

Royal Bank of Canada

RBC Green Bond Report



April 2020

Introduction

Royal Bank of Canada (RY on TSX and NYSE) is a global financial institution with a purpose-driven, principles-led approach to delivering leading performance. Our success comes from the 85,000+ employees who bring our vision, values and strategy to life so we can help our clients thrive and communities prosper. As Canada's biggest bank, and one of the largest in the world based on market capitalization, we have a diversified business model with a focus on innovation and providing exceptional experiences to our 17 million clients in Canada, the U.S. and 34 other countries. We strive to have a positive economic, environmental and social impact, and to provide responsible leadership wherever we operate.

We believe sustainable finance represents a growth opportunity for our business and our clients and we are committed to providing \$100 billion in sustainable finance by 2025. This is a key commitment in our enterprise climate strategy, the **RBC Climate Blueprint**, aimed at supporting our clients in the low-carbon transition and accelerating clean economic growth.

Our commitment to sustainable finance builds on our longstanding support for the growth of the green bond market. In Canada, RBC Capital Markets® is the number one ranked dealer in underwriting green bonds and maintains the largest market share of Canadian public sector green bonds deals. RBC Capital Markets is also active in the global green bond market, leading transactions across multiple currencies and in the U.S. municipal finance market. Since 2014, RBC Capital Markets has hosted an annual Green Bond Conference in Toronto and published an annual global green bond market report. We are a member of the Green Bond Principles and proud to be one of only five global underwriters, and the only Canadian bank, to be elected to the Green Bond Principles and Social Bond Principles Advisory Council.

In April 2019, we issued our inaugural EUR500 million 5-year Green Bond offering. This first Green Bond Report provides investors with details regarding our Green Bond Asset Portfolio, the allocation of proceeds to that Portfolio and the associated environmental impacts. This report is intended to be renewed annually to outline any changes to our Portfolio. We recommend this report be read in conjunction with the **RBC Green Bond Framework**.

