in the OEB-approved base regulated prices, assessed on a five-year cumulative basis over the 2022-2026 period. Additionally, regulatory frameworks in effect for the 2022-2026 period include a symmetrical 300 basis points trigger around the approved ROE level where the OEB may initiate a regulatory review.</li> </ul>

Date	Description of Development
	<p>Further details on the OEB's decisions related to OPG's 2022-2026 application for new regulated prices can be found in the section, <i>Significant Developments – Financial Strength</i> under the heading, <i>OEB's Decision on OPG's Application for New Regulated Prices</i> in the MD&amp;A.</p> <p>In November 2021, the Province amended <i>Ontario Regulation 53/05</i> to prescribe a SMR at the DNNP site as a regulated facility by the OEB and to provide for recovery of OPG's capital and non-capital costs for such new nuclear generation facilities, including planning, preparation and construction costs, subject to a prudence review. Effective January 1, 2022, differences in the revenue requirement impact of such costs from those reflected in OPG's regulated prices will be recorded in a regulatory account previously established under <i>Ontario Regulation 53/05</i> to record non-capital costs incurred by OPG for planning and preparation for the development of proposed new nuclear generation facilities.</p>



## 5.4 NUCLEAR BUSINESS DEVELOPMENTS

Date	Description of Development
<b>Darlington Refurbishment Project</b>	
<p>The Darlington Refurbishment project commenced in 2016 as the four Darlington GS units were 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 refurbishment of the first unit, Unit 2, commenced in October 2016. The last unit to undergo refurbishment is scheduled to be completed by the end of 2026. OPG continues to assess and seek ways to manage the ultimate impact of the COVID-19 pandemic on the project's total cost, which is otherwise continuing to track to the \$12.8 billion budget.</p> <p>The Darlington Refurbishment project is a multi-phase program comprising of five major sub-projects that are executed across four major segments for each unit. Descriptions of each major sub-project and segment can be found in the section, <i>Core Business and Outlook</i> under the heading, <i>Project Excellence – Darlington Refurbishment</i> in the MD&amp;A.</p> <p>All pre-requisite projects, including construction of facilities, infrastructure upgrades and installation of safety enhancements, and the HWSF, have been completed. OPG also has completed all of the work planned as of the end of 2021 to support the requirements set out in the Integrated Implementation Plan (IIP) for the station. The IIP contains actions previously identified as part of a series of assessments undertaken by OPG in line with applicable CNSC regulatory requirements related to life extensions of nuclear plants.</p> <p>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 <i>Ontario Regulation 53/05</i>.</p>	
2019	<p>The Reassembly segment of the Unit 2 refurbishment continued in 2019. In the second quarter of 2019, the project successfully completed the fuel channel installation series and the upper and middle feeder installation series, and re-filled the unit's moderator with heavy water. 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.</p> <p>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.</p>
2020	<p>The Unit 2 refurbishment was completed on June 4, 2020, following the successful completion of start-up activities and the receipt of all appropriate regulatory approvals from the CNSC. Unit 2 was returned to service in line with the Company's high quality and safety standards. The final steps of construction and return to service for the unit were performed amid the COVID-19 pandemic, with additional measures implemented to help safeguard the safety of employees and contractors. Upon returning the unit to service, capital expenditures totalling approximately \$4.8 billion were placed in service. Unit 2 has been operating reliably since returning to service.</p> <p>On September 3, 2020, OPG commenced the refurbishment of Unit 3 with the defueling of the reactor, following the successful completion of an immediately preceding planned outage. Defueling of the reactor was completed in the fourth quarter of 2020.</p>

Date	Description of Development
2021	The islanding of Unit 3, which involves physically separating the unit under refurbishment from the operating units, was completed in January 2021. Immediately following the islanding, the Unit 3 refurbishment entered the Disassembly segment, which was completed in October 2021. The Unit 3 refurbishment is currently in the Reassembly segment, incorporating continued COVID-19 protective measures. During the fourth quarter of 2021, the project commenced the installation of new fuel channel assemblies with the calandria tube installation series. The upper and middle feeder installation series is also continuing, with the installation of 960 new feeder tubes being completed in two segments, starting with the upper and middle feeders and followed by the lower feeders. Additionally, as part of the refurbishment, OPG is progressing the static commissioning of the Unit 3 turbine generator, following the completion of the overhaul of the turbine generator and the installation of the turbine control systems upgrade in August 2021.
2022	On February 15, 2022, OPG commenced the refurbishment of Unit 1. The Shut Down segment of the Unit 1 refurbishment began with defueling the reactor, which will be followed by the islanding of the unit. The Unit 1 refurbishment is scheduled to be completed in the second quarter of 2025.  Planning and pre-requisite activities for the refurbishment of Unit 4 are progressing as planned. The planning, pre-requisite and execution work for Unit 1 and Unit 4 refurbishments has and will incorporate the benefits of experience with the first two units, Unit 2 and Unit 3, and additional strategic improvements.

#### **Optimized Operations Plan for Pickering Nuclear Generating Station**

One of OPG's objectives is to maximize the safe and reliable operating life of the Pickering GS units. In connection with this objective, OPG continues to execute planned work required to enable safe and reliable operation of the plant to the planned end of life dates, including commitments required under the previously established Periodic Safety Review (PSR) and associated IIP. 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.

The Pickering GS operating licence is valid until August 31, 2028. The licence allows for commercial operation of the Pickering GS to December 31, 2024 and supports the plan to subsequently place the station in a safe storage state by 2028. The CNSC directed that OPG present a comprehensive update on its licensed activities at the Pickering GS at the mid-point of the ten-year licence period and no later than 2023.

In addition to providing Ontario with a reliable, cost effective source of baseload electricity during a period of refurbishments at the Darlington and Bruce nuclear generation stations, continued operation of the Pickering GS avoids carbon emissions in the province and maintains several thousand jobs in the Durham region.

2020	On August 14, 2020, the Province announced its support of OPG's plan to optimize the end of operations dates for the six operating units of the Pickering GS, which includes Units 1 and 4 operating to the end of September 2024 and December 2024, respectively, and Units 5 to 8 operating until the end of 2025. Operating any of the Pickering GS units past December 31, 2024 is subject to the CNSC's regulatory approval through a public hearing process. The optimized operations plan reflects OPG's analysis, which demonstrates that continuing to keep the units operational is safe, technically feasible and will result in incremental economic and other benefits to the province and the Company.
2021	In September 2021, CNSC staff affirmed that OPG has completed all PSR requirements and resolution actions documented in the IIP for the station. The CNSC staff concurred that OPG has implemented the results of the PSR to ensure the continued safe and reliable commercial operation of the Pickering GS to the end of 2024. With the completion of all IIP actions required for the Pickering GS operating licence, CNSC staff confirmed that no further quarterly and annual reporting is required.  OPG continues to perform additional technical analysis and inspections to confirm fitness-for-service of fuel channels and other major station components in support of optimizing the station's planned shutdown sequence to 2025, including confirming the validity of the PSR and IIP. OPG is required to notify the CNSC of the results of this PSR and IIP reassessment by the end of 2022, in support of the CNSC's approval required for post-2024 commercial operation.

## 5.5 RENEWABLE GENERATION BUSINESS DEVELOPMENTS

Date	Description of Development
<b>Little Long Dam Safety Project</b>	
OPG is executing a project to improve dam safety along the Lower Mattagami River in northeastern Ontario. The Little Long Dam Safety project will increase the discharge capacity and make other improvements at the Little Long Main Dam, helping the Company to comply with updated dam safety requirements established by the Province. The Little Long Dam supports OPG's hydroelectric generating stations on the Lower Mattagami River. The project costs will be recovered under the ESA for the Lower Mattagami generating stations. The project is expected to be placed in service in 2023 and is tracking within its budget of \$650 million.	
2019	The project entered the execution phase in the fourth quarter of 2019, with critical materials procurement, advanced detailed engineering construction design and permitting activities underway.
2020	Rock excavation activities below the Adam Creek spillway structure on the Little Long Reservoir progressed throughout 2020. In the fourth quarter of 2020, concrete placement of the new bays adjacent to the sluiceways and construction of the barge landing commenced. Additionally, procurement of critical equipment and detailed engineering continued during the year, with permitting activities completed in the fourth quarter.
2021 - 2022	OPG completed rock excavation activities below the Adam Creek spillway structure on the Little Long Reservoir and the construction of the cofferdam upstream of the new east bays. In January 2022, OPG began the commissioning of the existing Adam Creek gates and commenced the demolition of the east upstream dam. Concrete placement of the new bays adjacent to the sluiceways and the replacement of existing gates are continuing as planned.
<b>Smoky Falls Dam Safety Project</b>	
OPG has initiated the execution phase of a project to improve the dam safety at the Smoky Falls hydroelectric GS located along the Lower Mattagami River. The project will rehabilitate 100-year-old spillway and sluiceway structures in compliance with provincial dam safety requirements. The project costs are expected to be recovered under the ESA for the Lower Mattagami generating stations. The project is expected to be completed in 2025, with a budget of \$390 million.	
2021	In September 2021, the project entered the execution phase, having completed the front-end engineering and design phase. During the fourth quarter of 2021, OPG mobilized the site and commenced construction on the east spillway.
<b>Redevelopment of Calabogie Hydroelectric Generating Station</b>	
OPG is redeveloping the 5 MW Calabogie GS, located along the Madawaska River in eastern Ontario. The station was nearing the end of its operational life when it was extensively damaged by a storm in 2018. The project will replace the original station with a higher generating capacity powerhouse that will more efficiently utilize the available river flows and double the station's installed capacity to approximately 11 MW. The project is expected to be placed in service in 2022 and is tracking within the revised budget of \$145 million, an increase of \$8 million due to construction design changes and COVID-19 impacts.	
2020	OPG completed the excavation of the new powerhouse location, preparation of the adjacent underlying rock substrate and removal activities for original equipment. Excavation work on the inlet ramp and forebay area and demolition of the old powerhouse progressed.
2021 - 2022	OPG completed the structural steel installation and commenced the installation of the overhead crane and bridge assembly of the new powerhouse. Additionally, the upstream and downstream cofferdams were placed in-service during the second half of 2021. In February 2022, OPG completed the removal of the inlet structure.

Date	Description of Development
<b>Sir Adam Beck I Hydroelectric Generating Station Units G1 and G2 Replacement</b>	
OPG is executing a project to replace two older generating units at the ten-unit Sir Adam Beck I GS. The two units 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 peaking generation capacity, providing decades of cost effective, renewable power from one of the flagship stations in the Company's hydroelectric fleet. The project is expected to be placed in service in 2022 and is tracking within its budget of \$128 million.	
2019	The decommissioned units and associated equipment were removed from the site and front-end engineering design activities progressed. OPG continued finalizing the detailed cost and schedule commitments for the project.
2020	Project engineering activities were completed, cost and schedule commitments were finalized, procurement of long lead materials continued and project site work progressed. OPG completed the removal of the 100-year-old embedded turbine scroll cases for replacement from the G2 unit in the fourth quarter of 2020.
2021 - 2022	OPG completed the removal of the embedded turbine scroll case for replacement from the G1 unit, and installed new scroll cases for the G1 and G2 units. OPG also completed the G2 unit turbine and generator installation, including the tower assembly, runner and shaft assembly. The project continues to advance the G1 unit turbine and generator installation.
<b>Ranney Falls Hydroelectric Generating Station</b>	
OPG is executing a project to construct a 10 MW single-unit powerhouse on the existing Ranney Falls GS site in Campbellford, Ontario. The new unit will replace an existing unit that previously reached its end of life, doubling the station's in-service generating capacity. Based on current technical assessments, the expected in-service date for the project is in 2022. The project is tracking within its budget of \$77 million.	
2019	Construction was completed during the year, including the fabrication of the turbine and generator unit, and commissioning activities commenced.
2020 - 2021	Commissioning activities continued through September 2020, when during final unit commissioning, the new generator sustained damage and commissioning activities were halted. Work is underway by the vendor to repair and reassemble the unit at their own cost, prior to recommencing commissioning activities.
<b>Northern Ontario Hydroelectric Opportunities Report</b>	
2022	In January 2022, the Province requested OPG to examine opportunities for new hydroelectric development in northern Ontario. As part of this preliminary assessment, the Province has asked OPG to work with the Ontario Waterpower Association to update previous evaluations of hydroelectric potential in northern Ontario, while engaging with Indigenous communities to understand how they could benefit from future hydroelectric generation projects. As requested by the Province, OPG will share the results of this work with the Ontario Ministry of Energy as well as the IESO so that they can be considered as part of the IESO's work toward developing an achievable pathway to net-zero emissions in Ontario's electricity sector.

## 5.6 THERMAL BUSINESS DEVELOPMENTS

Date	Description of Development
<b>Decommissioning of Nanticoke and Lambton Generating Stations</b>	
OPG ceased coal-fired generation at the Lambton and Nanticoke generating stations in 2013. Over 2015 and 2016, OPG announced that it would decommission the stations. The decommissioning plan for the Nanticoke GS accommodated the construction and operation of the Nanticoke solar facility.	
2019	Demolition, site clean-up activities and removal of saleable equipment and materials at both Lambton GS and Nanticoke GS sites continued, including the implosion of the Nanticoke GS powerhouse.
2020	In the third quarter of 2020, OPG completed decommissioning activities at the Nanticoke GS site, safely returning the site to a brown field state. Decommissioning activities continued at the Lambton GS site.
2022	In February 2022, the Company completed the planned implosion at the Lambton GS site. Further demolition work will continue throughout 2022 on smaller structures before the site undergoes additional remediation and its return to a brownfield state.
<b>Shutdown of Thunder Bay Generating Station</b>	
In July 2018, OPG reached an agreement with the IESO to terminate the ESA for the advanced biomass-fueled generating unit at the Thunder Bay GS, effective June 30, 2018. OPG received notice from the IESO approving de-registration of the station in October 2018 and the main output transformers were physically disconnected from the grid in November 2018.	
2019	Following closure, the station began undergoing a decommissioning process, with all systems drained and de-energized during 2019. An external water treatment system was commissioned to treat site run-off, primarily from the ash landfill. The Company also assessed alternate solutions for the site, including a potential sale of the property.
2021	In April 2021, OPG completed the sale of the former Thunder Bay GS site.

