Ontario Power Generation Inc.

Green bond impact report

2021 year-end report

June 2022

ONTARIO POWER GENERATION

Overview

Ontario Power Generation (OPG) recognizes that operating in a safe, sustainable and inclusive manner is directly connected to business success and is expected by the company's customers, stakeholders, and Shareholder. As Ontario's largest clean energy provider, OPG strives to be a leader in sustainability and climate change action. This is accomplished through the implementation of operational and growth strategies that minimize OPG's environmental footprint, support reductions in greenhouse gas emissions, and increase resilience to climate change impacts, while taking into account impacts on customers.

Proceeds from green bond offerings provide an opportunity to finance and refinance projects that offer tangible environmental benefits. OPG has developed a Green Bond Framework under which it issues green bonds and can use the proceeds for eligible projects in the following areas:

- Renewable Energy Generation
- Energy Efficiency and Management
- Climate Adaptation and Resilience

Environmental benefits from these types of projects include avoided greenhouse gas emissions, improved air quality, resilience to the impacts of climate change, and increased energy efficiency.

This report presents information about the environmental benefits of eligible projects under OPG's Green Bond Framework as of December 31, 2021. This is OPG's fourth annual Green Bond Impact Report.

In conjunction with this report, OPG provides information about its environmental programs and performance, bond issuances, and the status of major projects in its annual report, annual information form, management's discussion and analysis reports, and consolidated financial statements, all of which are available on www.opg.com.

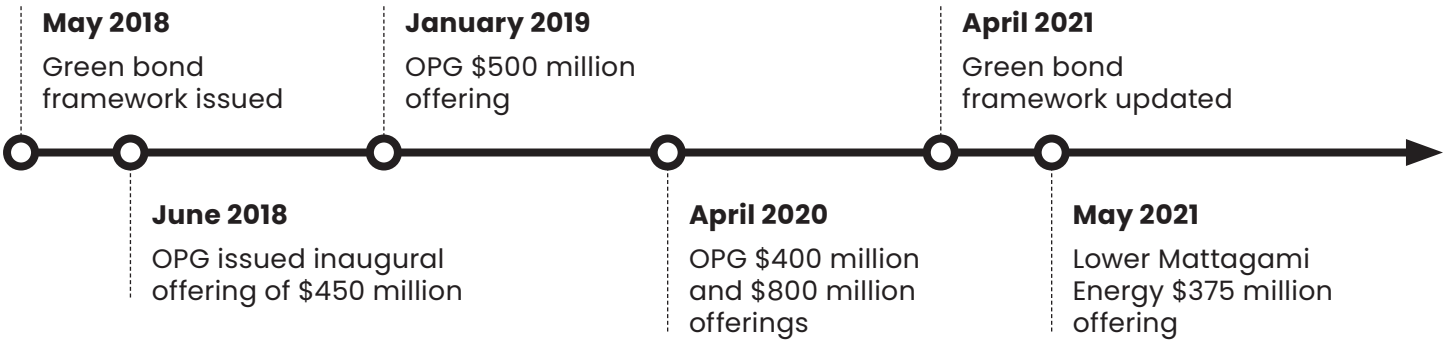
"OPG is proud to use green bonds to finance clean power initiatives. OPG believes low-cost, reliable, clean power is fundamental to a healthy environment and a strong low-carbon economy."

-Ken Hartwick, OPG President and Chief Executive Officer

Green Bond Offerings

In 2018, OPG issued its inaugural green bond offering under its existing Medium Term Note Program. This offering was a first-of-its-kind financing for the Canadian energy sector. OPG has subsequently issued three more offerings. As of December 31, 2021, OPG's green bond issuance totalled $2.15 billion, of which the entire proceeds have been allocated to finance and refinance eligible projects. Additionally, Lower Mattagami Energy Limited Partnership (LME), an entity wholly owned by OPG, completed a private placement bond offering with the issuance of $375 million of green bonds in 2021.