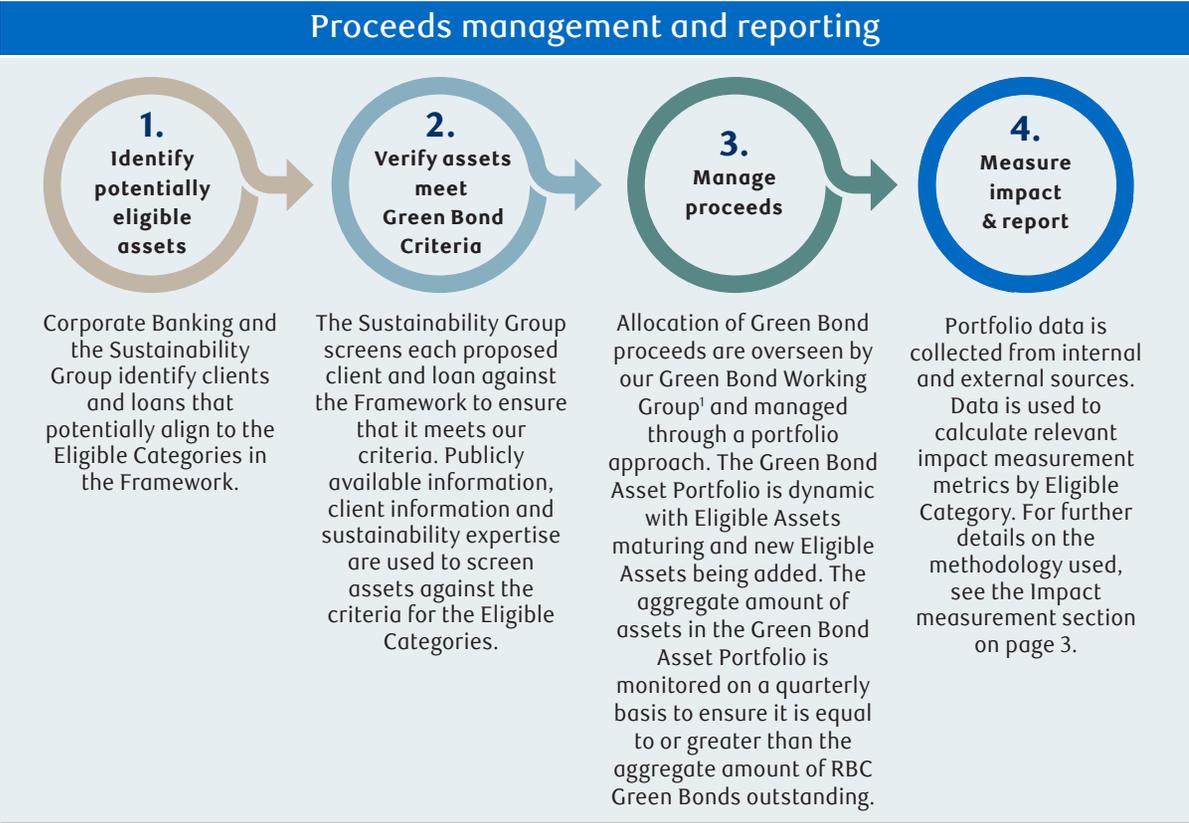


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Green Bond Framework

The **RBC Green Bond Framework** (the “Framework”) was developed in line with the International Capital Market Association Green Bond Principles 2018 and provides transparency in our Green Bond issuance and reporting processes. An overview of the Eligible Categories for the use of proceeds and the key processes described in the Framework are summarized below.

Use of proceeds	
Eligible Categories	Alignment with Sustainable Development Goals
 Renewable energy	 7 AFFORDABLE AND CLEAN ENERGY
 Clean transportation	 9 INDUSTRY INNOVATION AND INFRASTRUCTURE
 Energy efficiency	 7 AFFORDABLE AND CLEAN ENERGY
 Pollution prevention and control	 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
 Environmentally sustainable management of living natural resources and land use	 15 LIFE ON LAND
 Green buildings	 11 SUSTAINABLE CITIES AND COMMUNITIES
 Sustainable water and wastewater management	 6 CLEAN WATER AND SANITATION



External review

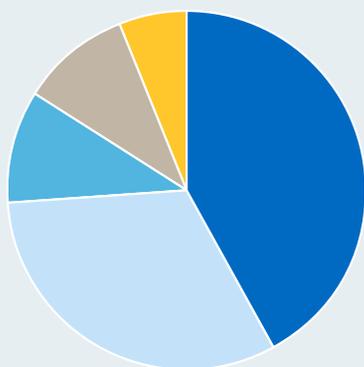
Sustainalytics, an independent provider of sustainability research, analysis and services to investors and other financial institutions globally, has provided an assessment and **Second-Party Opinion** on the Framework’s alignment with the Green Bond Principles. PricewaterhouseCoopers LLP (PwC), our independent auditor, has provided limited assurance on the allocation of Green Bond proceeds. See the **Appendix** for Limited Assurance Report.

¹ The Green Bond Working Group includes representatives from specialist teams in Corporate Treasury, Capital Markets and the Corporate Citizenship-Sustainability Group, and draws on Group Risk Management as required.

Green Bond Asset Portfolio

The total amount of RBC Green Bond proceeds² was allocated to the Green Bond Asset Portfolio (the “Portfolio”), which contains refinanced assets across the Eligible Categories. The allocation by Eligible Category and a summary of the estimated environmental impact for the two largest categories are below. All data presented as at October 31, 2019 and based on Canadian dollars unless otherwise stated.

Allocation of proceeds



- **43%** Green buildings
- **29%** Renewable energy
- **11%** Environmentally sustainable management of living natural resources and land use
- **10%** Clean transportation
- **7%** Energy efficiency

RBC Green Bond details

Date of Issuance: April 24, 2019
Issued Amount: EUR500 million
Tenor: 5 years

Impact measurement



Green buildings

Metric	RBC Green Bond share of impacts
Green building certified space (ft ²)	1,798,004
Energy saved annually (eMWh)	11,092
GHG emissions avoided annually (tCO ₂ e)	2,597

Methodology

Impact measurement metrics for green buildings were calculated using the national median source energy use intensity (EUI) as reported by Energy Star Portfolio Manager for both Canada and the United States. These factors were applied to each building’s square footage to calculate a baseline energy consumption. A building’s expected energy savings compared to the baseline energy consumption was calculated using certification scorecards in the case of Leadership in Energy and Environmental Design (LEED) or averages based on level of certification in the case of Building Owners and Managers Association (BOMA). Region specific carbon intensity factors³ were applied to the expected energy savings to calculate the GHG emissions⁴ avoided from the entire Portfolio. To calculate the impact associated with the outstanding RBC Green Bond, our loan share of each project and each project’s portfolio share of the proceeds were applied.



Renewable energy

Metric	RBC Green Bond share of impacts
Energy capacity (MW)	849
Energy generated annually (MWh)	2,014,252
GHG emissions avoided annually (tCO ₂ e)	665,467

Methodology

Impact measurement metrics for renewable energy were calculated using client reported yearly energy generation data (MWh) or, where not available, efficiency factors provided by clients multiplied by the total size (MW) of the project to approximate yearly energy generation data. Region specific carbon intensity factors³ were applied to the yearly energy generation data to calculate the greenhouse gas (GHG) emissions avoided⁴ from the entire Portfolio. To calculate the impact associated with the outstanding RBC Green Bond, our loan share of each project and each project’s portfolio share of the proceeds were applied.

² RBC Green Bond proceeds refers to issued amount, net of commissions and fees. As at October 31, 2019, 100% of RBC Green Bond proceeds were allocated.

³ Sources for the carbon intensity factors included Natural Resources Canada, United States Environmental Protection Agency, International Energy Agency and/or from local utilities.

⁴ GHG emissions avoided is calculated in tonnes of carbon dioxide equivalents (tCO₂e).

Case Studies on Portfolio Assets

The RBC Green Bond proceeds are allocated to a portfolio of projects and companies aligned to the Eligible Categories as outlined on page 3. The following case studies⁵ are examples of assets in our Portfolio.



Morguard REIT – Green buildings

RBC Capital Markets acted as sole Lender on a long-term commercial mortgage for 111 Dunsmuir Ave. located in Vancouver, British Columbia, Canada. 111 Dunsmuir is a 13-story Class “A” office building in Vancouver’s downtown core. The building was awarded the BOMA BEST Platinum certification for excellence in energy and environmental management, the highest possible level of BOMA certification. Specific sustainability features include low-energy LED lighting, variable frequency drives for air pumps, xeriscaping with drip irrigation sensors, low flow washroom fixtures and a comprehensive tenant engagement program to ensure optimal building performance.



Montez Fund III LP – Green buildings

RBC Capital Markets acted as Lead Arranger, Sole Bookrunner and Collateral Agent on a long-term commercial mortgage for the Enbridge Centre in Edmonton, Alberta, Canada. The Enbridge Centre is the first new office tower to be built in the Edmonton Financial District in over 25 years and achieved LEED Gold Certification. This innovative tower incorporated 2 existing heritage-designated buildings and includes energy efficient lighting, highly efficient floorplates and other sustainability features focused on water savings, indoor air quality and energy efficiency.