## 5.7 NEW BUSINESS DEVELOPMENTS

Date	Description of Development
<b>Development of Nuclear Small Modular Reactors</b>	
As part of a strategy to expand the business in alignment with the Company's Climate Change Plan, OPG continues to pursue SMR technology as a source of safe, virtually carbon-free, reliable and cost effective energy to help meet future energy and capacity needs.	
<i>Darlington New Nuclear Project</i>	
2020	<p>In November 2020, OPG announced the resumption of planning activities for future nuclear power generation at the DNNP site, to host a SMR. OPG concluded a due diligence process, in collaboration with other major energy utilities, to advance the development of a SMR at the DNNP site and support the potential deployment of nuclear SMRs in other jurisdictions, and progressed engineering and design work with three SMR developers.</p> <p>In June 2020, OPG filed an application with the CNSC to renew its existing site preparation licence in relation to the potential construction of new nuclear reactors at its DNNP site, expiring in 2022.</p>
2021	<p>In December 2021, OPG announced the selection of GE Hitachi Nuclear Energy and its Canadian Division GEH SMR Technologies Canada, Ltd. (GEH) to deploy a SMR at the DNNP site. OPG and GEH, along with other suitable partners, will collaborate on the engineering, design, planning, licensing preparation and permitting materials, and site preparation activities, with a goal to construct the first commercial grid-scale SMR in Canada, projected to be completed as early as 2028. The selected SMR design, the approximately 300 MW BWRX-300, is based on nine previous generations of reactors which have operated or have been certified. The Darlington SMR will provide a new source of clean nuclear energy to help meet Ontario's future electricity system needs, and support OPG's climate change goals by helping to avoid one million tonnes of carbon dioxide (CO<sub>2</sub>) emissions per year. The Province has provided its support for the project and its concurrence with the GEH technology selection decision.</p> <p>In October 2021, the CNSC approved OPG's application to renew the DNNP site preparation licence for a period of ten years expiring in October 2031. Construction and operation of new nuclear reactors at the DNNP site are subject to the CNSC's regulatory approval through separate applications and licensing processes, which would include public participation. OPG expects to commence site preparation activities for the Darlington SMR in 2022 and to submit the licence to construct application to the CNSC by the end of 2022.</p> <p>OPG continues to engage Williams Treaties First Nations, the Mohawks of the Bay of Quinte, and Métis Nation of Ontario, Region 8 on the Company's plans for construction of a SMR at the DNNP site.</p>
<i>Global First Power Limited Partnership</i>	
2020	<p>In June 2020, Global First Power Ltd., Ultra Safe Nuclear Corporation and OPG formed a joint venture, Global First Power Limited Partnership (GFP), with the goal of advancing the development of a proposed demonstrator Micro Modular Reactor (MMR™), at the Canadian Nuclear Laboratories' Chalk River site, northwest of Ottawa, Ontario.</p>
2021	<p>In May 2021, the CNSC determined that GFP's preliminary submitted materials related to the application for a site preparation licence for the proposed MMR™ were sufficient for the CNSC to initiate the technical review as part of the licensing application process. GFP expects to submit the full licence application and all required deliverables to the CNSC by the end of 2022.</p>

Date	Description of Development
<i>SMR Industry Developments</i>	
2019	In December 2019, the Provinces of Ontario, Saskatchewan and New Brunswick entered into a MOU to advance the development of 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.
2020	In recognition and support of climate change, economic and other benefits offered by SMRs, the federal government published Canada's Small Modular Reactor Action Plan (SMR Action Plan) in December 2020. The SMR Action Plan outlines Canada's plan for the development, demonstration and deployment of SMRs for multiple applications in Canada and internationally. OPG contributed various commitments to the action plan, including the proposed grid-scale SMR at the DNNP site, the proposed MMR™ at the Chalk River site, ongoing collaboration with other utilities on SMR deployment, and Indigenous engagement on potential SMR projects.
2021	In April 2021, the provinces of Ontario, New Brunswick and Saskatchewan released a SMR feasibility study, which was prepared by OPG, Bruce Power, New Brunswick Power Corporation and Saskatchewan Power Corporation and represents one of the early deliverables under the inter-provincial MOU. The report provides a feasibility assessment of SMR development and deployment, and sets out the business case for SMR implementation in each of the three provinces. The study builds on, and is aligned with the federal government's Canadian Roadmap for Small Modular Reactors and the SMR Action Plan.  In April 2021, the province of Alberta signed the existing MOU with the provinces of Ontario, Saskatchewan and New Brunswick to support the development of SMRs.
<b>Low-carbon Hydrogen Development</b>	
2021	Through Atura Power, OPG is laying the groundwork for low-carbon hydrogen production in Ontario as part of a new hydrogen-related business. Low-carbon hydrogen has the potential to reduce or offset carbon emissions in a range of applications, including powering fuel cells in vehicles used in the heavy-duty and long-haul trucking industry, as an energy substitute for high-emitting industrial applications, and by blending hydrogen with natural gas to reduce the carbon intensity of natural gas. The development of a hydrogen economy using Ontario's clean electricity is aligned with OPG's strategy of advancing innovative solutions to become a net-zero carbon company by 2040 and act as a catalyst for efficient, economy-wide decarbonization by 2050.
<b>Electrification and Energy Storage</b>	
OPG actively seeks to expand beyond its core generation business through investments in innovative and de-carbonizing technologies and new lines of business in the electricity sector, including transport electrification, energy storage, distributed energy resources, and other opportunities.	
<i>PowerON Energy Solutions</i>	
2022	In February 2022, the Board of the Toronto Transit Commission (TTC) voted to enter into a 20-year agreement with PowerON Energy Solutions (PowerON), a wholly-owned subsidiary of OPG, to help decarbonize Toronto's bus fleet, North America's largest transit electrification project to date. PowerON supports large-scale electrification projects by providing turnkey solutions encompassing all electrical infrastructure from the electricity grid connection to vehicle chargers. Under the agreement with the TTC, PowerON will design, build, co-invest in, and operate the charging and related electrical infrastructure to support the electrification of the TTC's bus fleet and facilities.

Date	Description of Development
<i>Ivy Charging Network</i>	
2019	OPG and a subsidiary of Hydro One Limited (Hydro One) formed a partnership to own and operate electric vehicle charging stations across Ontario, under the Ivy Charging Network (Ivy) brand.
2021	In August 2021, Ivy launched “Ivy Park & Charge”, a new service that offers destination-based level 2 charging for electric vehicle drivers through partnerships with municipal and business partners in Ontario. In December 2021, Ivy finalized a definitive agreement to deploy public fast chargers across 20 ONroute plaza locations along Highways 400 and 401 in Ontario in 2022. In addition, Ivy rebranded its level 3 fast-charger service as “Ivy Charge & Go”. By the end of 2021, Ivy had 59 level 2 chargers and 63 level 3 fast chargers in operation across the province.
<i>Electric Ferries</i>	
2020	In 2020, OPG formalized agreements to partner with the Ontario Ministry of Transportation to electrify two of the Province’s ferries. Under the agreements, the Company is responsible for building, owning and operating onshore battery storage assets used in the charging infrastructure to power these marine vessels.
<i>Energy Storage</i>	
2020	In October 2020, OPG placed in service its first energy storage facility as part of the Company’s distributed energy resources strategy. This 4 MW lithium ion facility is located behind the meter of an industrial counterparty, with the goal of generating revenues by reducing the industrial customer’s peak demand charges and through participation in the IESO’s Capacity Auctions.
2022	In February 2022, OPG placed in service its second energy storage facility located behind the meter of an industrial counterparty as part of the Company’s distributed energy resources strategy.
<b>Collaboration for Production of Medical Isotopes</b>	
2019	OPG and Nordion (Canada) Inc. commenced work on a project to expand OPG’s production of cobalt-60 to the Darlington GS, mainly for use in the health industry to sterilize surgical and medical supplies. The plan to produce cobalt-60 at the Darlington GS is subject to the CNSC’s review and approval. Cobalt-60 is currently produced by OPG at certain units of the Pickering GS, which is approaching end of life.
2021	<p>In November 2021, the CNSC approved an amendment to the operating licence for Darlington GS to authorize the production of Molybdenum-99 (Mo-99). Mo-99 is a parent isotope of technetium-99 (Tc-99m), which is used for skeletal, brain and organ imaging in order to detect and diagnose harmful diseases, including heart disease and cancer. Under an agreement between OPG and LEP, the parties will produce Mo-99 by irradiating Molybdenum-98 (Mo-98) supplied by BWX Technologies, Inc. (BWXT), which BWXT will then process and place into Tc-99m generators for medical use. Darlington GS will be the first commercial nuclear power station to produce large quantities of Mo-99.</p> <p>In the fourth quarter of 2021, LEP began production of high-purity He-3 from tritium stored at the Darlington GS. In December 2021, LEP and L’Air Liquide S.A. (Air Liquide) entered into a long-term commercial agreement for the distribution of He-3, which Air Liquide will further purify and package for health care, security and advanced research applications.</p>



## 6 RISK FACTORS

Details on risks faced by OPG are found in the section, *Risk Management* in the MD&A.

## 7 DIVIDENDS

The declaration and payment of dividends remains at the sole discretion of the Board and is dependent on the results of OPG's operations, the Company's financial condition and cash requirements, securities legislation requirements and other factors considered relevant by the Board in exercising its discretion and judgment on an ongoing basis. OPG did not declare or pay any dividends in 2019, 2020 or 2021.

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

## 8 DESCRIPTION OF CAPITAL STRUCTURE

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### 8.1 GENERAL DESCRIPTION

The authorized share capital of OPG consists of an unlimited number of common shares, the voting shares of the Company, and an unlimited number of non-voting Class A shares. As at December 31, 2021, OPG had 256,300,010 common shares and 18,343,815 Class A shares issued and outstanding, all of which are owned directly by the Province, at a stated value of \$5,126 million and \$787 million, respectively. OPG is authorized to issue an unlimited number of common shares and Class A shares without nominal or par value. Holders of common shares are entitled to one vote per share at meetings of the shareholders of the Company. Any issue of new shares is subject to the consent of OPG's shareholder, the Province.

The Company's Articles of Amalgamation were amended effective in 2017 to allow for the creation and issuance of non-voting Class A shares to the Province in exchange for its equity injections. The Class A and common shares rank equally as to dividends on a share for share basis, and all dividends declared by OPG shall be declared in equal amounts per share on all outstanding shares without preference or distinction. Upon the liquidation, dissolution or wind-up of OPG, whether voluntary or involuntary, the holders of Class A shares and common shares are entitled to share equally, on a share for share basis, in all distributions of property and assets without preferences or distinction. Any issuance of new shares is subject to the consent of the Province. OPG is entitled to redeem outstanding Class A shares as may be approved by the Board.

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

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### 8.2 MARKET FOR SECURITIES

The Company does not have any securities listed on any exchange or similar market for securities.

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### 8.3 MEDIUM TERM NOTE PROGRAM

In January 2019, OPG issued \$500 million of Series 3 Notes due in 2049, as a green bond offering, with a coupon interest rate of 4.25 percent.

In September 2019, OPG issued \$500 million of Series 4 Notes due in 2029, with a coupon interest rate of 2.98 percent, and \$300 million of Series 5 Notes due in 2050, with a coupon interest rate of 3.65 percent.

In April 2020, OPG issued \$400 million of Series 6 Notes due in 2025, as a green bond offering, with a coupon interest rate of 2.89 percent and \$800 million of Series 7 Notes due in 2030, as a green bond offering, with a coupon interest rate of 3.22 percent.

In October 2020, OPG issued \$400 million of Series 8 Notes due in 2026, with a coupon interest rate of 1.17 percent.

In February 2021, OPG issued \$500 million of Series 9 Notes due in 2051, with a coupon interest rate of 2.95 percent.

The net proceeds from the green bond issuances were used to finance or re-finance eligible projects as defined under OPG's Green Bond Framework. OPG's Green Bond Framework encompasses projects that offer tangible environmental benefits.

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### 8.4 CREDIT RATINGS

OPG has credit ratings from DBRS Limited (DBRS), S&P Global Ratings (S&P) and Moody's Investors Service (Moody's), which provide credit ratings for commercial entities. A credit rating generally provides investors with an independent measure of credit quality of an issue of securities. Maintaining an investment grade credit rating supports OPG's ability to access cost effective financing. Credit rating categories for long-term debt instruments range from highest credit quality (generally 'AAA') to default in payment (generally 'D').

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

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

This section describes OPG's credit ratings, as of the date of this AIF:

	DBRS	S&P	Moody's
Issuer rating	A (low)	BBB+	A3
Senior unsecured debt	A (low)	BBB+	A3
Trend/Outlook	Stable	Stable	Stable
Commercial paper program – Canada	R-1 (low)	A-1 (low)	NR <sup>1</sup>
Commercial paper program – US	NR <sup>1</sup>	A-2	P-2

<sup>1</sup> NR indicates no rating assigned.

Credit Rating Agency	Rating Descriptions
DBRS	<p>Long-term debt instruments that are rated in the 'A' category by DBRS are considered to be of good credit quality. The capacity for the payment of financial obligations by the obligor of such instruments is considered to be substantial, but of lesser credit quality than higher-rated entities. Entities in the 'A' category may be vulnerable to future events, but qualifying negative factors are considered manageable. The addition of a 'high' or 'low' modifier indicates relative standing within the rating category.</p> <p>DBRS's commercial paper credit rating scale ranges from 'R-1(high)' to 'D', which represents the highest to lowest quality of such securities rated. The rating of 'R-1(low)' is the third highest and is considered to be of good credit quality.</p>
S&P	<p>A 'BBB' rating category by S&amp;P for long-term debt instruments means that the obligor has adequate capacity to meet its financial commitments, but is considered more subject to adverse economic conditions than higher-rated entities. The addition of a plus '+' or minus '-' designation after a rating indicates the relative standing within a particular rating category.</p> <p>S&amp;P's Canadian commercial paper rating scale ranges from 'A-1 (high)' to 'D', which represents the highest to lowest quality of such securities rated. The rating of 'A-1 (low)' is the third highest and is considered to be satisfactory.</p>
Moody's	<p>Long-term debt instruments rated 'A' by Moody's are considered upper-medium-grade and are subject to low credit risk. Moody's appends numerical modifier 1, 2 and 3 to each generic rating category. The modifier '1' indicates that the obligation ranks in the higher end of the generic rating category; the modifier '3' indicates a ranking in the lower end of that generic rating category.</p> <p>Moody's commercial paper credit rating scale includes P-1, P-2, P-3 and NP, with P-1 representing the highest and NP representing the lowest quality of such securities rated. The rating of P-2 is the second highest and an issuer rated P-2 is considered to have a strong ability to repay short-term obligations.</p>

## 9 DIRECTORS AND OFFICERS

### 9.1 DIRECTORS

The following tables set forth the name, age, municipality of residence, position with the Company and principal occupation of each of the Directors of the Company as of the date of this AIF.



**Wendy Kei**

Age: 54

Toronto, Ontario, Canada

Wendy Kei was appointed Board Chair for OPG effective June 27, 2019. She was initially appointed to the OPG Board in March 2017.

Ms. Kei is currently a director and the Chair of the Audit Committee for both Karora Resources Inc. (TSX: KRR) and Noranda Income Fund (TSX: NIF.UN).

Ms. Kei is an accomplished Finance Executive with more than 25 years of senior business experience across multiple industries. For most of her career, she has worked in the mining industry and brings a strong focus on board leadership, corporate governance, financial expertise, corporate strategy, ESG, risk management and significant expertise in executing complex mergers and acquisitions.