Green Financing Timeline

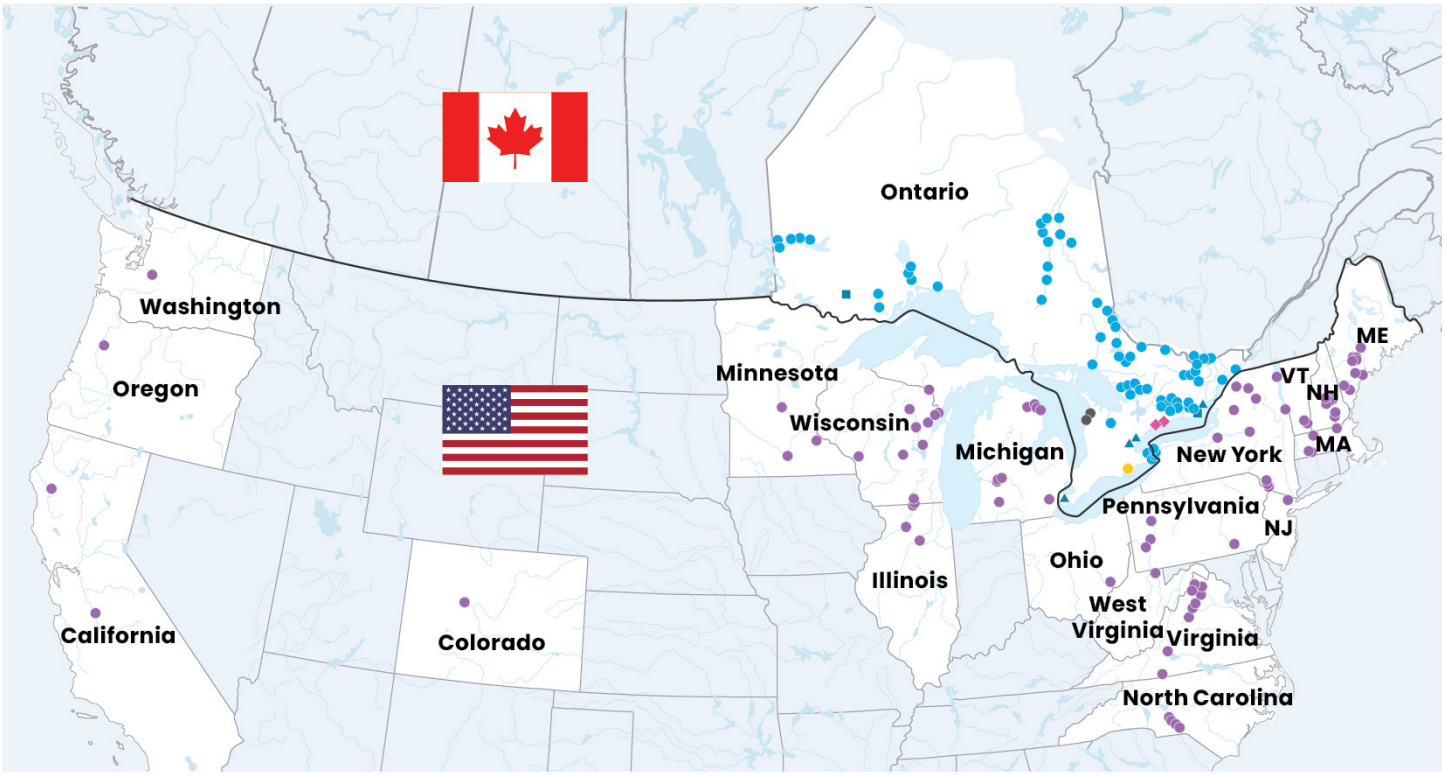


OPG's Nanticoke Solar facility is located on the site of the former largest coal-fuelled generating station in Ontario.