KingSett Canadian R/E INC Fund - Green buildings

RBC Capital Markets acted as sole Lender on a long-term commercial mortgage for 1235 Bay Street located in Toronto, Ontario, Canada. 1235 Bay Street is a 10-story Class “B” office building in Toronto’s Yorkville neighborhood. The building was awarded LEED Gold certification for Existing Buildings in 2015 and was recertified Gold under LEED v4.1 in December 2019. The building has incorporated many energy efficiency and environmentally friendly features such as LED lighting, water and energy efficient washrooms, air quality best management practices and a walkability score of 100. This building contributed to its owner, KingSett Capital, receiving a Global Real Estate Sustainability Benchmark 5-star rating. These measures have led to energy reductions of approximately 600,000 kWh per year resulting in GHG emissions reductions of 13 tCO₂e.



Greencoat UK Wind PLC – Renewable energy

RBC Capital Markets is a key Lender to Greencoat UK Wind PLC, the leading listed renewable infrastructure fund, invested in wind farms in the United Kingdom. Its portfolio of assets consists of onshore and offshore wind farms with a capacity size of 10MW or greater, and totals nearly 1GW in generating capacity. In 2019, its portfolio produced over 2,300 GWh of electricity, resulting in GHG emission reductions of over 1,200,000 tCO₂e.



California Ridge Wind Energy – Renewable energy

RBC Capital Markets provided construction and term financing for California Ridge Wind Energy which is a 227MW wind farm in Illinois, U.S. owned by Terraform Power. The project consists of 134 turbines and produced over 750,000 MWh of electricity in 2019, resulting in GHG emission reductions of approximately 300,000 tCO₂e.



Mosaic Transit Partners – Clean transportation

RBC Capital Markets acted as sole Financial Advisor, joint-lead Bond Bookrunner and Underwriter, Mandated Lead Arranger and IRS Provider for Mosaic Transit Partners’ Finch West LRT project. Mosaic Transit Partners is a General Partnership consortium that was awarded the contract to design, build, finance and maintain the Finch West LRT project. The Finch West LRT is a new 11km - 18 stop, light rail transit line in the northern part of the City of Toronto. Once completed, the Finch West LRT is expected to carry over 46,000 passengers each weekday, and contribute to reduced car traffic, improved air quality and reduced GHG emissions along the transit corridor.

⁵ Information for the case studies has been provided and reviewed by the clients profiled in the case studies.

Appendix: PwC Limited Assurance Report



Independent Limited Assurance Report in relation to Royal Bank of Canada's April 2020 Green Bond Performance Report

To: The Board of Directors and Management of Royal Bank of Canada ("RBC")

We have been engaged by RBC to perform an independent limited assurance engagement in respect of the select performance indicators detailed below ("Selected Information") contained in the **April 2020 RBC Green Bond Report** ("the Report") as at October 31, 2019. The reporting criteria against which the Selected Information was assessed is in the RBC Green Bond Framework available at http://www.rbc.com/investorrelations/pdf/RBC_Green_Bond_Framework.pdf

Selected Information

Our limited assurance engagement was performed on the following selected performance indicators:

Performance Indicator	Report page(s)
Issued amount	3
Allocation of proceeds to each of the Eligible Categories	3
Allocated proceeds at the reporting period end	3

Our assurance does not extend to any other information included in the Report. We have not reviewed and do not provide any assurance over the individual project information reported therein.

Responsibilities of RBC Management

RBC is responsible for the preparation and presentation of the selected information, incorporated in the Report, in accordance with the reporting criteria. This responsibility includes the design, implementation and maintenance of internal controls relevant to the preparation and presentation of the selected information that is free from material misstatements, whether due to fraud or error; developing and applying the criteria.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the selected information based on the limited assurance procedures we have performed and the evidence we have obtained. We conducted our engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 Revised, *Assurance engagements other than audits or reviews of historical financial information*.

This report, including our conclusions, has been prepared solely for the Board of Directors and Management of RBC in accordance with the agreement between us. We permit this report to be disclosed in the April 2020 RBC Green Bond Report as at 31 October 2019 and on RBC website, to assist the Board of Directors and Management of RBC in responding to their governance responsibilities by obtaining an independent assurance report in connection with the Selected Information. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Board of Directors and Management of RBC for our work or this report except where terms are expressly agreed between us in writing.