Ms. Kei previously served as Chief Financial Officer of Dominion Diamond Corporation (formerly Harry Winston Diamond Corporation and Aber Diamond Corporation).

Ms. Kei is a Fellow of the Chartered Professional Accountants of Ontario (FCPA-FCA) and holds a Fellow designation from the Institute of Corporate Directors (F.ICD) and a Bachelor of Mathematics degree from the University of Waterloo. Ms. Kei was named one of Canada's Top 100 Most Powerful Women in 2020 and was selected as a Diversity 50 2016 Candidate by the Canadian Board Diversity Council.

**2021 Board/Committee Membership:**

Board (Director since March 2017, Board Chair)  
The Board Chair attends all Committee meetings.

**2021 Attendance:**

9 of 9	100%
22 of 22	100%

**Principal Occupation:** Corporate Director

**Board Memberships for other Reporting Issuers:** Karora Resources (TSX), Noranda Income Fund (TSX)

**Independence from OPG:** Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Ken Hartwick**

Age: 59

Milton, Ontario, Canada

Ken Hartwick is OPG's President and Chief Executive Officer (CEO). Mr. Hartwick joined OPG in March 2016 as Chief Financial Officer and Senior Vice President - Finance. He was appointed the OPG President and CEO on April 1, 2019.

Under Mr. Hartwick's tenure, OPG has released its first-ever Climate Change Plan, advanced its electrification efforts through the Ivy partnership and PowerON subsidiary, launched a Reconciliation Action Plan, and is currently leading the development of Canada's first grid-scale small modular reactor. The Company is also undertaking multi-billion dollar overhauls of its hydroelectric and Darlington nuclear generating stations; the four-unit Darlington refurbishment is one of Canada's largest clean energy infrastructure projects. Mr. Hartwick is currently leading OPG's commitment to be a global leader in ED&I best practices and one of Canada's best diversity employers.

Mr. Hartwick joined OPG from Wellspring Financial Corporation, where he was CFO and Treasurer. He held various senior positions in the energy sector, including interim President and CEO of Atlantic Power Corporation, Chief Financial Officer (CFO) and CEO of Just Energy Corporation, and CFO of Hydro One. Mr. Hartwick previously held senior positions at Capgemini and was a partner at Ernst & Young LLP.

Mr. Hartwick is a Chartered Professional Accountant with an Honours Bachelor of Business Administration degree. He serves on a number of boards of directors.

**2021 Board/Committee Membership:**

Board (Director since June 2019)

The President and CEO attends all Committee meetings, excluding independent Director in-camera meetings/sessions.

**2021 Attendance:**

9 of 9 100%

22 of 22 100%

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

**Board Memberships for other Reporting Issuers:** MYR Group, Inc. (NASDAQ), Via Renewables Inc. (NASDAQ)

**Independence from OPG:** Not Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Mary Filippelli**

Age: 55

Toronto, Ontario, Canada

Mary Filippelli is an accomplished international business executive known for achieving transformative impact across multiple global organizations. Ms. Filippelli currently serves on the board of directors of Canadian Western Bank (TSX: CWB) as an independent director and member of the Audit Committee and the Governance and Conduct Review Committee. She is a trusted advisor to CEOs and boards of directors in setting, supporting and sustaining business strategy.

Most recently, Ms. Filippelli served as Vice-Chair and Managing Partner of Deloitte, and was a member of Deloitte's Leadership Team, Clients & Industry Management Committee, Financial Services and Risk Executive. In this role, Ms. Filippelli worked across each business line, industry, and geographic region to develop an elevated customer experience strategy. Previously, she served on the Global Executive of Lloyds Banking Group as the Group Audit Director in London, England where she led the transformation of Group Audit to elevate its relevance following the financial crisis. She also spent more than two decades with KPMG Canada in progressive roles, from audit partner, National Risk and Regulatory Lead Partner and National Financial Services Lead Partner, leading the national growth strategy across audit, tax and advisory services.

Ms. Filippelli is a Fellow of the Chartered Professional Accountants of Ontario (FCPA-FCA) and holds a Bachelor of Business Management degree from Ryerson University, where she continues to serve on the Dean's Counsel for the Ted Rogers School of Management. She is a supporter of the Princess Margaret Cancer Foundation where she also serves as a director.

**2021 Board/Committee Membership:**

Board (Director since September 2021)  
Audit and Risk Committee (since September 2021)  
Generation Oversight Committee (since September 2021)  
Human Resources and Governance Committee (since September 2021)

**2021 Attendance:**

5 of 5	100%
3 of 3	100%
2 of 2	100%
4 of 4	100%

**Principal Occupation:** Corporate Director**Board Memberships for other Reporting Issuers:** Canadian Western Bank (TSX)**Independence from OPG:** Independent**Interlocking Directorships on Boards of other Reporting Issuers:** None

**John Herron**

Age: 68

Punta Gorda, Florida, USA

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

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

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

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

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

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

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

**2021 Board/Committee Membership:**

Board (Director since November 2013)  
Generation Oversight Committee (Chair)  
Major Projects Committee

**2021 Attendance:**

9 of 9	100%
4 of 4	100%
4 of 4	100%

**Principal Occupation:** Corporate Director**Board Memberships for other Reporting Issuers:** Duke Energy (*NYSE*)**Independence from OPG:** Independent**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Selma Lussenburg**

Age: 66

Toronto, Ontario, Canada

Selma Lussenburg currently serves as a director of MAG Silver Corp. (TSX/NYSE: MAG) and the Muskoka District Airport. She is also the Chair of the Ontario Government's Internal Audit Justice Sectoral Advisory Committee, a member of the Executive Committee of the Canada-US Law Institute, and is a Canadian private sector representative on the CUSMA 31.22 Advisory Committee (previously NAFTA 2022 Committee) on the resolution of private commercial disputes.

From 2013 to 2018, Ms. Lussenburg was Vice President Governance, Corporate Safety and Security, General Counsel and Corporate Secretary at the Greater Toronto Airports Authority (Toronto Pearson International Airport/GTAA). Prior to that, Ms. Lussenburg served as General Counsel and Corporate Secretary for two other large and complex businesses in highly regulated industries: the Ontario Municipal Retirement System (OMERS) (investment and pension administration) and AT&T Enterprises Canada (telecommunications). Prior to assuming these senior executive roles, Ms. Lussenburg was in private practice and advised on corporate, commercial, mining and trade law matters at top tier law firms in Canada and Australia.

At Toronto Pearson International Airport, Ms. Lussenburg was the senior executive responsible for corporate safety and security and the senior executive diversity and inclusion champion; while at OMERS, she established the legal and compliance department. In addition to her other responsibilities at AT&T, she served as the Chief Privacy Officer for AT&T's Canadian operations.

Ms. Lussenburg served as Chair of the IATA/ACI World Smart Security Committee (focussed on enhancing passenger security and other security screening efficiency and effectiveness) and Chair of the Aeropole Board of Governors. She has also served as Chair of the board of directors of Ontario Capital Growth Corporation and as a member of the board of directors of Oxford Properties.

Ms. Lussenburg holds a Chartered Director (C. Dir) designation from the Directors College and a Masters of International Law degree from the Australian National University as well as other degrees.

**2021 Board/Committee Membership:**

Board (Director since November 2019)  
Audit and Risk Committee  
Generation Oversight Committee (until May 2021)  
Human Resources and Governance Committee (since May 2021)  
Major Projects Committee

**2021 Attendance:**

9 of 9	100%
6 of 6	100%
2 of 2	100%
4 of 4	100%
4 of 4	100%

**Principal Occupation:** Corporate Director

**Board Memberships for other Reporting Issuers:** MAG Silver Corporation (TSX/NYSE)

**Independence from OPG:** Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None



**Scott McDonald**

Age: 66

Toronto, Ontario, Canada

Scott McDonald is an experienced corporate director and former senior executive. He currently serves as a director and Governance Committee Chair on the board of directors of the Michael Garron Hospital (formerly Toronto East General Hospital). He previously served as a director and HR Committee Chair on the boards of directors of Purolator and SCL.

Mr. McDonald had a successful career as a senior business executive with large, complex Canadian and North American companies in both the private and public sectors. With extensive C-suite experience in human resources, his background also includes experience in general management, operations, sales, and distribution across several industries – forest products, consumer packaged goods, food, logistics, and distribution. His career provided him with the opportunity to have worked in both official languages, and also to work and live in Toronto, Sudbury, Montreal, and Ottawa.

Mr. McDonald holds the ICD.D designation from the Institute of Corporate Directors and is a member of the Human Resources Professionals Association, holding the Certified Human Resources Leader professional designation. He is a graduate of the University of Toronto and executive programs at McGill University, Massachusetts Institute of Technology, and the Rotman School of Management at University of Toronto.

**2021 Board/Committee Membership:**

Board (Director since January 2020)  
Audit and Risk Committee (until May 2021)  
Human Resources and Governance Committee (Chair)  
Major Projects Committee (since May 2021)

**2021 Attendance:**

9 of 9	100%
2 of 2	100%
8 of 8	100%
2 of 2	100%

**Principal Occupation:** Corporate Director**Board Memberships for other Reporting Issuers:** None**Independence from OPG:** Independent**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Jill Pepall**

Age: 70

Toronto, Ontario, Canada

Jill Pepall is a senior investment executive with a successful career in the banking, insurance and public sector pension industries. Most recently, she was Executive Vice President and Chief Investment Officer (CIO) of Investment Management Corporation of Ontario, with \$70 billion of assets under management, and its predecessor organization, Ontario Pension Board. Prior to that, she was Managing Director and CIO at Scotia Asset Management and Head of Investments at Empire Life Insurance.

Ms. Pepall currently serves on several boards of directors and board committees. She is a board member and chair of the investment committee of the CAMH Foundation (Centre for Addiction and Mental Health) and is a board member and investment committee member of CMA Impact Inc. (Canadian Medical Association). She is also a non-trustee member of the investment committee of the board of the Municipal Pension Plan of British Columbia and serves on the investment committee of the board for the Leukemia and Lymphoma Society.

Ms. Pepall received her Masters of Business Administration degree from the Schulich School of Business. She is a Chartered Financial Analyst (CFA) and holds the ICD.D designation from the Institute of Corporate Directors.

**2021 Board/Committee Membership:**

Board (Director since June 2020)  
Audit and Risk Committee (Chair since March 2021)  
Generation Oversight Committee  
Human Resources and Governance Committee (until August 2021)

**2021 Attendance:**

9 of 9	100%
6 of 6	100%
4 of 4	100%
5 of 5	100%

**Principal Occupation:** Corporate Director

**Board Memberships for other Reporting Issuers:** None

**Independence from OPG:** Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Tracy Primeau**

Age: 54

Kincardine, Ontario, Canada

Tracy Primeau has more than 30 years experience in the energy sector, having recently retired from Bruce Power as a Shift Manager in the operations division. Ms. Primeau began her career in the nuclear industry, where she was one of the few women to become a CNSC licensed Authorized Nuclear Operator and the only female shift manager to work her way up from the shop floor.

Throughout her career, Ms. Primeau has been a tireless communicator, having been an active member of Women in Nuclear (WiN) Canada, where she currently holds a WiN Canada Board position. She is also a mentor and role model to many men and women in the energy sector.

As a proud member of the Nipissing First Nation, Ms. Primeau strives to use the Seven Grandfather Teachings in her leadership every day. She was a founding member of the Ontario Hydro Native Circle in 1992 and was the first Chair of the Bruce Power Native Circle, a position she held for many years.

Raising her two boys with her husband, Ms. Primeau has always been active in her community. Currently, she is the board Chair of the Women's House Serving Bruce & Grey, works on the executive of the local hockey club, and sits on the Kincardine municipality's Economic Development Committee as the Energy Representative.

Ms. Primeau holds a Bachelor of Arts degree from University of Waterloo and is an active alumni member of St. Paul's College and their Indigenous program as well as serves on their board of directors.

**2021 Board/Committee Membership:**

Board (Director since July 2021)  
Audit and Risk Committee (since July 2021)  
Generation Oversight Committee (since July 2021)  
Major Projects Committee (since July 2021)

**2021 Attendance:**

5 of 5	100%
3 of 3	100%
2 of 2	100%
2 of 2	100%

**Principal Occupation:** Corporate Director**Board Memberships for other Reporting Issuers:** None**Independence from OPG:** Independent**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Jim Reinsch**

Age: 78

Frederick, Maryland, USA

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

Mr. Reinsch is also a member of several international nuclear energy organizations, including the World Association of Nuclear Operators and the World Nuclear Association. Mr. Reinsch holds a Bachelor of Science degree from the University of Maryland.

Mr. Reinsch is a past board member of Frederick Memorial Hospital, Hood College Board of Trustees, Duke Energy, the Smithsonian National Portrait Gallery, Terrestrial Energy, and the Emirate Nuclear Energy Corporation's Committee on Nuclear Power, which reports to the board of directors.

**2021 Board/Committee Membership:**

Board (Director since August 2015)

Major Projects Committee (Chair)

Generation Oversight Committee

**2021 Attendance:**

8 of 9 89%

4 of 4 100%

4 of 4 100%

**Principal Occupation:** Corporate Director**Board Memberships for other Reporting Issuers:** None**Independence from OPG:** Independent**Interlocking Directorships on Boards of other Reporting Issuers:** None

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**James Sheppard**

Age: 73

League City, Texas, USA

James Sheppard was appointed to the OPG Board in March 2017 and currently serves as an Independent Consultant. Mr. Sheppard was Interim Senior Vice President for Southern California Edison Company and served as its Interim Chief Nuclear Officer from September 2010 to December 9, 2010.

From 1993 to 2009, Mr. Sheppard held several senior positions associated with the South Texas Project nuclear power plant, including Chairman, President and Chief Executive Officer of STP Nuclear Operating Company, which operated the facility for its three owners. He served as Executive Officer of South Texas Project Electric Generating Station. He served as an executive at STP for ten years, holding positions of Vice President and Assistant to the President and Chief Executive Officer; Vice President of Engineering and Technical Services; Vice President of Business Systems; Assistant to the executive vice president; and General Manager of Licensing. He has been an independent director at Xcel Energy Inc. since March 2011.

Mr. Sheppard holds a Bachelor of Science degree in aerospace engineering from the U.S. Naval Academy and a Master's degree in business administration from Duke University.

**2021 Board/Committee Membership:**

Board (Director since March 2017)  
Generation Oversight Committee  
Human Resources and Governance Committee  
Major Projects Committee

**2021 Attendance:**

9 of 9	100%
4 of 4	100%
8 of 8	100%
4 of 4	100%

**Principal Occupation:** Corporate Director

**Board Memberships for other Reporting Issuers:** None

**Independence from OPG:** Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None

**Anju Virmani**

Age: 67

Toronto, Ontario, Canada

Anju Virmani recently retired from her role as Chief Information Officer of Cargojet Inc. (TSX: CJT). She currently serves as a member of the board of directors of Ontario Health where she is a member of the Finance, Risk and Audit Committee, and the Innovation and Transformation Committee.

In the past, Ms. Virmani served as an advisory member of the Advisory Council for National Security and the Cross Cultural Roundtable on National Security. She also served on the boards of Toronto Central Local Health Integration Network and the Toronto Transit Commission as a citizen board member.

Ms. Virmani is a successful technology executive with more than 20 years of experience in leading organizations through transformations in technology and managing technology strategy and risk.

Ms. Virmani supports initiatives in diversity and inclusion that provide technical education for women of diverse backgrounds in science, technology, engineering and mathematics programs through mentorship and scholarships.

Ms. Virmani holds a Bachelor of Science degree and a Bachelor of Education degree from the University of Delhi (New Delhi, India), a Master's degree in business administration from the City University of New York and a Chartered Director (C.Dir) designation.

**2021 Board/Committee Membership:**

Board (Director since February 2021)  
Audit and Risk Committee (since March 2021)  
Generation Oversight Committee (since March 2021)  
Human Resources and Governance Committee (since March 2021)

**2021 Attendance:**

8 of 8	100%
6 of 6	100%
4 of 4	100%
7 of 7	100%

**Principal Occupation:** Corporate Director

**Board Memberships for other Reporting Issuers:** None

**Independence from OPG:** Independent

**Interlocking Directorships on Boards of other Reporting Issuers:** None

## Past Occupation

All of the Company's directors have held the positions listed above or other executive positions within the same or associated firms or organizations during the past five years or longer, except for the directors listed below.

Director	Past Occupation
Mary Filippelli	Group Audit Director at Lloyds Banking Group from 2014 to 2017, Vice Chair and Advisor at Deloitte LLP from 2017 to 2021.
Selma Lussenburg	Vice President Governance, Corporate Safety & Security, General Counsel & Corporate Secretary at Greater Toronto Airports Authority from 2013 to 2018.
Scott McDonald	Chief Human Resources Officer at Canada Post Corporation from 2013 to 2018.
Jill Pepall	Executive Vice President and Chief Investment Officer at Ontario Pension Board from 2009 to 2017, Executive Vice President and Chief Investment Officer at Investment Management Corporation of Ontario from 2017 to 2018.
Tracy Primeau	Shift Manager at Bruce Power from 1990 to 2021.
Anju Virmani	Chief Information Officer at Cargojet Airways Inc. from 2001 to 2021.

## Composition of the Committees of the Board of Directors

The Company has four committees of the Board: the Audit and Risk Committee, the Generation Oversight Committee, the Human Resources and Governance Committee (previously the Compensation, Leadership and Governance Committee) and the Major Project Committee (previously the Darlington Refurbishment Committee). As President and CEO of OPG, Mr. Hartwick is not a member of any Board committees but attends all committee meetings. The Board Chair is typically not a member of any committees but attends all committee meetings.

The voting members of the committees, as of the date of this AIF (unless otherwise indicated), are identified below. The table below lists the committees of the Board and their members as of the date of this AIF.

Director <sup>1,2</sup>	Audit and Risk Committee <sup>1,2,3</sup>	Generation Oversight Committee <sup>4</sup>	Human Resources and Governance Committee <sup>1,2,5</sup>	Major Projects Committee <sup>2</sup>
Mary Filippelli	✓		✓	✓
John Herron		Chair		✓
Selma Lussenburg	✓		✓	✓
Scott McDonald			Chair	✓
Jill Pepall	Chair	✓		
Tracy Primeau	✓	✓		✓
Jim Reinsch		✓		Chair
James Sheppard		✓	✓	✓
Anju Virmani	✓	✓	✓	

<sup>1</sup> Ani Hotoyan-Joly served as a Director from March 2017 to March 2021 and was the Audit and Risk Committee Chair and a member of the Human Resources and Governance Committee.

<sup>2</sup> Yezdi Pavri served as a Director from September 2015 to April 2021 and was a member of the Audit and Risk Committee, Human Resources and Governance Committee and Major Projects Committee.

<sup>3</sup> Scott McDonald was a member of the Audit and Risk Committee from January 2020 to May 2021.

<sup>4</sup> Selma Lussenburg was a member of the Generation Oversight Committee from November 2019 to May 2021.

<sup>5</sup> Jill Pepall was a member of the Human Resources and Governance Committee from June 2020 to August 2021.

## 9.2 OFFICERS

The following table sets forth the name, municipality of residence, position with the Company and the date of commencement for each of the officers of the Company as of the date of this AIF:

Name	Municipality of Residence	Current Position Held	Officer Since
Wendy Kei	Toronto, Ontario	Board Chair	June 2019
Ken Hartwick	Milton, Ontario	President and Chief Executive Officer	March 2016
Shelley Babin	Toronto, Ontario	General Counsel, Senior Vice President, Regulatory Affairs and ESG and Chief Ethics Officer	July 2019
Nicolle Butcher	Toronto, Ontario	Chief Operations Officer	July 2019
Alec Cheng	Markham, Ontario	Vice President, Chief Controller and Accounting Officer	December 2018
Heather Ferguson	Toronto, Ontario	Senior Vice President, Business Development & Strategy and Corporate Affairs	July 2019
Chris Ginther	Newmarket, Ontario	Executive Vice President, Business Strategy and Commercial Management	July 2012
Steve Gregoris	Whitby, Ontario	Chief Nuclear Officer	September 2020
Mel Hogg	Toronto, Ontario	Chief Administrative Officer	September 2020
David Kaposi	Toronto, Ontario	Vice President, Chief Investment Officer	November 2013
Mike Martelli	Toronto, Ontario	Chief Project Officer	July 2013
Carlton Mathias	Toronto, Ontario	Vice President Law, ESG, and Corporate Secretary	August 2018
John Mauti	Toronto, Ontario	Chief Financial Officer & Senior Vice President, Finance	April 2019
Dominique Minière	Toronto, Ontario	Executive Vice President, New Nuclear Domestic & International Strategy	March 2019
Subo Sinnathamby	Markham, Ontario	Senior Vice President, Nuclear Refurbishment	September 2020

On January 5, 2022, OPG announced the appointment of a new Chief Financial Officer & Senior Vice President, Finance, Aida Cipolla, effective March 14, 2022 and the retirement of John Mauti, OPG's current Chief Financial Officer & Senior Vice President, Finance on March 31, 2022.

### Past Occupation

All of the executive officers of the Company have held the positions listed above or other positions within the Company during the past five years or longer, except for the officers listed below.

Executive Officer	Past Occupation
Steve Gregoris	Organizational Effectiveness Evaluator secondment at WANO from October 2016 to May 2017.
Mel Hogg	Associate at Stikeman Elliott LLP from February 2008 to August 2017.
Dominique Minière	Chief Operating Officer at Electricité de France from January 2015 to March 2019.



#### Cease Trade Orders, Bankruptcies, Penalties or Sanctions

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

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

#### Conflicts of Interest

Directors and officers of OPG are required to disclose any existing or potential conflicts in accordance with OPG policies governing directors and officers and in accordance with the OBCA. The Board of Directors Conflict of Interest Policy and the Company's Code of Business Conduct cover potential conflicts of interest for Directors and all OPG employees, respectively.

#### Indebtedness of Directors and Executive Officers

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

## 10 CORPORATE GOVERNANCE

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

### Board of Directors

OPG's Board of Directors is comprised of individuals with the following capabilities:

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

The Board exercises its independent supervision over management as follows: all of the members of the Board are independent of the Company except for the Company President and CEO; meetings of the Board are held at least five times a year; a formal Charter for the Board and for each Board committee have been adopted and the charters are reviewed annually; and a portion of each Board and Board committee meeting is reserved for independent Directors to meet without management present. Further information of the Board's role and responsibilities are included in OPG's Charter of the Board of Directors which can be found on the Company's website at [www.opg.com](http://www.opg.com). ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website is incorporated by reference herein.***

### *Position Descriptions*

The Board and each Board committee is chaired by an independent Director and each have a written job description. The detailed written job descriptions of the Board Chair and each Board committee Chair can be found on the Company's website at [www.opg.com](http://www.opg.com). ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website is incorporated by reference herein.***

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

### *Director Independence*

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

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

The Board has a Board of Directors Conflict of Interest Policy and Procedure that governs the disclosure and mitigation of Director conflicts or potential conflicts of interest, which requires the immediate written disclosure of actual or potential conflicts of interest to the Board Chair. The Board has also adopted an annual process of written disclosure by Directors in order to:

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

To further minimize potential conflicts of interest, the Board has a policy on interlocking directorships. This policy states that no more than two OPG Directors may sit on a board of directors of another reporting issuer at the same time. Directors must confirm that they are in compliance with OPG's policy on interlocking directorships when disclosing to the Board Chair appointments to other boards of directors. OPG Board members do not have any interlocking directorships.

A copy of the Board of Directors Conflict of Interest Policy can be found on the Company's website at [www.opg.com](http://www.opg.com). ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website is incorporated by reference herein.***

### *Strategic Planning*

OPG's Board holds an annual strategy session and devotes a significant portion of each regular Board meeting to discussion of corporate strategic matters. Management is responsible for developing the strategy and presenting it to the Board for discussion. Integrated into the strategy and business of the Company is OPG's work on ESG matters, which the Board oversees in accordance with the provisions of the OPG Board Charter.

In 2021, the Board received reports on key strategic issues, risks, competitive developments and corporate opportunities related to the Company. Management ensures that the key strategic elements are incorporated into OPG's annual budget and business plan, which are reviewed and approved by the Board. The Board also periodically receives briefings from external advisors on broad energy industry developments and/or special strategic matters.

### *Overseeing the Management of Risks*

The Board oversees OPG's approach to identifying, reporting and mitigating the risks that could significantly impact the Company's capacity to achieve its long-term strategic objectives, as well as specific business plan objectives. To fulfill its risk oversight responsibilities, the Board approves the Enterprise Risk Management (ERM) Framework with oversight by the Audit and Risk Committee, comprised of independent Directors. The ERM Framework employs a framework that management uses to manage the Company's risk profile, as well as the Company's internal audit program. The ERM Framework assists the Board in understanding how risks may affect the Company and how they are being addressed by management. The Audit and Risk Committee receives quarterly reports from OPG's Chief Risk and Audit

Executive (CRAE) on enterprise-wide risks and internal audit findings, and meets with the CRAE *in camera*. The Board also oversees Company risk through meetings of each of the standing Board committees and at the Board's annual strategy session, as risk considerations are integrated into management's reports and requests for Board approval.

Through the Human Resources and Governance Committee, the Board also monitors the risks associated with the Executive Compensation Program, to ensure an appropriate level of risk and reward is maintained while minimizing opportunities for excessive risk taking. On an annual basis, the CRAE reviews the executive compensation framework to identify any potential for excessive risk-taking that may reasonably have a material adverse effect on OPG and provides an annual report to the Human Resources and Governance Committee on the results of the review.

#### *Orientation and Continuing Education*

The Human Resources and Governance Committee is responsible for reviewing and recommending appropriate orientation programs for new Directors. New Directors are provided a robust orientation program, which includes briefings by OPG senior executives covering all of the aspects of the Company's business. New Directors are also briefed and provided relevant documentation relating to OPG's governance practices and policies. New Directors participate in plant visits of OPG generating facilities, where they also receive comprehensive introductory briefings from OPG senior executives on OPG's operations and related business activities.

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

#### *Ethical Business Conduct*

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

OPG's Code of Business Conduct is applicable to all OPG employees and equally applicable to directors, agents, representatives, consultants, contractors, and business partners acting on OPG's behalf. The OPG Board of Directors mandate explicitly acknowledges the Board's role in creating a culture of integrity throughout the organization. The Board has statutory obligations regarding conflict of interest as well as a separate procedure for disclosure. The Board is required to follow both provincial legislative requirements and guidance regarding specific types of conflict and disclosure in their role as directors in the OPG Board of Directors Conflict and Interest Policy and Procedure. A copy of the Code of Business Conduct can be found on the Company's website at [www.opg.com](http://www.opg.com). ***Unless otherwise specifically stated, none of the information contained on, or connected to the Company's website is incorporated by reference herein.***

### *Nomination of Directors*

The Human Resources and Governance Committee is responsible for conducting an annual review of the OPG Board's principles and systems of governance and oversight of annual Board, Board committee and Director evaluations. The Human Resources and Governance Committee maintains a robust Succession Plan for the orderly rotation of Directors to ensure that the Board has the skills, experience and diversity required. The Succession Plan includes the following components:

- (i) core requirements for a high performing board;
- (ii) skill sets required by the Board as a whole;
- (iii) skills profile for the current Board;
- (iv) tenure map of the current Board;
- (v) Board diversity target and implementation;
- (vi) "evergreen list" of potential Board candidates; and
- (vii) Board succession priorities.

The Human Resources and Governance Committee recommends candidates to the Shareholder. Nominations of Directors by the Shareholder may also be considered by the committee.

When considering a potential candidate, the Human Resources and Governance Committee considers the qualities, experience and skills that the Board, as a whole, should have in light of the business opportunities and risks facing OPG. The attributes the Human Resources and Governance Committee considers in a candidate include integrity, business judgment and experience, diversity, professional expertise, independence from management, financial literacy and communication skills, as well as sufficient time available to fulfill his or her obligations as a Board member. Further, the Board ensures that a diverse candidate (which includes candidates who self-identify as belonging to an equity-seeking group, including but not limited to women, Indigenous Peoples, racialized people, persons with disabilities, and members of the 2SLGBTQ+ community) is interviewed for every vacancy on the Board. The Board's diversity targets are set out below under the heading, *Diversity in Leadership*.

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

### *Performance Assessments*

The Human Resources and Governance Committee is responsible for the annual process for evaluating the performance of the Board, its committees and individual Directors. The Human Resources and Governance Committee makes recommendations to the Board for enhancing the Board's governance and effectiveness. In past years, the Board and committee evaluations were based solely upon the completion of confidential questionnaires regarding self-assessments of performance areas and adherence to the Board and Committee Charters. Consistent with good corporate governance practices, in 2021, the Human Resources and Governance Committee, with the support of the full Board, determined that the performance of the Board would be assessed with the assistance of an independent expert consultant. A competitive process was employed to retain an independent consultant. A report was prepared in accordance with best practices and its content was discussed at an *in camera* meeting of the Board. The discussion included committing to actions to enhance performance. The Board expects to have an independent expert consultant facilitate Board performance assessments at regular intervals going forward.

### *Director Tenure/Board Renewal*

The OPG Board Charter sets out the Board's policy on tenure, being that directors may serve on the Board for up to ten years from the date that they were first appointed to the Board, with the possibility of an extension to a director's tenure for one further term in exceptional circumstances. The Board has specifically considered whether to impose an age limit for directors and has decided it is not in the best interest of the Board and the Company to do so. When considering Board renewal, the Human Resources and Governance Committee regularly reviews the Board skills profile

and the Board Diversity and Inclusion Policy. From time to time, the committee makes recommendations to add skills to the Board that reflect OPG's business opportunities and risks.

#### *Overseeing Succession Planning for Chief Executive Officer*

Chief Executive Officer succession planning is reviewed with the Board and the Human Resources and Governance Committee at least twice a year. A report on CEO succession planning is delivered to the full Board at the May meeting and to the Human Resources and Governance Committee at the November meeting. The report includes the identity of candidates and their readiness stages. The report is discussed with the CEO at an *in camera* session and then again in an *in camera* session of the independent directors. Candidates are aware of their placement on a CEO succession plan and have regular discussions with their supervisors about readiness preparation. Candidates also attend before the Board or committees from time to time to present on their areas of accountability as appropriate.

### Compensation

#### *Executive Compensation Framework*

The Human Resources and Governance Committee is comprised of independent members who oversee the compensation of executives from the Enterprise Leadership Team to CEO. Additional details regarding the committee's responsibilities can be found below under the heading, *Committees of the Board of Directors*.

In August 2018, the Government of Ontario introduced the *Compensation Framework Regulation 406/18* under the *Broader Public Sector Executive Compensation Act, 2014*. This regulation applies to designated executives, which predominately includes OPG employees at the Vice President level and higher, imposing a freeze on base salary and restricting pay-for-performance payments to the pay-for-performance envelope disbursed in the 2017 pay year. The Government of Ontario is in the process of reviewing executive compensation programs throughout the broader public sector and until a review is completed, there remains uncertainty on the executive compensation parameters that will be applicable going forward.

#### *CEO Compensation*

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

The CEO's base pay and incentives compensation are compliant with the *Compensation Framework Regulation 406/18*.

For details regarding compensation paid to Directors and executive officers during the financial year ended December 31, 2021, refer to OPG's Statement of Executive Compensation, which is attached to this AIF as Appendix C.

#### *Director Compensation*

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

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

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

Since 2004, the Chair of the Board, in their role as non-executive Chair, receives an all-inclusive annual fee of \$150,000 and is reimbursed for out-of-pocket expenses including travel and other expenses. All Directors' out-of-pocket expenses must be in compliance with Ontario's Travel, Meal and Hospitality Directive and be approved by the Integrity Commissioner of Ontario.

#### Committees of the Board of Directors

The following are the current standing Board committees as of the date of this AIF:

##### *Audit and Risk Committee*

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

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

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

The Audit and Risk Committee oversees an independent internal audit function and management's ERM Framework, which includes the review of management's assessment of significant risks to achieving OPG's business plan objectives. The committee is also responsible for ensuring that an effective Code of Business Conduct is in place at OPG and monitors compliance with this code. Additionally, the committee provides oversight of OPG's cyber security program.

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

##### *Generation Oversight Committee*

This committee is responsible for the oversight of safe, secure and efficient operations of OPG's generating facilities. Additionally, the committee is responsible for the development, risk management, financing and execution of the Company's major generation and other projects, including those related to nuclear waste management, security, industrial and occupational health and safety, environment and outage management. This committee also is responsible for providing oversight for matters relating to business development and business acquisitions. The committee is also responsible for the oversight of OPG's environmental and dam safety management systems and OPG's Indigenous relations. The committee reviews reports of internal and external advisors/assessors in respect of OPG's generation operations and management's response to the findings from such assessments. The committee provides oversight to ensure that OPG's generating facilities are in compliance with nuclear safety, industrial and occupational health and safety and environmental laws and regulations.

#### *Human Resources and Governance Committee (previously Compensation, Leadership and Governance Committee)*

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

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

#### *Major Projects Committee (previously Darlington Refurbishment Committee)*

The Major Projects Committee is responsible for oversight of matters relating to the planning and execution of major projects, including the Darlington Refurbishment project, that are undertaken by the Company through the internal Enterprise Projects Office organization as may be determined from time to time. The committee is also responsible for reviewing and approving the retention and compensation of qualified advisors, independent of OPG management, to monitor and report to the committee on the progress and performance of such major projects against approved execution plans, including scopes, budgets and schedules. The committee monitors and reports to the Board on the progress of the major projects against the Board approved budgets and schedules, reviews reports from OPG's CRAE, and reviews results of internal assessments and management's response to the findings of such assessments.

#### Diversity in Leadership

Diversity is an integral part of OPG's business practice and the constituency of the Board. The Board considers diversity essential in attracting qualified directors and maintaining a highly effective board of directors, and maintains a Board of Directors Diversity and Inclusion Policy.

#### *Board of Directors*

In 2019, OPG became a member of the 30% Club Canada, a campaign which aims to have 30 percent of board seats and senior management positions in the Canadian business community to be held by women by 2022. In 2019, the Board set a target, for 2022, of 50 percent of Board positions to be held by members of designated groups and 30 percent of Board positions to be held by women. As at December 31, 2021, the Board exceeded these targets.

#### *Senior Management*

OPG applies ED&I principles to succession planning and is monitors succession metrics to ensure an effective pipeline of diverse candidates for management positions. As at December 31, 2021, women filled 38 percent of Corporate Officer roles and 21 percent of senior leadership positions. In total, there were six women in Corporate Officer roles and 14 women in senior leadership positions.



## Further Information on OPG Governance

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

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

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

## 11 INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

### 11.1 RELATIONSHIP WITH THE PROVINCE AND THE OEFC

#### Relationship with the Shareholder

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

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

#### Memorandum of Agreement

In September 2021, OPG and the Shareholder entered into a renewed MOA regarding OPG's roles and responsibilities as an owner and operator of a diversified portfolio of electricity and generation assets and provider of related services, both inside and outside of Ontario. The MOA was renewed by the Ontario Minister of Energy and the OPG Board Chair. The MOA serves as the basis of agreement between OPG and the Shareholder regarding OPG's mandate, governance, performance, reporting and communications and establishes the accountabilities between OPG and the Province. OPG's business imperatives are based on the Company's mandate as set out in the MOA.

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

#### Shareholder Directives

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

#### Ontario Nuclear Funds Agreement

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

#### OPG Debt Held by the OEFC

A portion of OPG's long-term debt has been financed by the OEFC. As at December 31, 2021, the OEFC held \$2,690 million of OPG's long-term debt with maturity dates ranging from 2022 to 2048. For additional details, see Note 9 of the Company's audited consolidated financial statements as at and for the year ended December 31, 2021.

#### Fair Hydro Trust Loan Receivable to OPG

The Company's interest in the Trust includes subordinated debt issued by the Trust as part of its financing for the acquisition of Investment Interest from the IESO in 2017 and 2018. OPG recognizes this interest as a loan receivable on the consolidated balance sheet following the deconsolidation of the Trust effective May 9, 2019 as a result of the *Fixing the Hydro Mess Act, 2019* receiving Royal Assent. Under this legislation, the Province is responsible for paying existing funding obligations administered by the Trust. The Trust is prohibited from issuing any new funding obligations. As at December 31, 2021, the loan receivable balance was \$911 million. Additional details on the Trust can be found in the section, *General Development of the Business* under the heading, *General Developments – Ontario Fair Hydro Plan*.

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

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

OPG is subject to income tax audits by the Ontario Ministry of Finance. As of the date of this AIF, income tax audits up to and including the 2016 taxation year have been completed. OPG remains subject to income tax examination by the Ontario Ministry of Finance for years after 2016.

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

## 12 LEGAL PROCEEDINGS AND REGULATORY ACTIONS

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### 12.1 LEGAL PROCEEDINGS

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

#### British Energy Claim

In 2006, OPG was served with a Notice of Action and Statement of Claim filed with the Ontario Superior Court of Justice by British Energy Limited and British Energy International Holdings Limited (together, British Energy). The action claimed contribution and indemnity from OPG for any amounts British Energy was found liable for in an arbitration commenced against it by the purchasers of British Energy's interest in Bruce Power L.P. (the Claimants) regarding an alleged breach of British Energy's representations and warranties (the Arbitration). Both the action and the Arbitration related to corrosion to a steam generator unit discovered after OPG leased the Bruce nuclear generating stations to Bruce Power L.P.

In 2012, the arbitrator found that British Energy was liable to the Claimants for some of the damages they claimed. In September 2014, British Energy amended its Statement of Claim (Amended Claim) to reflect that the Claimants 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". OPG defended the claim, and the parties exchanged documentary productions.

A pre-trial was held on May 31, 2021. Shortly thereafter, the parties reached a settlement of British Energy's claim and the action has now been dismissed. The settlement did not have a material impact on the Company's consolidated financial statements.

### 12.2 REGULATORY ACTIONS

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

## 13 MATERIAL CONTRACTS

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

## 14 INTERESTS OF EXPERTS

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

## 15 GLOSSARY

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

Term	Definition
Energy Supply Agreement or ESA	a bilateral contract between the IESO and an electricity generator covering the generation of electricity and/or electricity services in Ontario, including capacity and ancillary services.
FERC	an acronym for the Federal Energy Regulatory Commission, the federal agency responsible for the regulation of sale and transmission of wholesale electricity, natural gas and oil in interstate commerce in the United States.
Global Adjustment	a portion of total cost of electricity in Ontario, which includes the difference between the electricity market clearing price used to dispatch generation and the prices paid to contracted and regulated generators in the province, and the cost of conservation and demand management programs.
government business enterprises	government organizations that are separate legal entities with the power to contract in their own name, have the financial and operating authority to carry on a business, are principally focused on the selling of goods and services to individuals and non-government organizations, and are able to maintain their operations and meet their obligations through revenues generated outside the government reporting entity.
greenhouse gas or GHG	gaseous constituents of the atmosphere, both natural and human-caused, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect.
gross revenue charge	taxes and charges levied on hydroelectric generating stations in Ontario as prescribed by <i>Ontario Regulation 124/02</i> under the <i>Electricity Act, 1998</i> .
heavy water (deuterium oxide)	water containing significantly more than the natural proportion of heavy hydrogen (deuterium) atoms to ordinary hydrogen atoms, used as a moderator in CANDU reactors.
IESO	an acronym for the Independent Electricity System Operator, a non-profit entity responsible for operating the electricity market and directing the operation of the bulk electrical system in Ontario.
in-service generating capacity	the portion of installed capacity (the highest level of output which a generating unit is designed to maintain indefinitely without damage to the unit) that has not been removed from service.
interconnection	a transmission line which carries power across the service area boundary of geographically adjacent jurisdictions.
intermediate facilities	electricity generating facilities that are needed for intermediate load requirements to meet demand during peak hours of the day, adjusting output as consumer demand moves up and down.
intervenor	individuals or groups who have the OEB's permission to actively participate in a public hearing about a utility's application or other proceedings.
isotope	an atom in a chemical element that differs in the number of neutrons than protons and electrons.
kWh	a kilowatt hour, the commercial unit of electric energy (the amount of electricity consumed by ten 100 watt light bulbs burning for one hour).
load	the quantity of electricity consumption measured as either the energy consumed over a given period of time or the rate of energy consumption at a given time by a particular customer or group of customers.
memorandum of understanding	an agreement between two or more parties outlining the terms and details of an understanding, including each parties' requirements and responsibilities.
MW	a megawatt, equal to 1,000,000 watts or 1,000 kilowatts.

Term	Definition
MWh	a megawatt-hour, equal to 1,000 kWh.
OEB	an acronym for the Ontario Energy Board, an independent, quasi-judicial tribunal that regulates market participants in Ontario's natural gas and electricity industries.
OEFC	an acronym for the Ontario Electricity Financial Corporation, an agency of the Province and the legal continuation of the former Ontario Hydro. The OEFC is responsible for managing the debt and certain other obligations not transferred to other successor companies of Ontario Hydro. The transfer orders made by Order-in-Council under the <i>Electricity Act, 1998</i> provide that if they fail for any reason to fully and effectively in law transfer an asset, right, liability or obligation to OPG or that if such transfer would constitute a breach of the terms of the asset, right, liability or obligation or of any applicable law, such assets, rights, liabilities or obligations are not transferred, but are held by the OEFC for the benefit of OPG.
ONFA	an acronym for the Ontario Nuclear Funds Agreement between OPG and the Province that sets out the responsibility for funding the liabilities for the decommissioning of OPG's nuclear stations and the long-term management of OPG's used nuclear fuel and L&ILW.
Ontario NFWA Trust	a trust established by OPG pursuant to the <i>Nuclear Fuel Waste Act</i> (Canada) for the purpose of funding the implementation of Canada's long-term used nuclear fuel management plan.
operating reserve	the capacity that can be called upon on short notice to replace scheduled energy supply that is unavailable as a result of an unexpected outage or to augment scheduled energy as a result of unexpected demand or other contingencies.
peaking facilities	electricity generating facilities that generally run only when there is a high demand for electricity.
prescribed facilities	OPG's electricity generating stations the output of which receives regulated prices determined by the OEB. OPG's prescribed facilities are the Darlington and Pickering nuclear generating stations and 54 hydroelectric generating stations located across a number of major river systems in the Ontario.
rate rider	an amount which is added to or subtracted from the base regulated price to recover or refund a specific amount of money for a temporary period.
reactive support	the control and maintenance of prescribed voltages on the electricity grid.
refurbishment	the work needed to extend the life of a generating asset by replacing the major life-limiting components.
regulated facilities	see prescribed facilities.
regulation service	a service acting to balance total electricity system generation with total electricity system load demand (plus transmission losses) on a minute-by-minute or second-by-second basis, and acts to help correct variations in power system frequency. This service corrects for short-term changes in electricity use that might affect the stability of the power system.
Shareholder	the sole shareholder of OPG, the Province of Ontario.
small modular reactors or SMRs	a new class of nuclear reactors that are considerably smaller in size and power output than conventional nuclear power reactors, with enhanced safety features. Small modular reactor technology has the potential for a range of applications, from grid-scale units that can provide non-emitting reliable electricity, to smaller units suitable for heavy industry and powering remote communities.
surplus baseload generation or SBG	a condition that occurs when electricity generation from baseload generating facilities is greater than the electricity market demand.

Term	Definition
Tritium	a radioactive substance that is created within CANDU reactors as a result of heavy water in the reactor moderator and heat transport systems.
TWh	a terawatt hour, equal to 1,000,000 MWh.
unit	an electrical generator, together with its driving turbine and auxiliary equipment.
unit capability factor	amount of energy a generating unit is capable of producing as a percentage of its maximum output assuming no external constraints such as transmission limitations.
watt	a scientific unit of electric power representing the rate of work of one joule per second.



## **APPENDIX A**

### **ONTARIO POWER GENERATION INC. AUDIT AND RISK COMMITTEE INFORMATION**

## AUDIT AND RISK COMMITTEE INFORMATION

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

### Composition of the Audit and Risk Committee

All members of the Audit and Risk Committee are independent within the meaning of NI 52-110 and are financially literate. Each member has an understanding of internal controls and procedures for financial reporting. As part of OPG's Continuing Education Program for Directors, Audit and Risk Committee members are provided with access to both internal and external educational resources, including seminars and courses, in order to maintain or enhance their financial literacy.

As at March 10, 2022, members of the Audit and Risk Committee were:

Director	Relevant Education and Experience
Jill Pepall (Chair)	Ms. Pepall holds a Master's degree in Business Administration (MBA) from the Schulich School of Business at York University and is a Chartered Financial Analyst (CFA). She also holds the Institute of Corporate Director (ICD.D) designation. Ms. Pepall currently serves as a board member and Chair of the Investment Committee at the CAMH Foundation (Centre for Addiction and Mental Health). She is also a board member and investment committee member of CMA Impact Inc. (Canadian Medical Association). Ms. Pepall has previously served as Executive Vice President and Chief Investment Officer at Investment Management Corporation of Ontario and its predecessor organization, Ontario Pension Board. She was also Managing Director and Chief Investment Officer at Scotia Asset Management.
Mary Filippelli	Ms. Filippelli holds a Bachelor of Business Management from Ryerson University and is a Fellow of the Chartered Professional Accountants and Chartered Accountants of Ontario. Ms. Filippelli currently serves on the board of directors of Canadian Western Bank (TSX: CWB) as an independent director and member of the Audit Committee, and the Governance and Conduct Review Committee. Ms. Filippelli previously served as Vice-Chair and Managing Partner of Deloitte, and was a member of Deloitte's Leadership Team, Clients & Industry Management Committee, Financial Services and Risk Executive. Additionally, she served on the Global Executive of Lloyds Banking Group as the Group Audit Director in London, England and spent more than two decades with KPMG Canada in progressive roles, from audit partner, National Risk and Regulatory Lead Partner and National Financial Services Lead Partner, leading the national growth strategy across audit, tax and advisory services.
Selma Lussenburg	Ms. Lussenburg holds a Bachelor of Law (LLB) degree from the University of Ottawa and a Master of Law from the Australian National University. She also holds a Chartered Director (C.Dir) designation from the Directors College and completion of the Directors College Financial Literacy module. Ms. Lussenburg has previously served as Chair and Audit Committee member of Ontario Capital Growth Corporation. Ms. Lussenburg has also served as General Counsel at the Greater Toronto Airports Authority (GTAA) where she was a member on the GTAA's Disclosure Committee.
Tracy Primeau	Ms. Primeau holds a Bachelor of Arts degree from the University of Waterloo. She is currently enrolled in the Institute of Corporate Director (ICD.D) designation program. Ms. Primeau is an active alumni member of St. Paul's University College, an affiliated institution of the University of Waterloo, where she serves on the board of directors and is member of the Audit Committee. Ms. Primeau is the Board Chair of the Women's House Serving Bruce & Grey and oversees the Audit and Risk Committee and attends the finance committee meetings reporting on risk mitigation.
Anju Virmani	Ms. Virmani holds a Bachelor of Science degree and Bachelor of Education degree from the University of Delhi and a Master's degree in Business Administration (MBA) from the City University of New York. She also holds a Chartered Director (C.Dir) designation from the Directors College and completion of the Directors College Financial Literacy module. Ms. Virmani currently serves on the board of directors of Ontario Health and is a member of the Finance, Risk and Audit Committee. She has previously served as a member of the Finance and Audit Committee for Toronto Central Local Health Integration Network.

### Pre-Approval Policies and Procedures

The Audit and Risk Committee Charter contains provisions governing the Company's relationship with the external auditors, including but not limited to annual performance reviews and a comprehensive review of the external auditors at least once every five years and pre-approval of all services to be provided by the external auditors. The most recent comprehensive review of the external audit firm was completed in 2019, for the period from 2014 to 2018. The Board reappointed Ernst & Young LLP as the Company's auditor for the 2022 fiscal year in November 2021.

### External Auditor Service Fees

The following fees were accrued by OPG in connection with services rendered by Ernst & Young LLP:

<i>(thousands of dollars)</i>	2021	2020
Audit Fees <sup>1</sup>	<b>2,723</b>	2,880
Audit-Related Fees <sup>2</sup>	<b>425</b>	512
All Other Fees <sup>3</sup>	<b>17</b>	56

<sup>1</sup> "Audit Fees" refer to fees for audit services.

<sup>2</sup> "Audit-Related Fees" refer to fees for assurance and related services that reasonably relate to the performance of the audit or review of the Company's financial statements and are not reported under "Audit Fees".

<sup>3</sup> "All Other Fees" refer to fees for services not included in the categories of "Audit Fees", "Audit-Related Fees" and "Tax Fees".

## **APPENDIX B**

### **ONTARIO POWER GENERATION INC. AUDIT AND RISK COMMITTEE CHARTER**

**Ontario Power Generation Inc.**  
**Audit and Risk Committee of the Board**

**CHARTER**

**Purpose**

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

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

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

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

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

**Committee Responsibilities and Duties**

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

**1. Integrity of OPG's Financial Statements and Reporting**

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

- a) appointment or replacement of the Chief Financial Officer;
- b) OPG's annual financial statements and external audit report, including financial statements, Management Discussion and Analysis (MD&A), related footnotes and any documentation required by the *Securities Act* to be prepared and filed by OPG or that OPG otherwise files with securities regulators; and
- c) OPG's Annual Information Form, if required, prior to filing with securities regulators.

The Committee reviews and approves:

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

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

- e) adequacy of procedures in place for the review of OPG's public disclosure of financial information extracted or derived from OPG's financial statements;
- f) the adequacy of OPG's role as Financial Services Manager of the Fair Hydro Trust, including in relation to the Management Oversight Committee (MOC) Charter and the continuing sufficiency of the MOC Charter as reviewed by the Committee from time to time;
- g) significant accounting principles and reporting issues and impact on the financial statements, including complex or unusual transactions, highly judgmental areas, major issues regarding or changes to OPG's selection/application of accounting principles, financial presentations, the effect of regulatory and accounting initiatives, as well as off-balance sheet arrangements on OPG's financial statements;
- h) analysis prepared by Management and/or the external auditor detailing financial reporting issues and judgments made in connection with the preparation of financial information, including analysis of the effects of alternative generally accepted accounting principles methods; and
- i) whether any other matters related to conduct have come to the Committee's attention that causes it to believe that the financial statements contain an untrue statement of material fact or omit to state a necessary material fact.

## **2. Integrity and Adequacy of Internal Controls and Standards of Codes of Conduct and Ethics**

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

- a) legal, tax, or regulatory matters that may have a material impact on OPG's operations and the financial statements, including, but not limited to, violations of securities law or breaches of fiduciary duty;
- b) the scope of review of internal control over financial reporting, significant findings, recommendations and Management's responses for implementation of actions to correct weaknesses in internal controls;
- c) disclosures made by the Chief Executive Officer and Chief Financial Officer during the certification process regarding significant deficiencies in the design or operation of internal controls or any fraud that involves Management or other employees who have a significant role in OPG's internal controls;
- d) procedures for the receipt, recording and treatment of complaints received by OPG regarding accounting, internal accounting controls, or auditing matters, and procedures for the confidential and anonymous submission by OPG employees of concerns regarding accounting or auditing matters;
- e) expenses of the Board Chair, Board of Directors, President/CEO and the President/CEO's direct reports on an annual basis, and of any other senior officers and employees the Committee considers appropriate; and
- f) reports from the Chief Ethics Officer on independent reviews and investigations of fraud allegations, matters that may involve fraud and/or Codes of Conduct violations and compliance, including anonymous "whistleblower" complaints, except that investigations of matters that involve Code of Business Conduct violations and compliance which are primarily personnel related shall be reviewed by the Human Resources and Governance Committee.

### **3. Performance of OPG's Internal Audit Function**

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

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

The Committee reviews and approves:

- a) the annual internal audit plan and all major changes to the plan, including the organizational structure, budget and the adequacy of resources; and
- b) the charter of the internal audit function triennially.

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

- a) results of Internal Audit reports including significant findings, the adequacy of control processes, Management's response and the timetable for implementation of Management actions to correct weaknesses, and any difficulties encountered in the course of their work (such as restrictions on the scope of their work or access to information);
- b) Internal Audit's confirmation of organizational independence and disclosure of any conflict of interest; and
- c) Internal Audit performance relative to the annual internal audit plan.

### **4. Performance and Independence of External Auditor**

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

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

The Committee reviews and approves:

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

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

- a) the work and report of the external auditor engaged for the purpose of preparing or issuing an auditor's report or performing other audit, review or attest services for OPG, including the resolution of disagreements between Management and the external auditor regarding financial reporting;
- b) the independence and qualifications of the external auditor;
- c) the annual report by the external auditor describing the auditing firm's internal quality control procedures, any material issues raised by the most recent internal quality-control review or peer review of the auditing firm or by any inquiry or investigation by governmental or professional authorities within the preceding five years respecting one or more independent audits carried out by the external auditor and any steps taken to deal with any such issues and all relationships between the external auditors and OPG;
- d) scope and approach of the annual audit plan with the external auditors;
- e) quality and acceptability of OPG's accounting principles including all critical accounting policies and practices used, any alternative treatments that have been discussed with Management as well as any other material communications with Management;

- f) external auditor's process for identifying and responding to key audit and internal control risks;
- g) rotation of the lead audit partner and other audit partners every seven years, and consider regular rotation of the audit firm;
- h) all related-party transactions; and
- i) OPG's hiring policies regarding partners, employees and former partners and employees of the present and former external auditor of OPG.

## **5. Business and Financial Planning**

The Committee reviews and makes recommendations to the Board on:

- a) OPG's business plan, including overall financing plan in support of the Company's capital expenditures and medium – long-term forecast;
- b) OPG's rate applications to the Ontario Energy Board, including proposed payment amounts and any agreement arising from a Settlement Conference with intervenors; and
- c) corporate financing vehicles, credit facilities, including any plans to access capital debt markets and other related financing activities. The Board may delegate to an officer of the Company authority to enter into such financing activities in such a manner as the Board shall determine at the time of such delegation. Any decisions of the officer to whom authority is delegated must be presented to the full Audit and Risk Committee at its next scheduled meeting.

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

The Committee reviews and makes recommendations to the Board on:

- a) the appointment or replacement of the Chief Investment Officer;
- b) the appointment of the auditor for the OPG Pension Fund and the Used Fuel Segregated Fund and Decommissioning Segregated Fund;
- c) the broad objectives, governance frameworks and risk posture for the OPG Pension Fund and the Used Fuel Segregated Fund and Decommissioning Segregated Fund and annual status report on these Funds; and
- d) the tri-ennial valuation of the Pension Fund and annual valuation of the Supplementary Employee Retirement Pension Plans. *(The Committee provides advice to the Human Resources and Governance Committee on the affordability of proposed pension benefit changes.)*

The Committee reviews and approves:

- a) the appointment of the members of OPG's Pension Committee. In addition, the Committee may, at any time, remove or replace any member of the Pension Committee or fill a vacancy on the Pension Committee. The Pension Committee Chair may temporarily appoint a senior management employee to fill a vacancy on the Pension Committee until the next regularly scheduled Audit and Risk Committee meeting;
- b) the annual audited financial statements for the OPG Pension Fund, the Used Fuel Segregated Fund and the Decommissioning Segregated Fund;
- c) the investment policies and procedures, including the design of modifications, for the OPG Pension Fund, as required by the *Pension Benefits Act* (Ontario) and its regulations, and for the Decommissioning Segregated Funds, as required by the Ontario Nuclear Funds Agreement; and
- d) the appointment of the Pension Plan actuary.

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



- a) reports on a quarterly, annual or by exception basis, on compliance with and appropriateness of the asset mix policy; total fund and asset class returns relative to benchmarks; material compliance with breaches of policies or procedures; and work conducted by the plan actuary; and
- b) periodic reports on the calculation of OPG's nuclear waste liability.

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

The Committee reviews and makes recommendations to the Board on:

- a) the appointment or replacement of the Chief Risk and Audit Executive; and
- b) the Company's enterprise risk policy, framework, overall risk appetite and targets, including risk appetite statements and tolerance limits defined by management (Enterprise Risk Committee). Approved risk appetite statements will set the tone for policies governing the appropriate risk areas.

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

- a) the processes employed by Management for identifying and assessing the Company's principal risks;
- b) periodic reports on Management's assessment of the principal risks to achieving the Company's strategic and business plan objectives, and the strategies for monitoring, managing and responding to those risks;
- c) periodic reports on significant emerging and evolving risks and relevant external events that could potentially impact OPG's risk profile;
- d) compliance metrics related to OPG's commercial operations trading, treasury, and fuels management;
- e) regular reports on OPG's cyber security position and programs; and
- f) periodic reports on OPG's Insurance Program.

## **8. Assessment of Committee Performance and Board Policies**

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

- a) review and assess Committee performance, including a review of the adequacy of and its compliance with this Charter, in accordance with the evaluation process approved by the Board and taking into account all legislative and regulatory requirements applicable to the Committee as well as any best practice guidelines recommended by regulators with whom OPG has a reporting relationship;
- b) provide oversight of the implementation of the following Board policies, and review these policies at least annually (or as otherwise noted below) to ensure their continuing adequacy:
  - i. Delegation and Exercise of Authority Policy;
  - ii. Disclosure Policy;
  - iii. Code of Business Conduct and Supplier Code of Conduct, including anti-bribery and corruption;
  - iv. Enterprise Risk Management Policy (*reviewed every three years*); and
  - v. Cyber Security Policy; and
- c) provide oversight of the development of any new policies deemed necessary by the Committee.

## **9. Oversight of OPG's Cyber Security Program**

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

- a) review reports provided by Management on the overall status of OPG's cyber security program at least annually;
- b) designate members of Management, with appropriate expertise, that are accountable for implementing and managing an appropriate cyber security program that includes compliance with applicable regulatory standards, maintaining policies and procedures devoted to the management of cyber security risk and developing an incident response plan;
- c) confirm that sufficient resources are devoted to the management of cyber security risks;
- d) engage Management in discussions to identify OPG's most critical data assets, where they reside, how they can be accessed, and how often the systems are tested to ensure the data is adequately protected;
- e) discuss with Management whether specific cyber security insurance is required; and
- f) encourage a culture where all employees understand cyber security as an enterprise-wide risk management issue and receive training on how to manage risk.

## **Organization**

### **Members**

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

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

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

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

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

### **Meetings**

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

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

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

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

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

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

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

### **Reports**

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

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

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

### **Authority**

The Audit and Risk Committee shall have the authority to:

- a) conduct or authorize investigations into any matters within the Committee's scope of responsibilities;
- b) set and pay the compensation for any advisors employed by the Committee; and
- c) communicate directly with the internal and external auditors.

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

### **Delegation of Authority**

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

### **Access to Management and Outside Advisors**

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

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

*Effective: May 13, 2016*

*Last reviewed: November 11, 2020*

*Revised: March 11, 2021*

## **APPENDIX C**

### **ONTARIO POWER GENERATION INC. STATEMENT OF EXECUTIVE COMPENSATION**

**Form 51-102F6V**  
**Statement of Executive Compensation – Venture Issuers**  
**(with respect to the financial year ended on December 31, 2021)**  
**Ontario Power Generation Inc.**

## **Compensation Discussion and Analysis**

### ***Executive Summary***

This Compensation Discussion and Analysis describes the material elements of the compensation paid to the named executive officers (“NEOs”) of Ontario Power Generation Inc. (“OPG” or the “Company”) and the members of the OPG Board of Directors (“Board”) (“Directors”) with respect to the financial year ended December 31, 2021.

When referring to the NEOs in this Compensation Discussion and Analysis, the following individuals are being referred to as a group:

<b>Position</b>	<b>Name</b>	<b>OPG Title</b>
Chief Executive Officer	Kenneth Hartwick	President & Chief Executive Officer (CEO)
Chief Financial Officer	John Mauti	Chief Financial Officer and Senior Vice President Finance (CFO)
Named Executive Officer	Dominique Minière	Chief Strategy Officer, New Nuclear Domestic & International Strategy (NNDIS)

OPG’s Executive Compensation Program (the “Program”) applicable to the NEOs includes both fixed and variable (i.e. pay for performance) elements of compensation. The Program design targets total compensation at the 50<sup>th</sup> percentile of the labour market within which OPG competes for talent (the “Comparator Group”). This Compensation Discussion and Analysis describes the fixed and variable elements of the Program and provides the resulting compensation earned by each NEO in 2021.

OPG’s Program is subject to the *Broader Public Sector Executive Compensation Act, SO 2014* (“BPSECA”) and its regulations enacted by the Province of Ontario, which is OPG’s sole shareholder. This legislation establishes compensation restraints and controls that affect compensation for the NEOs and other OPG executive-level employees.

OPG’s compensation program for Directors is based on a Board approved compensation framework. This Compensation Discussion and Analysis describes the compensation framework and provides the resulting compensation earned by each Director in 2021.

## ***Compensation Governance***

The Board follows compensation best practices and government requirements. The five-member Human Resources and Governance Committee (“HRGC”)<sup>1</sup> assists the Board in its oversight of matters related to compensation and benefits, among other things. As of December 31, 2021, the members of the HRGC were Scott McDonald (Chair), Joe Sheppard, Selma Lussenburg, Anju Virmani and Mary Filippelli, all of whom are independent Directors.

The HRGC is responsible for overseeing all significant compensation matters, including:

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

The Board determines CEO compensation on the recommendation of the HRGC. The HRGC determines compensation for the direct reports to the CEO, including the remaining NEOs, as well as the Director compensation framework and level. The base salary element of NEO compensation did not change between 2020 and 2021 (see the below Table of Compensation). Variable pay-for-performance elements of the NEOs’ 2021 compensation are approved by the Board/HRGC in Q1 2022. HRGC decisions are either reported to the Board if the decision was within the authority delegated to the HRGC under its Charter, or for matters beyond the HRGC’s authority, recommended to the full Board for approval.

### ***Objectives of Executive Compensation***

OPG’s compensation philosophy guides the development of all compensation elements and is a key consideration in the development of the Program. The philosophy is intended to enable OPG to attract, retain and motivate key talent in a manner that complies with applicable regulations, is competitive and affordable, and aligns with OPG’s business strategy. OPG’s compensation philosophy is comprised of five key principles:

- Drive results with a performance orientation that aligns with OPG’s business strategy and risk tolerance, while taking into consideration affordability, market competitiveness as well as the context and environment in which OPG operates.
- Demonstrate fiscal conservatism through sustainability and sound financial management while supporting the attraction and retention of top talent.

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<sup>1</sup> Formerly the Compensation Leadership and Governance Committee.

- Have a strong performance orientation linked to OPG's value creation and results while allowing individual compensation to be meaningfully differentiated based on performance, where appropriate.
- Recognize OPG's role as a significant Ontario employer and encourage employee development, a culture of trust and respect and a seamless integration with talent and succession management objectives.
- Be simple to understand and administer, sustainable and scalable; being able to be communicated in a way that is integrated with messages about non-monetary recognition such that the perceived value of all programs meets or exceeds Program costs.

### ***Comparator Group***

The Company undertakes compensation benchmarking to ensure compensation is competitive and aligns with its business strategy and operating environment. OPG periodically reviews and benchmarks total compensation against the 50<sup>th</sup> percentile compensation of the appropriate comparator groups. Comparator groups are established based on a mix of private and public sector organizations that are similar in size, scope and complexity, reflecting organizations from which OPG competes for talent.

OPG benchmarks its executive positions based on the following selection criteria:

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

OPG reviews its peer comparator groups for purposes of benchmarking to ensure continued alignment with its business objectives. OPG most recently reviewed its peer comparator groups in 2020.

### ***Elements of the Program***

This section describes the significant elements of the Program contributing to the NEO's 2021 total compensation. Pension-related compensation is described below in the Pension Benefits section.

Within applicable regulatory and legislative requirements, the Program is designed to attract, motivate and retain qualified individuals and to compensate the NEOs for achieving performance objectives aligned with OPG's strategic imperatives. In September 2016, the Ontario government introduced the *BPSECA* and *Executive Compensation Framework, O Reg 304/16*. This regulation required all employers designated under the *BPSECA*, including OPG, to have a written Executive Compensation Program that describes the compensation they may provide to their executives. The program description must have included the compensation philosophy, salary and performance-related pay caps, comparative analysis details and a description of other elements of compensation. OPG met the requirements of *O Reg 304/16* and, effective January 1, 2017, implemented its Executive Compensation Program (defined above as the "Program"). OPG's Program applies to employees at the Vice President level and higher.

On August 13, 2018, the Ontario government introduced a new *BPSECA* regulation, *Compensation Framework, O Reg 406/18*, which replaced *O Reg 304/16*. *O Reg 406/18* imposes base salary caps for OPG designated executives which includes the NEOs and all employees at the Vice President level or



higher. *O Reg 406/18* also caps the performance-related pay envelope for OPG's designated executives.

Summary of Program Elements		
Element	Type	Brief Description
Base Salary	Fixed	The base salary provides a competitive level of fixed compensation that reflects the market value of the position and recognizes the skills and experience each NEO brings to OPG.
Short-Term Incentive (pay for performance)	Variable	All NEOs participate in a short-term pay for performance incentive plan called the Stakeholder Return Program (SRP). The NEOs are eligible to earn a cash payment under the SRP based on achieving individual performance goals and OPG corporate performance goals as assessed against an annual scorecard.
Medium-Term Incentive (pay for performance)	Variable	All NEOs participate in the Medium-Term Incentive Plan (MTIP). The NEOs are eligible to earn a cash payment under the MTIP based on achieving medium-term performance goals over a three-year period which align with OPG's financial and operational objectives.
Pension	Fixed	The pension plans in place are designed to provide retirement income to the NEOs based on their income and length of service to OPG.
Benefits	Fixed	The NEOs participate in health, dental and group life insurance benefit programs available to other management employees.

### Base Salary

The HRGC approves base salary ranges for all non-unionized (Management Group) employees, including the NEOs. OPG's base salary structure is very detailed and rigorously maintained with base salaries defined by job responsibilities and salary ranges defined for each job level.

### Short-Term Incentive (pay for performance)

OPG's short-term pay for performance incentive program is called the Stakeholder Return Program (SRP). The SRP is intended to motivate and reward eligible employees, including the NEOs, to achieve results on an annual basis that will benefit the company and the people of Ontario, OPG's largest stakeholder. The SRP provides compensation based on the achievement of annual individual performance objectives and annual OPG objectives in the areas of social license, financial strength, operational excellence and project excellence.

OPG's annual performance objectives are established before the beginning of each calendar year by the CEO and OPG leadership team in the form of a Corporate Balanced Scorecard. The Corporate Balanced Scorecard is reviewed by the HRGC and approved by the Board. The scorecard contains Key Performance Indicators ("KPIs") measured based on threshold, target and stretch goals, with a score for each KPI ranging from 0 to 1.5. Generally, the target goals align with the recent business plan forecasts and threshold and stretch goals are scaled symmetrically to motivate strong performance. Individual performance objectives are set in alignment with OPG's corporate objectives.

Performance measures for the 2021 Corporate Balanced Scorecard were organized into the following four groupings and corresponding KPIs:

1. Social License (10%)
  - a. Safety: Serious Injury Incidence Rate (10%)
2. Financial Strength (40%)
  - a. Earnings Before Taxes (\$M) (25%)
  - b. OM&A Expenses from Ongoing Operations (\$M) (15%)
3. Operational Excellence (20%)
  - a. Production (TWh) (20%)
4. Project Excellence (30%)
  - a. Darlington Refurbishment – Unit 3 Costs (\$M) (10%)
  - b. Darlington Refurbishment – Unit 3 Schedule (% complete) (10%)
  - c. Total In-Service Capital (not including Darlington Refurbishment) (\$M) (10%)

The final SRP payout for the NEOs (and all other eligible employees) reflects the results of the Corporate Balanced Scorecard and individual performance ratings for the relevant year. The target level of performance incentive payout (% of base salary) is set according to position and level, and is subject to funding and legislative limitations. The 2021 Corporate Balanced Scorecard result was 0.972, which is below the target of 1.00 and consequently reduced the SRP payout to NEOs, compared to a result at target.

The CEO's individual performance and SRP payout are approved by the Board; 70% of the payout is based on the achievement of Corporate Balanced Scorecard results and 30% of the payout is based on the achievement of three equally weighted individual objectives. The remaining NEO performance and SRP payout is determined by individual performance ratings (based on the CEO's assessment of NEO individual results and performance) and the final score for the Corporate Balanced Scorecard. The HRGC and the Board have the discretion to adjust the final score for the Corporate Balance Scorecard as well as available payout envelopes under the SRP (no such adjustments were made in 2021). SRP awards are paid (if earned) following assessment of performance at the end of each year.

#### Medium-Term Incentive (pay for performance)

OPG's medium-term pay for performance incentive program is called the Medium Term Incentive Plan ("MTIP"). The MTIP is intended to motivate eligible OPG executives, including the NEOs, to achieve mid-term performance objectives designed to encourage long-term value. As a cornerstone of the Program, the MTIP helps OPG maintain a market-competitive and sustainable compensation plan to attract and retain top talent at the executive level. Whereas the SRP is a short-term incentive plan focused on annual corporate and individual performance, the MTIP ensures an appropriate emphasis on longer term individual contributions to collective OPG performance.

MTIP awards are based on OPG's results against set targets over a three-year performance period. MTIP performance objectives are established before the beginning of each cycle by the CEO and leadership team in the form of a scorecard. The MTIP scorecard is reviewed by the HRGC and approved by the Board. The MTIP scorecard KPIs are measured based on threshold, target and stretch goals, with a score for each KPI ranging from 0 to 1.5. 2021 NEO total compensation includes MTIP awards for the 2019-2021 MTIP cycle. Similar to the SRP scorecard, MTIP target goals generally align with the business plan forecasts and threshold and stretch goals are scaled symmetrically to motivate strong performance.

KPIs and weightings for the 2019-2021 MTIP cycle were as follows:

1. Return on Equity (%) (30%)
  - a. 2019 (6%)
  - b. 2020 (6%)
  - c. 2021 (6%)
  - d. 3-year Average (12%)
2. Total Generation Cost (TGC/MWh) (30%)
  - a. 2019 (6%)
  - b. 2020 (6%)
  - c. 2021 (6%)
  - d. 3-year Average (12%)
3. Darlington Refurbishment – Unit 3 (40%)
  - a. Unit 3 Schedule (% complete) (20%)
  - b. Unit 3 Cost (\$M) (20%)

The final MTIP award is calculated and paid at the end of the three-year performance cycle based on the NEO's target (% of base salary) and results on the MTIP scorecard. MTIP scorecard results and any associated MTIP awards are subject to Board discretion and approval. The NEO's targets may be adjusted during the three-year cycle in the event that the Board determines that such adjustment is warranted, including based on position and responsibility changes. The 2019 to 2021 performance cycle for the MTIP closed at the end of 2021 and incorporates assessment of results for 2019, 2020 and 2021. The 2019-2021 MTIP scorecard result was 1.166, which is above the target of 1.00 and consequently increased the MTIP award to the NEOs compared to a result at target (the Board did not make adjustments to the 2019-2021 MTIP scorecard result or awards).

The below table provides the NEOs' SRP and MTIP pay for performance target opportunities as a percentage of base salary for 2021 (including the 2019-2021 MTIP cycle):

Name	SRP Pay for Performance Target Opportunity (% of base salary)	MTIP Pay for Performance Target Opportunity (% of base salary)
K. Hartwick	60%	70%
J. Mauti	45%	25% <sup>1</sup>
D. Miniere	60%	70%

**Note:** Mr. Mauti's MTIP pay for performance target increased from 20% for the 2018-2020 MTIP cycle to 25% for the 2019-2021 MTIP cycle as a result of a promotion effective July 4, 2019.

### ***Material Terms of Employment Agreements and Arrangements***

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

**Mr. Hartwick**

Mr. Hartwick joined OPG as CFO and Senior Vice President Finance on March 14, 2016. Mr. Hartwick was appointed President & CEO on April 1, 2019. Mr. Hartwick participates in the SRP, MTIP and OPG registered and supplemental pension plans.

**Mr. Mauti**

Mr. Mauti was appointed CFO and SVP Finance on July 4, 2019 (acting in this role from April 1, 2019 until permanent appointment). Prior to his current position, Mr. Mauti was VP Chief Controller & Accounting Officer from January 1, 2015. Mr. Mauti participates in the SRP, MTIP and OPG registered and supplemental pension plans.

**Mr. Miniere**

Mr. Miniere assumed the position of Chief Strategy Officer, NNDIS on October 1, 2021. Prior to his current position, Mr. Miniere was appointed President, Nuclear on March 4, 2019, and then Chief Strategy Officer on October 8, 2020. Mr. Miniere participates in the SRP, MTIP and OPG registered and supplemental pension plans.

**Termination and Change in Control Payments**

Based on the terms and conditions of the employment agreements of each of the NEOs, the following is a summary of entitlements upon certain termination scenarios, and the potential or actual payments which each NEO would be eligible to receive in the event that his or her employment was terminated by OPG without cause as at December 31, 2021.

Executive Name & Job Title	Employment Agreements	Total Payment (\$)
<b>K. Hartwick</b> President & CEO	Provides that upon termination without cause, severance shall be equivalent to 18 months base salary, less applicable deductions. Such payment shall be made on a salary continuance basis. Benefits other than short term and long term disability benefits cease at the end of the applicable statutory notice period.	\$1,026,000
<b>J. Mauti</b> CFO & SVP Finance	Provides that upon termination without cause, severance shall be equivalent to 18 months base salary, less applicable deductions. Such payment shall be made on a salary continuance basis. Benefits other than short term and long term disability benefits cease at the end of the applicable statutory notice period.  Provides continued entitlement to pre-existing elements of compensation (i.e. salary, SRP, and MTIP) at current levels during the transition period for the appointment of OPG's new CFO & SVP Finance effective 2022, and entitlement following Mr. Mauti's retirement to short-term incentive (SRP) and medium-term incentive (MTIP) compensation according to the terms of the SRP and MTIP plans. Post-retirement payment amounts will be dependent on future SRP and MTIP scorecard results.	\$525,000
<b>D. Miniere</b> Chief Strategy Officer, NNDIS	Provides that upon termination without cause, severance shall be equivalent to 12 months base salary, less applicable deductions. Such payments shall be made on a salary continuance basis. Benefits other than short term and long term disability benefits cease at the end of the applicable statutory notice period.	\$680,000

Directors are appointed to the Board by way of shareholder resolution and do not enter employment, consultant or management agreements. Please see Notes 6-18 to the Table of Compensation and the discussion of Director compensation that follows the table for the material terms of the arrangements under which Directors received compensation. Director arrangements do not include any provisions regarding severance, termination or constructive dismissal.

### ***Table of Compensation***

The following table summarizes the compensation paid by OPG to the Directors and the CEO, CFO and the Chief Strategy Officer, NNDIS, who is the most highly compensated executive officer other than the CEO and CFO, for the two years ended December 31, 2021.

The information provided in the Table of Compensation differs from that published under the *Public Sector Salary Disclosure Act, 1996* (Ontario) for the year ended December 31, 2021. The differences are due to the timing of payment of pay for performance incentive amounts. Salary disclosure under the *Public Sector Salary Disclosure Act, 1996* (Ontario) is limited to amounts reported on T4 forms for each year. Information in the Table of Compensation is based on the year for which the pay for performance incentive was earned. Under OPG's pay for performance programs, SRP incentive awards are earned in one year and paid in the following year, and MTIP incentive awards are earned over a three-year period and paid in the following year.

Table of Compensation								
Name and Title	Year	Salary	Bonus (Pay for Performance \$)		OPG Board Fees (\$) <sup>1</sup>	Value of Perquisites (\$)	Value of all Other Compensation (\$) <sup>2</sup>	Total Compensation (\$)
			Annual Incentive Plan (SRP)	Long-Term Incentive Plan (MTIP)				
NEOs								
K. Hartwick President & CEO, Director	2021	\$684,000	\$483,788	\$558,280	\$0	\$0	\$337,540 <sup>3</sup>	\$2,063,608
	2020	\$684,000	\$512,466	\$431,780	\$0	\$0	\$263,540 <sup>3</sup>	\$1,891,786
J. Mauti CFO and SVP Finance	2021	\$350,000	\$177,389	\$102,025		\$0	\$58,682 <sup>4</sup>	\$688,096
	2020	\$350,000	\$140,172	\$66,459		\$0	\$694,725 <sup>4</sup>	\$1,251,356
D. Miniere Chief Strategy Officer, NNDIS	2021	\$680,000	\$459,522	\$555,016		\$0	\$257,923 <sup>5</sup>	\$1,952,461
	2020	\$680,000	\$453,899	\$389,629		\$0	\$391,923 <sup>5</sup>	\$1,915,451
Directors								
Wendy Kei <sup>6</sup> Board Chair	2021				\$150,000			
	2020				\$152,090			
Mary Filippelli <sup>7</sup>	2021				\$49,569			
	2020				-			
John Herron <sup>8</sup>	2021				\$110,166			
	2020				\$111,600			
Ani Hotoyan-Joly <sup>9</sup>	2021				\$15,229			
	2020				\$83,000			
Yezdi Pavri <sup>10</sup>	2021				\$22,431			
	2020				\$93,000			
Selma Lussenburg <sup>11</sup>	2021				\$92,000			
	2020				\$92,000			
Scott McDonald <sup>12</sup>	2021				\$87,500			
	2020				\$81,300			
Jill Pepall <sup>13</sup>	2021				\$88,312			
	2020				\$62,410			
Tracy Primeau <sup>14</sup>	2021				\$65,000			
	2020				-			
Jim Reinsch <sup>15</sup>	2021				\$109,514			
	2020				\$111,600			
James Sheppard <sup>16</sup>	2021				\$129,210			
	2020				\$125,390			
Anju Virmani <sup>17</sup>	2021				\$84,063			
	2020				-			

#### Notes:

<sup>1</sup> As further detailed below, total 'OPG Board Fees' are contingent upon the number of Board committees a Director sits on, whether a Director serves as Chair of a Board committee, and the number of Board meetings a Director attends during a calendar year. OPG does not provide Directors with share-based awards, option-based awards, non-equity incentive plan compensation or a pension. A 2020 benchmarking analysis showed that OPG's Director Compensation is below the 25th percentile of the Private Sector, above the 75th percentile of the Public Sector, and is positioned at the 25th percentile of

the Total Sample.

The values provided for 'OPG Board Fees' are provided in CAD. Compensation to U.S resident Directors John Herron, Jim Reinsch and James Sheppard was paid in USD. OPG processes the payments for these Directors in CAD by converting USD to CAD at the month-end of each quarter. OPG then converts the net amount back to USD and makes the payment in USD. In 2021, OPG Board Fees were converted between UAD and CAD using the following exchange rates: Q1 – 1.2631; Q2 – 1.2384; Q3 – 1.2741; Q4 - 1.2765 .

<sup>2</sup> Value of all Other Compensation includes taxable benefits paid to the NEOs.

<sup>3</sup> Value of all Other Compensation for Mr. Hartwick includes the value of his pension's Compensatory change, which is \$330,000 for 2021 and \$256,000 for 2020. See Note 1 to the NEO Pension Benefits Table for a description of how Compensatory value is calculated.

<sup>4</sup> 2021 Value of all Other Compensation for Mr. Mauti includes \$43,671 in compensation under his Flexible Spending Account (FSA). FSA is a general benefits account where unused amounts remaining at year-end are paid as taxable income. Mr. Mauti's 2020 Value of all Other Compensation amount has been corrected to include his 2020 FSA payment of \$36,714. Value of all Other Compensation for Mr. Mauti also includes the value of his pension's Compensatory change, which is \$14,000 for 2021 and \$657,000 for 2020. See Note 1 to the NEO Pension Benefits Table for a description of how Compensatory value is calculated.

<sup>5</sup> Value of all Other Compensation for Mr. Miniere includes the value of his pension's Compensatory change, which is \$254,000 for 2021 and \$388,000 for 2020. See Note 1 to the NEO Pension Benefits Table for a description of how Compensatory value is calculated.

<sup>6</sup> Wendy Kei was appointed to the Board in March 2017. Ms. Kei was appointed Board Chair effective June 27, 2019. Ms. Kei ceased to be Chair of the HRGC effective June 1, 2020. Ms. Kei's 2020 fees are for her role as Board Chair (\$150,000) and prorated time as Chair of the HRGC.

<sup>7</sup> Mary Filippelli was appointed to the Board effective September 9, 2021. Ms. Filippelli is a member of the Audit and Risk Committee, HRGC and Generation Oversight Committee.

<sup>8</sup> John Herron was appointed to the Board in November 2013. Mr. Herron is Chair of the Generation Oversight Committee and a member of the Major Projects Committee.

<sup>9</sup> Ani Hotoyan-Joly was appointed to the Board in March 2017 and resigned from the Board effective March 17, 2021. Ms. Hotoyan-Joly was Chair and member of the Audit and Risk Committee, and member of the HRGC.

<sup>10</sup> Yezdi Pavri was appointed to the Board in September 2015 and resigned from the Board effective April 27, 2021. Mr. Pavri was a member of the Audit and Risk Committee, Human Resources and Governance Committee and the Major Projects Committee.

<sup>11</sup> Selma Lussenburg was appointed to the Board in November 2019. Ms. Lussenburg was a member of the Generation Oversight Committee from November 2019 to May 2021. Since May 2021, Ms. Lussenburg has been a member of the Audit and Risk Committee, Major Projects Committee and HRGC.

<sup>12</sup> Scott McDonald was appointed to the Board effective January 21, 2020. Mr. McDonald was a member of the Audit and Risk Committee from January 2020 to May 2021. Since May 2020, Mr. McDonald has been Chair of the HRGC and member of the Major Projects Committee.

<sup>13</sup> Jill Pepall was appointed to the Board effective June 15, 2020. Ms. Pepall was a member of the HRGC from June 2020 to August 2021 and is a member of the Audit and Risk Committee and Generation Oversight Committee. Ms. Pepall was appointed as interim Chair of the Audit and Risk Committee on March 2021 and began acting as Chair of the Audit and Risk Committee on August 12, 2021.

<sup>14</sup> Tracy Primeau was appointed to the Board on July 1, 2021. Ms. Primeau is a member of the Audit and Risk Committee, Generation Oversight Committee and the Major Projects Committee.

<sup>15</sup> Jim Reinsch was appointed to the Board in August 2015. Mr. Reinsch is Chair of the Major Projects Committee and a member of Generation Oversight Committee.

<sup>16</sup> James Sheppard was appointed to the Board in March 2017. Mr. Sheppard is a member of the HRGC, Major Projects Committee and Generation Oversight Committee.

<sup>17</sup> Anju Virmani was appointed to the Board effective February 17, 2021. Ms. Virmani is a member of the Audit and Risk Committee, HRGC and Generation Oversight Committee.

Each Director who was not an employee of OPG is eligible for compensation according to the following fees as reflected in the above-stated OPG Board Fees:

- a) \$25,000 annual Board retainer
- b) \$3,000 annual retainer per Committee membership
- c) \$5,000 annual retainer for serving as Chair of the HRGC, Major Projects Committee or Generation Oversight Committee, and \$8,000 annual retainer for serving as Chair of the Audit and Risk Committee
- d) \$2,000 for each long meeting attended, and \$1,000 for each short meeting attended. Meeting fees are determined by the Board Chair or respective Committee Chair.
- e) Travel time fees (one fee per round trip) based on the distance from primary residence to a meeting according to the following zones: Zone 1 - 160-645 km (\$1,000); Zone 2 - 645-2,415 km (\$1,500); Zone 3 - 2,415 + km (\$2,500).

Additional information on committee membership and the annual performance evaluation for Directors members can be found in OPG's year-end 2021 Annual Information Form under the "Corporate Governance" section.

The Chair of the Board, in her role as non-executive Chair, receives an all-inclusive annual fee of \$150,000, as determined by resolution of OPG's shareholder and has remained unchanged since 2004. The Chair of the Board is also reimbursed for out-of-pocket expenses including travel and other expenses. All Directors' out-of-pocket expenses must be in compliance with Ontario's Travel, Meal and Hospitality Directive and be approved by the Integrity Commissioner of Ontario.

Mr. Hartwick was appointed to the OPG Board in June 2019 and did not receive additional compensation in 2020 and 2021 for serving as a Director.

### ***Pension Benefits***

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

- Years of credited service as at December 31, 2021;
- Estimated annual benefit accrued, or earned, for service up to December 31, 2021 and up to the age of 65; and
- A reconciliation of the accrued obligation from December 31, 2020 to December 31, 2021.

NEO Pension Benefits							
Name	Credited Service at December 31, 2021 (yrs)	Annual Benefits Payable		Accrued Obligation at Beginning of Year	Compensatory	Non-Compensatory	Accrued Obligation at Year End
		at Dec 31, 2021	at age 65				
K. Hartwick	5.8	\$120,000	\$240,000	\$2,400,000	\$330,000	\$40,000	\$2,770,000
J. Mauti	30.3	\$200,000	\$250,000	\$5,510,000	\$14,000	\$(14,000)	\$5,510,000
D. Miniere	2.8	\$60,000	\$90,000	\$850,000	\$254,000	\$126,000	\$1,230,000



**Notes:**

<sup>1</sup> Compensatory changes are changes to the pension liabilities due to the impact of an additional year of service (always a positive change) that is attributable to OPG (i.e. net of member contributions), as well as the impact of any pay difference in actual pensionable earnings relative to those assumed on the NEO's total pension benefit for all service to date.

<sup>2</sup> Non-compensatory elements include changes to the pension liabilities due to interest on the beginning of year liability, changes in assumptions (e.g. the discount rate), member contributions during the year; changes in assumptions as of December 31, 2021 have collectively decreased the liability including an increase in discount rate (from 2.64% to 3.22% per year) which results in a decrease in liability, and partially offset by an increase in liabilities from a decrease in the lump sum settlement discount rate (decrease from 3.4% to 2.80% per year), and an increase in the inflation assumption (increase from 1.75% to 2.00% per year); and, non-pay related experience such as termination payment/retirement pension commencement.

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

	Registered Plan	Supplementary Plan
<b>Type of Plan</b>	Contributory defined benefit pension plan registered under the <i>Income Tax Act</i> (Canada) and the <i>Pension Benefits Act</i> (Ontario).  Pensions earned for service after 1992 are subject to limits under the <i>Income Tax Act</i> (Canada).	Provides benefits to those employees whose entire benefit could not be provided through the Registered Plan as a result of the limits under the <i>Income Tax Act</i> (Canada). Members of the Supplementary Plan earn benefits under one of three schedules: Supplementary Payment Schedule ("SPS"), Executive Supplementary Payment Schedule ("ESPS") and the Designated Supplementary Payment Schedule ("DSPS").  Note: None of the NEOs are enrolled in the DSPS.
<b>Annual Pension Benefit</b>	2.0% of final average earnings less 0.5% of final average earnings up to the average of the year's Maximum Pensionable Earnings	Same as Registered Plan
<b>Bridge Benefit</b>	Temporary bridging pension is provided to age 65	Same as Registered Plan
<b>Indexing</b>	Fully indexed to CPI, to a maximum increase of 8% per annum.	SPS - Same as Registered Plan ESPS - Benefits are indexed at 50% of CPI (to a maximum of 4% per annum)
<b>What's included in Pensionable Earnings?</b>	Base salary plus pay for performance incentive amounts (limited to 5% of base pay)	SPS - Same as Registered Plan ESPS - Base salary plus pay for performance incentive amounts (limited to target level, excludes MTIP)

<b>When eligible for an Unreduced Pension?</b>	<p>Age plus continuous service equals 84 (if hired before July 1, 2014*)</p> <p>Age plus continuous service equals 90 (if hired post-June 30, 2014)</p> <p>Effective January 1, 2025, age plus continuous service equals 90</p> <p>* If hired prior to July 1, 2014, pension earned up to January 1, 2025 unreduced at Rule 84 date. Pension earned on and after January 1, 2025 will be unreduced at Rule 90 date.</p>	<p>SPS - Same as Registered Plan</p> <p>ESPS - Age equals 60</p>
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As at December 31, 2021, the NEOs participated in the following pension arrangements:

<b>Executive</b>	<b>Employment Agreement</b>
K. Hartwick, President & CEO	Mr. Hartwick participates in the Registered Plan and the ESPS provision of the Supplementary Plan.
J. Mauti, CFO & SVP Finance	Mr. Mauti participates in the Registered Plan and the SPS provision of the Supplementary Plan.
D. Miniere, Chief Strategy Officer, NNDIS	Mr. Miniere participates in the Registered Plan and the ESPS provision of the Supplementary Plan.