About OPG

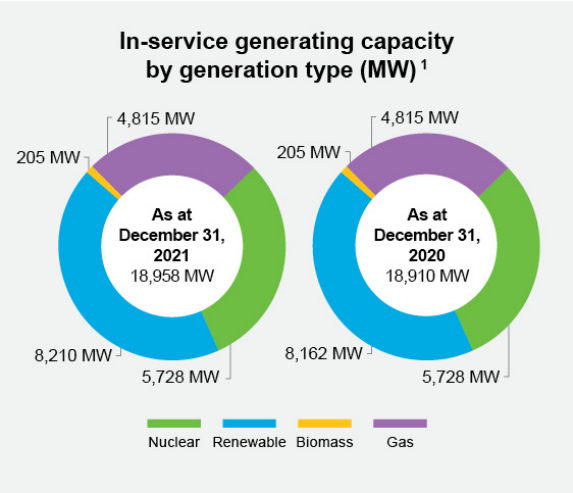
OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity. OPG was established under the *Business Corporations Act* (Ontario) and is wholly owned by the Province of Ontario. As at December 31, 2021, OPG and its wholly-owned subsidiaries had approximately 9,325 regular and term-based employees, mostly in Ontario.

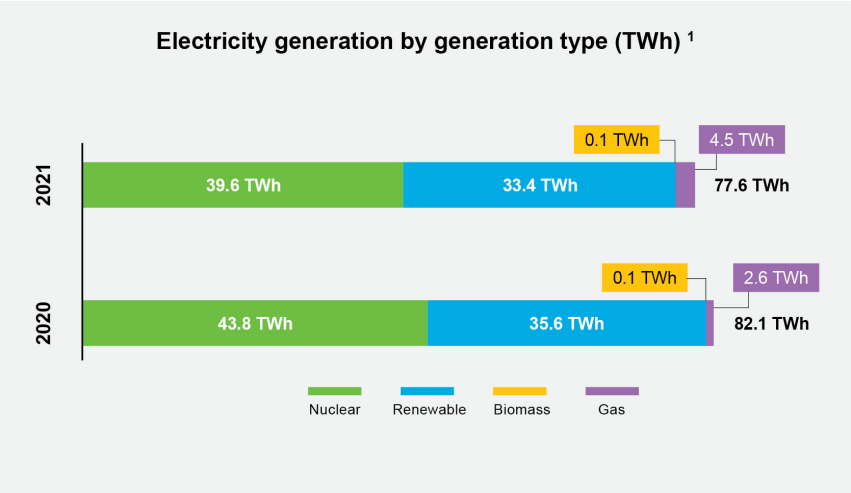
As at December 31, 2021, OPG owned and operated two nuclear generating stations, 66 hydroelectric generating stations, two thermal generating stations, one solar facility and four combined cycle gas turbine plants in Ontario, Canada. The combined cycle plants are natural gas-fired facilities owned and operated through a wholly-owned subsidiary operating as Atura Power. Through its United States-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 United States as at December 31, 2021. In addition, OPG owns two nuclear generating stations in Ontario, the Bruce A Generating Station (GS) and the Bruce B GS, which are leased on a long-term basis to, and operated by, Bruce Power L.P.



2	2	2	1	66	87	4
Nuclear Stations	Leased **Nuclear** Stations	**Thermal** Stations	**Solar** Facility	**Canada Hydroelectric** Stations	**US Hydroelectric** Stations	**Atura Power Combined Cycle** Stations

OPG's electricity generation portfolio had an in-service generating capacity of 18,958 megawatts (MW) as at December 31, 2021. OPG's total electricity production in 2021 was 77.6 terawatt hours (TWh). Low-carbon emitting sources account for the majority of OPG's in-service generating capacity and electricity generation.





[1] Includes OPG's proportionate share of in-service generating capacity and electricity generation from co-owned and minority-held facilities, as applicable. Gas category includes Lennox GS and plants operated through Atura Power.

Awards and Recognition

In November 2019, OPG's use of green bonds to align financial and sustainability goals was recognized by Electricity Canada with the 2019 Sustainable Electricity Program award for Advancement of an Integrated Approach to Sustainability.

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.

Two historic generating units are being replaced at Sir Adam Beck I GS to add more clean power.