Our Independence and Quality Control

In conducting our assurance engagement, we have met the independence requirements of the *Code of Ethics for Professional Accountants*. We applied International Standard on Quality Control 1 (ISQC 1), *Quality control for firms that perform audits and reviews of financial statements and other assurance and related services engagements*.

Understanding reporting and measurement methodologies

The Selected Information needs to be read and understood together with the reporting criteria, which RBC is solely responsible for selecting and applying. The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, measurement techniques and can affect comparability between entities and over time.

Our Procedures

A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, and the procedures performed in response to the assessed risks.

The procedures we performed were based on our professional judgment and included inquiries, observation of processes performed, inspection of documents, analytical procedures, evaluating the appropriateness of quantification methods and reporting policies, and agreeing or reconciling with underlying records. Given the circumstances of the engagement, our procedures included but were not limited to:

- Making enquiries of RBC's management, including those with responsibility for Green Bond governance, management and reporting;
- Evaluating the design of key structures, systems, processes and controls for managing, recording and reporting the Selected Information;
- Obtaining the internal listing of assets allocated into the green bond and confirming this was consistent with the proposed disclosure of the green bond; and
- Considering the disclosure and presentation of the Selected Information in the Report.

Limited Assurance Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Selected Information included in RBC's **April 2020 Green Bond Report** as at October 31, 2019 is not prepared, in all material respects, in accordance with the relevant criteria.

PricewaterhouseCoopers LLP

Chartered Professional Accountants

March 30, 2020
Toronto, Ontario

Disclaimer

This Green Bond Report is provided for informational purposes only and is subject to change without notice. After the date of this document, Royal Bank of Canada (“RBC”) does not assume any responsibility or obligation to update or revise any statements in this document, regardless of whether those statements are affected by the results of new information, future events or otherwise. No representation or warranty, express or implied, is or will be made in relation to the accuracy, reliability or completeness of the information contained herein. No liability whatsoever is or will be accepted by RBC for any loss or damage howsoever arising out of or in connection with the use of, or reliance upon, the information contained in this document.

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This material is not intended for distribution to, or use by, any person or entity in any jurisdiction where such distribution or use would be contrary to law or regulation. This Green Bond Report may contain projections and forward-looking statements within the meaning of certain securities laws, including the “safe harbour” provisions of the United States Private Securities Litigation Reform Act of 1995 and any applicable Canadian securities legislation. Forward-looking statements contained in this document may include, but are not limited to, statements regarding the allocation of Green Bond proceeds and the estimated impact associated with outstanding Green Bonds. Forward-looking statements are typically identified by words such as “believe”, “expect”, “foresee”, “forecast”, “anticipate”, “intend”, “estimate”, “goal”, “plan” and “project” and similar expressions of future or conditional verbs such as “will”, “may”, “should”, “could” or “would”.

By their very nature, forward-looking statements require certain assumptions and are subject to inherent risks and uncertainties, which give rise to the possibility that predictions, forecasts, projections, expectations or conclusions will not prove to be accurate and that such assumptions may not be correct. Readers are cautioned not to place undue reliance on these statements as a number of risk factors could cause actual results to differ materially from the expectations expressed in such forward-looking statements. These factors – many of which are beyond RBC’s control and the effects of which can be difficult to predict – include: difficulty identifying assets that meet the Green Bond criteria, and the risk that eligible projects will be completed within any specified period or at all or with the results or outcome as originally expected or anticipated by RBC.

Readers are cautioned that these risk factors are not exhaustive. When relying on the forward-looking statements contained in this document to make decisions with respect to RBC, investors and others should carefully consider the foregoing factors and other uncertainties and potential events.

Except as required by law, none of RBC or its affiliates undertakes to update any forward-looking statement that may be made from time to time in this document.