Green Bond Framework

Proceeds obtained from green bond issuance are used to finance or refinance eligible projects that offer tangible environmental benefits. OPG's Treasury group is responsible for the review and selection of green projects that will qualify as eligible projects. The Treasury group verifies the suitability and eligibility of such investments in collaboration with internal experts and stakeholders, including OPG's Operations and Environment groups. Projects are evaluated using financial and risk-based analyses as well as strategic considerations.

Under OPG's most recent Green Bond Framework published in April 2021, proceeds from the bond issuances can be applied to eligible projects for a period of up to 36 months prior to the date of issuance, and eligible projects are expanded to include those that support climate adaptation and resilience. In addition, the framework includes a new provision to enable OPG's subsidiaries to issue green bonds under the framework.

Without limitation, eligible projects generally fall into the categories specified in the following table.

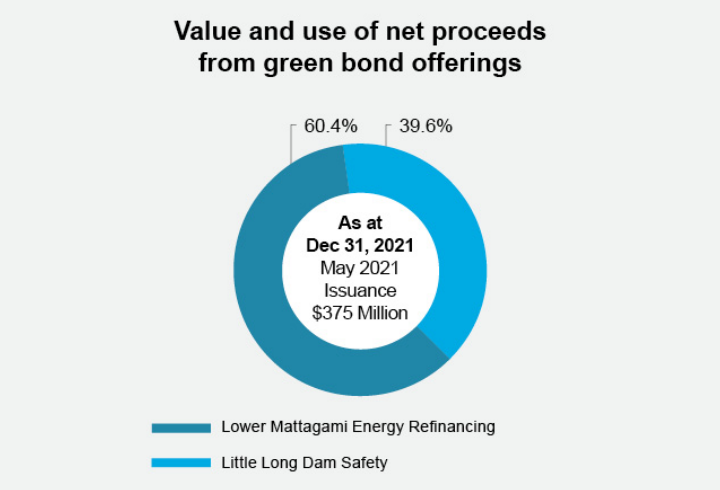
Renewable Energy Generation		
	Investments that help supply energy from renewable sources	Solar Energy • Construction of new solar energy facilities • Maintenance and/or refurbishment of existing solar energy facilities Wind Energy • Construction of new wind energy facilities • Maintenance and/or refurbishment of existing wind energy facilities Hydroelectricity • Construction of new run-of-river hydroelectricity projects with low storage capacity • Refurbishment, repowering, modernization, and/or maintenance of existing hydroelectricity facilities with the purpose of increasing generation efficiency, operational life span and/or renewable energy output while maintaining or improving the level of operational safety
Energy Efficiency and Management		
	Investments that help reduce energy consumption or help manage and store energy	• Transportation Electrification (e.g. development of electric vehicles related infrastructure) • Climate change and eco-efficient products, production technologies and process (e.g. energy storage facilities)
Climate Adaptation and Resilience		
	Investments that help reduce potential damages from extreme weather events	• Flood protection and stormwater management • Extreme weather resistant infrastructure and other forms of flooding mitigation

OPG commits to not knowingly using green bond proceeds for financing assets and/or projects that involve energy generation from fossil fuels.

In April 2021, Sustainalytics conducted an evaluation of OPG's updated Green Bond Framework and is of the opinion that the framework is credible and impactful and aligns to the four core components of the Green Bond Principles 2018. Sustainalytics considers that the projects funded by the green bond proceeds are expected to provide positive environmental impact by increasing Ontario's share of renewable energy and contributing to its climate change goals. Additionally, Sustainalytics is of the opinion that OPG has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects funded by the use of proceeds.

2021 Green Bond Offering

In May 2021, OPG's wholly-owned LME completed a private placement bond offering with the issuance of $375 million of green bonds, maturing in May 2031 with a coupon interest rate of 2.43 percent. The net proceeds from the issuance were used for refinancing LME's outstanding bonds at maturity and funding the Little Long Dam Safety project. LME owns and operates certain of OPG's contracted hydroelectric facilities located along the Lower Mattagami River.



In northeastern Ontario, construction is progressing on the Little Long Dam Safety project to improve dam safety on the Mattagami River.

Green Bond Project Summary

OPG has used the majority of its green bond proceeds to fund projects that increase the company's renewable energy generation capacity. The following table summarizes the projects with green bond financing as of December 31, 2021.

Eligible Project	Operating Status	Allocated Proceeds (millions of dollars)	Approved Budget (millions of dollars)	Generation Capacity Added (MW)	2021 Electricity Production (Gigawatt hours (GWh))
Renewable Generation - Acquisitions					
Acquisition of Eagle Creek Renewable Energy in 2018 and Cube Hydro Partners in 2019. Now operating as Eagle Creek.	In operation	1,612.5		688 (capacity as at December 31, 2021)	2,147
Renewable Generation - New Facilities					
Peter Sutherland Senior hydroelectric GS. The station was in-service as of 2017.	In operation	29.7	300	28	92
Nanticoke Solar. The facility was in-service as of 2019.	In operation	76.6	107	44	78
Renewable Generation - Existing Facilities					
Lower Mattagami River redevelopment. New hydroelectric units were added to the existing Little Long, Harmon and Kipling stations. The station at the Smoky Falls site was replaced with a new three-unit station. The six new units were placed in-service in 2014.	In operation	223.7	2,600	438	982 (new units)
Sir Adam Beck Pump hydroelectric GS reservoir refurbishment. The project was completed in 2017.	In operation	27.1	58		
Sir Adam Beck water conveyance system rehabilitation assessment. An extensive condition survey of the canal was completed in 2017-2018.	Assessment complete	5.5	12.4		

Eligible Project	Operating Status	Allocated Proceeds (millions of dollars)	Approved Budget (millions of dollars)	Generation Capacity Added (MW)	2021 Electricity Production (Gigawatt hours (GWh))
Ranney Falls hydroelectric GS Unit 3 redevelopment. To be in-service in 2022.	Under construction	60.2	77	10 (planned)	
Sir Adam Beck 1 hydroelectric GS replacement of two decommissioned generating units. To be in-service in 2022.	Under construction	2.6	128	125 (planned)	
Sustaining capital. Various upgrades, replacements and other modifications at over 40 hydroelectric facilities.	In operation	322.1			
Climate Adaptation and Resilience					
Little Long Dam safety improvements on the Mattagami River. The project is expected to be completed in 2023.	Under construction	149.1	650		

Status updates for OPG's eligible projects under construction as at December 31, 2021 are as follows.

Ranney Falls Hydroelectric GS

In 2017, OPG began construction work on a 10 MW single-unit powerhouse on the Ranney Falls GS site to replace an existing unit that reached its end of life in 2014. During final commissioning of the new unit in September 2020, the 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. Based on current technical assessments, the revised in-service date is expected to be in 2022. The project continues to track within budget.

OPG is adding a new generating unit and powerhouse at the existing Ranney Falls facility, helping to extend the lifespan and efficiency of the station.

Sir Adam Beck I GS Units G1 and G2 Replacement

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 prior to being decommissioned in 2009. The conversion of these units to standard generator technology of 60 hertz is expected to add approximately 125 MW of incremental peaking generation capacity.

During 2021, OPG completed the G2 unit turbine and generator installation, including the tower assembly, runner and shaft assembly. The installation and machining of the G1 scroll case was also completed during the fourth quarter of 2021. The project continues to advance the G1 unit turbine and generator installation. The project is expected to be placed in service in 2022 and is tracking within budget.

Little Long Dam Safety Project

In 2019, OPG initiated 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 OPG to comply with updated dam safety requirements established by the Province of Ontario.

During 2021, 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 commissioning the existing Adam Creek gates and commenced the demolition of the east upstream dam. The project is expected to be completed in 2023 and is tracking within budget.

Green Bond Impacts

Clean Renewable Energy

Renewable energy is energy derived from natural processes that are replenished at a rate that is equal to or faster than the rate at which they are consumed. For example, hydroelectric generating stations use the energy of falling water to drive hydraulic turbines that generate electricity, and solar generating facilities collect and convert the sun's emitted light into electricity.

At OPG, hydroelectricity is by far the most significant form of renewable energy produced by the company, providing baseload, intermediate and peaking generation depending on physical characteristics and hydrological conditions. OPG maintains a rigorous maintenance and asset management program to ensure continuing reliable and efficient operations of these long-lasting assets. OPG continues to explore opportunities for solar development opportunities beyond its initial project at Nanticoke.

Investing in renewable energy generation provides environmental and health benefits. Renewable energy sources reduce the need for electricity generated from fossil fuels (i.e. coal, diesel, oil, natural gas) that produce air pollution – pollutants such as sulphur oxides, nitrogen oxides, particulate matter and mercury that contribute to the formation of smog and acid rain. Renewable energy sources also have a lower carbon intensity than fossil fuel generation, which reduces greenhouse gas emissions that contribute to climate change.

Smoky Falls GS

A commonly used metric to quantify the positive impact of renewable energy is carbon dioxide (CO_2) emissions avoided. For the purposes of this report, OPG will consider the amount of electricity produced from its eligible projects that have added renewable generation capacity and use regional CO_2 grid emission factors to provide an estimate of CO_2 emissions potentially avoided.

Note: The actual amount of carbon emissions avoided by renewable electricity displacing electricity from fossil fuels depends on where and when electricity is produced. Regions that already have clean electricity systems have lower potential to avoid emissions, and the mix of generation sources serving an electrical grid system at particular time can impact which sources are displaced.

2021 Carbon Dioxide Emissions Avoided

Eligible Project	Region	2021 Electricity Production (GW)	Grid Emission Factor (tonnes CO_2/ GWh)	2021 Estimated Emissions Avoided (tonnes CO_2)
Eagle Creek (includes Eagle Creek's 85 wholly-owned and operated facilities)	New England region	362.394	540	195,693
	New York region	279.678	540	151,026
	Mid-Atlantic region	370.867	800	296,694
	Midwest region	199.943	910	181,948
	Carolinas region	861.711	780	672,135
	California region	0.981	540	530
	Northwest region	14.287	790	11,287
Peter Sutherland Senior GS	Ontario	91.960	400	36,784
Nanticoke Solar	Ontario	78.155	400	31,262
Lower Mattagami River stations (incudes new units at Little Long, Harmon, Kipling and Smoky Falls GS)	Ontario	981.987	400	392,795
				Total = 1,970,154

The calculation of Eagle Creek's CO_2 emissions avoided are based on the United States Environmental Protection Agency Avoided Emissions and Generation Tool (AVERT) regional emissions factors. For 2021, AVERT has reorganized its regional calculations and now splits the contiguous 48 states into 14 regions. The calculation of CO_2 emissions avoided in Ontario is based on computer-based modelling that determines how much the increased renewable generation will displace generation from combined cycle gas turbine plants.

Support of Sustainability Goals

OPG's Climate Change Goals

In 2020, OPG released a Climate Change Plan that sets the following ambitious goals:

- OPG will continue to be a climate leader by investing in and implementing carbon reductions and offsets to achieve net-zero carbon emissions by 2040.
- OPG will be a leading energy innovation company, advancing clean technologies and solutions to help the markets where it operates achieve net-zero carbon economies by 2050.

OPG has developed an action plan across the next thirty years in the areas of carbon emissions reductions, climate change adaptation, energy sector innovation, and climate change leadership. OPG's use of green bonds will help to achieve these goals.

United Nations Sustainable Development Goals

OPG supports the United Nations Sustainable Development Goals (SDGs) to achieve a better and more sustainable future for all by 2030. In particular, OPG has the ability to make contributions to SDG 7, SDG 11 and SDG 13.

Ensure access to affordable, reliable, sustainable and modern energy for all

Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix

Target 7.3: By 2030, double the global rate of improvement in energy efficiency

Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

Take urgent action to combat climate change and its impacts

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries