



Pricing Supplement

Dated January 9, 2023

To the Prospectus Dated September 14, 2021 and
Prospectus Supplement Dated September 14, 2021

\$1,700,000,000
5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

We will pay interest on the 5.000% Senior Notes, due February 1, 2033, which we refer to in this pricing supplement as the Notes, semi-annually on February 1 and August 1 of each year, subject to the Payment Convention. We will make the first interest payment on August 1, 2023. The Notes will mature on February 1, 2033. The Notes will be our unsecured obligations and will rank equally with all of our other unsecured and unsubordinated indebtedness from time to time outstanding. We will issue the Notes in minimum denominations of \$2,000 and integral multiples of \$1,000 in excess thereof.

The Notes will be bail-inable notes (as defined in the accompanying prospectus supplement dated September 14, 2021) and subject to conversion in whole or in part – by means of a transaction or series of transactions and in one or more steps – into common shares of the Bank or any of its affiliates under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act (the “CDIC Act”) and to variation or extinguishment in consequence, and subject to the application of the laws of the Province of Ontario and the federal laws of Canada applicable therein in respect of the operation of the CDIC Act with respect to the Notes.

We may redeem the Notes as a whole or in part at any time and from time to time prior to maturity at the redemption prices described under the caption “Specific Terms of the Notes—Optional Redemption” in this pricing supplement. There is no sinking fund for the Notes. All payments on the Notes are subject to our credit risk.

The CUSIP number for the Notes is 78016FZX5.

The Notes will not be listed on any securities exchange.

Investing in the Notes involves a number of risks. See “Risk Factors” on page P-5 of this pricing supplement and beginning on page S-2 of the prospectus supplement dated September 14, 2021.

The Notes are unsecured and are not savings accounts or insured deposits of a bank. The Notes are not insured or guaranteed by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other governmental agency or instrumentality of Canada or the United States.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Note	Total
Price to public	99.864%	\$ 1,697,688,000
Underwriting discount	0.350%	\$ 5,950,000
Proceeds to Royal Bank of Canada	99.514%	\$ 1,691,738,000

We will deliver the Notes in book-entry only form through the facilities of The Depository Trust Company (“DTC”) (including through its indirect participants Euroclear, Clearstream and CDS Clearing and Depository Services Inc. (“CDS”)) on or about January 12, 2023, against payment in immediately available funds.

Lead Managers and Joint Book Runners

RBC Capital Markets	Citigroup	J.P. Morgan
KeyBanc Capital Markets	Santander	SOCIETE GENERALE

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

TERMS OF THE NOTES

We describe the basic features of the Notes in the sections of the prospectus dated September 14, 2021 called "Description of Debt Securities" and prospectus supplement dated September 14, 2021 called "Description of the Notes We May Offer," subject to and as modified by the provisions described below.

Issuer:	Royal Bank of Canada (the "Bank")
Issue:	Senior Global Medium-Term Notes, Series I
Title of Series:	5.000% Senior Notes, due February 1, 2033
Ranking:	Senior
Principal Amount:	US \$1,700,000,000
Currency:	U.S. Dollars
Minimum Denominations:	\$2,000 and integral multiples of \$1,000 in excess thereof
Pricing Date:	January 9, 2023
Issue Date:	January 12, 2023
Maturity Date:	February 1, 2033
CUSIP / ISIN / Common Code:	78016FZX5 / US78016FZX58 / 257713733
Interest Rate:	For each Interest Period (as defined below), the Notes will bear interest at the fixed rate of 5.000% per annum.
Interest Payment Dates:	Semi-Annually, on each February 1 and August 1, beginning August 1, 2023 and ending on the Maturity Date, subject to the Payment Convention, as described below.
Interest Periods:	The Notes will bear interest from and including each Interest Payment Date (or in the case of the initial Interest Period, the Issue Date) to but excluding the following Interest Payment Date (or, in the case of the final Interest Period, the redemption date or the Maturity Date) (each such period, an "Interest Period"), subject to the Payment Convention, as described below.
Record Dates for Interest Payments:	The fifteenth calendar day, whether or not a Business Day, immediately preceding the related Interest Payment Date.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

Payment Convention:	If any Interest Payment Date or the Maturity Date falls on a day that is not a Business Day, the required payment of principal, premium, if any, and/or interest will be made on the next succeeding Business Day, and no additional interest will accrue in respect of the payment made on that next succeeding Business Day.
Business Day:	A Monday, Tuesday, Wednesday, Thursday or Friday that is neither a legal holiday nor a day on which banking institutions are authorized or required by law to close in New York City or Toronto.
Day Count Fraction:	Interest will be computed and paid on a 30/360 basis (based upon a 360-day year of twelve 30-day months).
Redemption at our Option:	The Bank may redeem the Notes, at its option, in whole or in part, at any time and from time to time at a “make-whole” redemption price (expressed as a percentage of principal amount and rounded to three decimal places) equal to the greater of: (1) (a) the sum of the present values of the remaining scheduled payments of principal and interest thereon discounted to the redemption date on a semi-annual basis (assuming a 360-day year consisting of twelve 30-day months) at the Treasury Rate described herein under “Specific Terms of the Notes—Optional Redemption” plus 25 basis points less (b) interest accrued to, but excluding, the date of redemption, and (2) 100% of the principal amount of the Notes to be redeemed, plus, in either case, accrued and unpaid interest thereon to, but excluding, the redemption date. Notice of any redemption will be mailed (or otherwise transmitted in accordance with the depository’s procedures) not less than 30 days nor more than 60 days before the redemption date to each holder of notes to be redeemed. See “Specific Terms of the Notes—Optional Redemption”.
Canadian Bail-in Powers Acknowledgment:	The Notes are bail-inable notes. See “Specific Terms of the Notes—Agreement with Respect to the Exercise of Canadian Bail-in Powers”.
Repayment at Option of Holder:	Not applicable.
Lead Managers and Joint Book Runners:	RBC Capital Markets, LLC, Citigroup Global Markets Inc., J.P. Morgan Securities LLC, KeyBanc Capital Markets Inc., Santander Investment Securities Inc. and SG Americas Securities, LLC
Public Offering Price:	99.864%
Underwriting Discount:	0.350%
Clearance and Settlement:	DTC (including through its indirect participants Euroclear, Clearstream and CDS, as described under “Ownership and Book-Entry Issuance” in the prospectus dated September 14, 2021).
Listing:	The Notes will not be listed on any securities exchange or quotation system.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

Terms Incorporated in the
Master Note:

All of the terms appearing above on pages P-2, P-3 and P-4 under the caption "Terms of the Notes" of this pricing supplement and the terms appearing under the caption "Specific Terms of the Notes" below.
The Notes are part of a series of senior debt securities of the Bank entitled "Senior Global Medium-Term Notes, Series I." The Notes will have the CUSIP No. 78016FZX5, the ISIN No. US78016FZX58 and the Common Code No. 257713733.

RISK FACTORS

*An investment in the Notes is subject to the risks described below, as well as the risks described under “Risk Factors” in the accompanying prospectus, dated September 14, 2021, and the accompanying prospectus supplement, dated September 14, 2021. The Notes are not secured debt. You should carefully consider whether the Notes are suited to your particular circumstances. This pricing supplement should be read together with the accompanying prospectus, dated September 14, 2021, and the accompanying prospectus supplement, dated September 14, 2021. The information in the accompanying prospectus and the accompanying prospectus supplement is supplemented by, and to the extent inconsistent therewith replaced and superseded by, the information in this pricing supplement. **This section describes certain significant risks relating to an investment in the Notes. We urge you to read the following information about these risks, together with the other information in this pricing supplement and the accompanying prospectus and accompanying prospectus supplement, before investing in the Notes.***

Investors Are Subject to Our Credit Risk, and Market Perceptions About Our Creditworthiness May Adversely Affect the Market Value of the Notes.

Investors are dependent on our ability to pay all amounts due on the Notes on the interest payment dates and at maturity, and, therefore, investors are subject to our credit risk and to changes in the market's view of our creditworthiness. Any decrease in the market's view on or confidence in our creditworthiness is likely to adversely affect the market value of the Notes.

The Market Value of the Notes May Be Influenced by Unpredictable Factors.

The market value of your Notes may fluctuate between the date you purchase them and the Maturity Date. Several factors, many of which are beyond our control, will influence the market value of the Notes. Factors that may influence the market value of the Notes include:

- supply and demand for the Notes, including inventory positions with the underwriters or any other market-maker;
- interest rates in the market and expectations about future interest rates;
- the creditworthiness of the Bank;
- the time remaining to the maturity of the Notes; and
- economic, financial, political, regulatory or judicial events that affect financial markets generally.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

The Notes Will Not Be Listed on Any Securities Exchange or Quotation System and Secondary Trading May Be Limited.

The Notes will not be listed on any securities exchange or quotation system. Therefore, there may be little or no secondary market for the Notes. The underwriters may, but are not obligated to, make a market in the Notes. Even if there is a secondary market, it may not provide enough liquidity to allow you to trade or sell the Notes easily. Because we do not expect that other broker-dealers will participate significantly in the secondary market for the Notes, the price at which you may be able to trade your Notes is likely to depend on the price, if any, at which the underwriters are willing to transact. If at any time the underwriters were not to make a market in the Notes, it is likely that there would be no secondary market for the Notes. Accordingly, you should be willing to hold your Notes to maturity.

SPECIFIC TERMS OF THE NOTES

Please note that in this section entitled “Specific Terms of the Notes,” references to “holders” mean those who own Notes registered in their own names, on the books that we or the trustee maintain for this purpose, and not those who own beneficial interests in Notes registered in street name or in Notes issued in book-entry form through DTC or another depository. Owners of beneficial interests in the Notes should read the section entitled “Description of the Notes We May Offer—Legal Ownership” in the accompanying prospectus supplement, dated September 14, 2021, and “Ownership and Book-Entry Issuance” in the accompanying prospectus, dated September 14, 2021.

The Notes are part of a series of senior debt securities entitled “Senior Global Medium-Term Notes, Series I,” that we may issue under our senior indenture, dated as of October 23, 2003, between the Bank and The Bank of New York Mellon, as successor to the corporate trust business of JPMorgan Chase Bank, N.A., as trustee, as supplemented by a first supplemental indenture, dated as of July 21, 2006, by a second supplemental indenture, dated as of February 28, 2007, and by a third supplemental indenture, dated as of September 7, 2018 and as further amended, from time to time (the “indenture”). The Notes are described in the accompanying prospectus supplement. This pricing supplement summarizes financial and other terms that apply to the Notes. We describe terms that apply generally to all Series I Medium-Term Notes in “Description of the Notes We May Offer” in the accompanying prospectus supplement. The terms described in this pricing supplement, and should be read in conjunction with, those described in the accompanying prospectus and accompanying prospectus supplement and, if the terms described here are inconsistent with those described there, the terms described here are controlling.

Please note that the information about the price to the public and the net proceeds to the Bank on the front cover of this pricing supplement relates only to the initial sale of the Notes. If you have purchased the Notes in a market-making transaction after the initial sale, information about the price and date of sale to you will be provided in a separate confirmation of sale.

In addition to the terms described on the front and inside cover of this pricing supplement, the following specific terms will apply to the Notes:

Defeasance

There shall be no defeasance, full or covenant, applicable to the Notes.

Payment at Maturity

At maturity you will receive an amount equal to the principal of your Notes plus any accrued and unpaid interest.

Manner of Payment and Delivery

Any payment on the Notes at maturity will be made to accounts designated by you and approved by us, or at the office of the trustee in New York City, but only when the Notes are surrendered to the trustee at that office. We also may make any payment in accordance with the applicable procedures of the depository.

Agreement with Respect to the Exercise of Canadian Bail-in Powers

By its acquisition of an interest in any Note, each holder or beneficial owner of that Note is deemed to (i) agree to be bound, in respect of that Note, by the CDIC Act, including the conversion of that Note, in whole or in part – by means of a transaction or series of transactions and in one or more steps – into common shares of the Bank or any of its affiliates under subsection 39.2(2.3) of the CDIC Act and the variation or extinguishment of that Note in consequence, and by the application of the laws of the Province of Ontario and the federal laws of Canada applicable therein in respect of the operation of the CDIC Act with respect to that Note; (ii) attorn and submit to the jurisdiction of the courts in the Province of Ontario with respect to the CDIC Act and those laws; (iii) have represented and warranted to the Bank that the Bank has not directly or indirectly provided financing to the holder for the express purpose of investing in the Note; and (iv) acknowledge and agree that the terms referred to in paragraphs (i) and (ii), above, are binding on that holder or beneficial owner despite any provisions in the indenture or that Note, any other law that governs that Note and any other agreement, arrangement or understanding between that holder or beneficial owner and the Bank with respect to that Note.

Holders and beneficial owners of any Note will have no further rights in respect of that Note to the extent that Note is converted in a bail-in conversion, other than those provided under the bail-in regime, and by its acquisition of an interest in any Note, each holder or beneficial owner of that Note is deemed to irrevocably consent to the converted portion of the principal amount of that Note and any accrued and unpaid interest thereon being deemed paid in full by the Bank by the issuance of common shares of the Bank (or, if applicable, any of its affiliates) upon the occurrence of a bail-in conversion, which bail-in conversion will occur without any further action on the part of that holder or beneficial owner or the trustee; provided that, for the avoidance of doubt, this consent will not limit or otherwise affect any rights that holders or beneficial owners may have under the bail-in regime.

See “Description of Notes We May Offer—Special Provisions Related to Bail-inable Notes” in the accompanying prospectus supplement dated September 14, 2021 for a description of provisions applicable to the Notes as a result of Canadian bail-in powers.

Optional Redemption

The Bank may redeem the notes at its option, in whole or in part, at any time and from time to time, at a “make-whole” redemption price (expressed as a percentage of principal amount and rounded to three decimal places) equal to the greater of:

1. (a) the sum of the present values of the remaining scheduled payments of principal and interest thereon discounted to the redemption date on a semi-annual basis (assuming a 360-day year consisting of twelve 30-day months) at the Treasury Rate plus 25 basis points less (b) interest accrued to, but excluding, the date of redemption, and
2. 100% of the principal amount of the notes to be redeemed,

plus, in either case, accrued and unpaid interest thereon to, but excluding, the redemption date.

“Treasury Rate” means, with respect to any redemption date, the yield determined by the Bank in accordance with the following two paragraphs.

The Treasury Rate shall be determined by the Bank after 4:15 p.m., New York City time (or after such time as yields on U.S. government securities are posted daily by the Board of Governors of the Federal Reserve System), on the third business day preceding the redemption date based upon the yield or yields for the most recent day that appear after such time on such day in the most recent statistical release published by the Board of Governors of the Federal Reserve System designated as "Selected Interest Rates (Daily) - H.15" (or any successor designation or publication) ("H.15") under the caption "U.S. government securities—Treasury constant maturities—Nominal" (or any successor caption or heading) ("H.15 TCM"). In determining the Treasury Rate, the Bank shall select, as applicable: (1) the yield for the Treasury constant maturity on H.15 exactly equal to the period from the redemption date to the maturity date of the Notes (the "Remaining Life"); or (2) if there is no such Treasury constant maturity on H.15 exactly equal to the Remaining Life, the two yields – one yield corresponding to the Treasury constant maturity on H.15 immediately shorter than and one yield corresponding to the Treasury constant maturity on H.15 immediately longer than the Remaining Life – and shall interpolate to the maturity date of the Notes on a straight-line basis (using the actual number of days) using such yields and rounding the result to three decimal places; or (3) if there is no such Treasury constant maturity on H.15 shorter than or longer than the Remaining Life, the yield for the single Treasury constant maturity on H.15 closest to the Remaining Life. For purposes of this paragraph, the applicable Treasury constant maturity or maturities on H.15 shall be deemed to have a maturity date equal to the relevant number of months or years, as applicable, of such Treasury constant maturity from the redemption date.

If on the third business day preceding the redemption date H.15 TCM is no longer published, the Bank shall calculate the Treasury Rate based on the rate per annum equal to the semi-annual equivalent yield to maturity at 11:00 a.m., New York City time, on the second business day preceding such redemption date of the United States Treasury security maturing on, or with a maturity that is closest to, the maturity date of the Notes, as applicable. If there is no United States Treasury security maturing on the maturity date of the Notes but there are two or more United States Treasury securities with a maturity date equally distant from the maturity date of the Notes, one with a maturity date preceding the maturity date of the Notes and one with a maturity date following the maturity date of the Notes, the Bank shall select the United States Treasury security with a maturity date preceding the Par Call Date. If there are two or more United States Treasury securities maturing on the maturity date of the Notes or two or more United States Treasury securities meeting the criteria of the preceding sentence, the Bank shall select from among these two or more United States Treasury securities the United States Treasury security that is trading closest to par based upon the average of the bid and asked prices for such United States Treasury securities at 11:00 a.m., New York City time. In determining the Treasury Rate in accordance with the terms of this paragraph, the semi-annual yield to maturity of the applicable United States Treasury security shall be based upon the average of the bid and asked prices (expressed as a percentage of principal amount) at 11:00 a.m., New York City time, of such United States Treasury security, and rounded to three decimal places.

The Bank's actions and determinations in determining the redemption price shall be conclusive and binding for all purposes, absent manifest error.

Notice of any redemption will be mailed (or otherwise transmitted in accordance with the depository's procedures) not less than 30 days nor more than 60 days before the redemption date to each holder of notes to be redeemed.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

In the case of a partial redemption, selection of the notes for redemption will be made pro rata, by lot or by such other method as the Trustee in its sole discretion deems appropriate and fair. No notes of a principal amount of \$2,000 or less will be redeemed in part. If any note is to be redeemed in part only, the notice of redemption that relates to the note will state the portion of the principal amount of the note to be redeemed. A new note in a principal amount equal to the unredeemed portion of the note will be issued in the name of the holder of the note upon surrender for cancellation of the original note. For so long as the notes are held by DTC (or another depository), the redemption of the notes shall be done in accordance with the policies and procedures of the depository.

Unless the Bank defaults in payment of the redemption price, on and after the redemption date interest will cease to accrue on the notes or portions thereof called for redemption.

ADDITIONAL AMOUNTS

We will pay any amounts to be paid by us on the Notes without deduction or withholding for, or on account of, any and all present or future income, stamp and other taxes, levies, imposts, duties, charges, fees, deductions or withholdings ("taxes") now or hereafter imposed, levied, collected, withheld or assessed by or on behalf of Canada or any Canadian political subdivision or authority that has the power to tax, unless the deduction or withholding is required by law or by the interpretation or administration thereof by the relevant governmental authority. At any time a Canadian taxing jurisdiction requires us to deduct or withhold for or on account of taxes from any payment made under or in respect of the Notes, we will pay such additional amounts ("Additional Amounts") as may be necessary so that the net amounts received by each holder (including Additional Amounts), after such deduction or withholding, shall not be less than the amount the holder would have received had no such deduction or withholding been required.

However, no Additional Amounts will be payable with respect to a payment made to a holder of a Note, or of a right to receive payment in respect thereto (a "Payment Recipient"), which we refer to as an "Excluded Holder," in respect of any taxes imposed because the beneficial owner or Payment Recipient:

- (i) is someone with whom we do not deal at arm's length (within the meaning of the Income Tax Act (Canada)) at the time of making such payment;
- (ii) is subject to such taxes by reason of its being connected presently or formerly with Canada or any province or territory thereof other than by reason of the holder's activity in connection with purchasing such Note, the holding of such Note or the receipt of payments thereunder;
- (iii) is, or does not deal at arm's length with a person who is, a "specified shareholder" (as defined in subsection 18(5) of the Income Tax Act (Canada)) of the Bank, or is a person in respect of which the Bank is a "specified entity" (as defined in proposed subsection 18.4(1) of the Income Tax Act (Canada) contained in certain proposals to amend the Income Tax Act (Canada) released on April 29, 2022);
- (iv) presents such Note for payment (where presentation is required) more than 30 days after the relevant date (except to the extent that the holder thereof would have been entitled to such Additional Amounts on presenting a Note for payment on the last day of such 30 day period); for this purpose, the "relevant date" in relation to any payments on any Note means:
 - (a) the due date for payment thereof, or
 - (b) if the full amount of the monies payable on such date has not been received by the trustee on or prior to such due date, the date on which the full amount of such monies has been received and notice to that effect is given to holders of the Notes in accordance with the indenture;
- (v) could lawfully avoid (but has not so avoided) such withholding or deduction by complying, or requiring that any agent comply with, any statutory requirements necessary to establish qualification for an exemption from withholding or by making, or requiring that any agent make, a declaration of non-residence or other similar claim for exemption to any relevant tax authority; or

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

(vi) is subject to deduction or withholding on account of any tax, assessment, or other governmental charge that is imposed or withheld by reason of the application of Sections 1471 through 1474 of the United States Internal Revenue Code of 1986 (or any successor provisions) (the "Internal Revenue Code"), any regulation, pronouncement, or agreement thereunder, official interpretations thereof, or any law implementing an intergovernmental approach thereto, whether currently in effect or as published and amended from time to time.

For the avoidance of doubt, we will not have any obligation to pay any holders Additional Amounts on any tax which is payable otherwise than by deduction or withholding from payments made under or in respect of the Notes.

We will also make such withholding or deduction and remit the full amount deducted or withheld to the relevant authority in accordance with applicable law. We will furnish to the trustee, within 30 days after the date the payment of any taxes is due pursuant to applicable law, certified copies of tax receipts evidencing that such payment has been made or other evidence of such payment satisfactory to the trustee. We will indemnify and hold harmless each holder of Notes (other than an Excluded Holder) and upon written request reimburse each such holder for the amount of (x) any taxes so levied or imposed and paid by such holder as a result of payments made under or with respect to the Notes, and (y) any taxes levied or imposed and paid by such holder with respect to any reimbursement under (x) above, but excluding any such taxes on such holder's net income or capital.

U.S. FEDERAL INCOME TAX CONSIDERATIONS

For a discussion of the material U.S. federal income tax consequences of owning the Notes, please see the section “Tax Consequences—United States Taxation” in the accompanying prospectus, dated September 14, 2021. We have determined that the Notes will not be treated as issued with a greater than *de minimis* amount of original issue discount for U.S. federal income tax purposes.

CANADIAN FEDERAL INCOME TAX CONSIDERATIONS

For a discussion of the Canadian federal income tax consequences of owning the Notes, please see the section “Tax Consequences — Canadian Taxation” in the accompanying prospectus, dated September 14, 2021 and the section “Certain Income Tax Consequences—Canadian Taxation” in the accompanying prospectus supplement, dated September 14, 2021, subject to the modifications described below.

The section “Tax Consequences—Canadian Taxation” in the accompanying prospectus, dated September 14, 2021 is modified such that the discussion of Canadian federal income tax consequences therein assumes that no amount paid or payable in respect of the Notes will be the deduction component of a “hybrid mismatch arrangement” under which the payment arises within the meaning of certain proposed amendments to the Income Tax Act (Canada) (**Tax Act**) released on August 9, 2022.

The section “Certain Income Tax Consequences—Canadian Taxation—Other Taxes” in the accompanying prospectus supplement, dated September 14, 2021 is deleted in its entirety and replaced with the following:

Other Taxes

A Resident Holder that is throughout the relevant taxation year a “Canadian controlled private corporation” (as defined in the Tax Act) or a “substantive CCPC” as proposed to be defined in the Tax Act pursuant to draft legislation released by the Department of Finance Canada on August 9, 2022 may be liable to pay an additional tax of 10 2/3% on its “aggregate investment income” (as defined in the Tax Act) for the year, including interest and taxable capital gains. Such additional tax may be refundable in certain circumstances. Resident Holders should consult their own tax advisors in this regard.

Interest, capital gains and taxable dividends received by a Resident Holder who is an individual (including certain trusts) may result in such Resident Holder being liable for alternative minimum tax under the Tax Act. Such resident Holders should consult their own tax advisors in this regard.

BENEFIT PLAN INVESTOR CONSIDERATIONS

A fiduciary of a pension, profit-sharing or other employee benefit plan (a “plan”) subject to the Employee Retirement Income Security Act of 1974, as amended (“ERISA”), should consider the fiduciary standards of ERISA in the context of the plan’s particular circumstances before authorizing an investment in the debt securities.

Any purchaser or holder of debt securities or any interest therein will be deemed to have represented (both on behalf of itself and any plan) by its purchase and holding of the debt securities that either (1) it is not a plan and is not purchasing those debt securities on behalf of or with “plan assets” of any plan or (2) the purchase and holding of the debt securities will not constitute a non-exempt prohibited transaction under ERISA or the Internal Revenue Code. In addition, any purchaser or holder of debt securities or any interest therein which is a non-ERISA arrangement will be deemed to have represented by its purchase or holding or, if applicable, exchange of the debt securities that its purchase and holding will not violate the provisions of any similar law.

For a further discussion of benefit plan investor considerations, please see the discussion under the heading “Benefit Plan Investor Considerations” in the accompanying prospectus, dated September 14, 2021.

CLEARANCE AND SETTLEMENT

The Notes will settle through DTC, and its indirect participants Euroclear, Clearstream and CDS. For a description of DTC, Euroclear, Clearstream and CDS, see “Ownership and Book-Entry Issuance” in the accompanying prospectus, dated September 14, 2021.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

We have entered into a terms agreement, dated January 9, 2023, with the underwriters pursuant to the Distribution Agreement, dated September 14, 2021, among us and the agents party thereto for the purchase and sale of the Notes. We have agreed to sell to each of the underwriters, and each of the underwriters has agreed to purchase from us, the principal amount of the Notes shown opposite its name at the public offering price set forth above.

Name	Principal Amount of Notes
RBC Capital Markets, LLC	\$ 289,000,000
Citigroup Global Markets Inc.	\$ 289,000,000
J.P. Morgan Securities LLC	\$ 289,000,000
KeyBanc Capital Markets Inc.	\$ 170,000,000
Santander Investment Securities Inc.	\$ 170,000,000
SG Americas Securities, LLC	\$ 170,000,000
ANZ Securities, Inc.	\$ 17,000,000
BNY Mellon Capital Markets, LLC	\$ 17,000,000
Capital One Securities, Inc.	\$ 17,000,000
Commonwealth Bank of Australia	\$ 17,000,000
Desjardins Securities Inc.	\$ 17,000,000
Fifth Third Securities, Inc.	\$ 17,000,000
Huntington Securities, Inc.	\$ 17,000,000
M&T Securities, Inc.	\$ 17,000,000
MUFG Securities Americas Inc.	\$ 17,000,000
nabSecurities, LLC	\$ 17,000,000
National Bank of Canada Financial Inc.	\$ 17,000,000
Rabo Securities USA, Inc.	\$ 17,000,000
Regions Securities LLC	\$ 17,000,000
Scotia Capital (USA) Inc.	\$ 17,000,000
Truist Securities, Inc.	\$ 17,000,000
U.S. Bancorp Investments, Inc.	\$ 17,000,000
Westpac Banking Corporation	\$ 17,000,000
Academy Securities, Inc.	\$ 8,500,000
Blaylock Van, LLC	\$ 8,500,000
Roberts & Ryan Investments, Inc.	\$ 8,500,000
Samuel A. Ramirez & Company, Inc.	\$ 8,500,000
Total	\$ 1,700,000,000

Commonwealth Bank of Australia, Desjardins Securities Inc. and Westpac Banking Corporation will not effect any offers or sales of any Notes in the United States unless it is through one or more U.S. registered broker-dealers as permitted by the regulations of the Financial Industry Regulatory Authority, Inc. ("FINRA").

The underwriters may sell the Notes to certain dealers at the public offering price, less a concession that will not exceed 0.200% of their principal amount. The underwriters and those dealers may resell the Notes to other dealers at a reallowance discount that will not exceed 0.150% of their principal amount. After the initial offering of the Notes, the concession and reallowance discounts on the Notes may change. The offering of the Notes by the underwriters is subject to receipt and acceptance and subject to the underwriters' right to reject any order in whole or in part.

We estimate that the total offering expenses for the Notes, excluding underwriting discounts and commissions, will be approximately \$42,379.

Subject to the terms and conditions of the terms agreement, the underwriters have agreed to purchase the Notes as principal, for their own account at a purchase price equal to the issue price specified on the front cover of this pricing supplement, less an underwriting discount of 0.350%. To the extent the underwriters resell Notes to a broker or dealer less a concession equal to the entire underwriting discount, such broker or dealer may be deemed to be an "underwriter" of the Notes as such term is defined in the Securities Act of 1933, as amended. The underwriters have advised us that, if they are unable to sell all the Notes at the public offering price, the underwriters propose to offer the Notes from time to time for sale in negotiated transactions or otherwise, at prices to be determined at the time of sale.

In the future, the underwriters may repurchase and resell the Notes in market-making transactions. For more information about the plan of distribution, the Distribution Agreement (of which the terms agreement forms a part) and possible market-making activities; see "Supplemental Plan of Distribution" in the accompanying prospectus supplement dated September 14, 2021.

We expect that delivery of the Notes will be made against payment therefor on January 12, 2023, which is the third scheduled business day following the trade date. Under Rule 15c6-1 of the Securities Exchange Act of 1934, trades in the secondary market generally are required to settle no later than two business days after the trade date, unless the parties to any such trade expressly agree otherwise at the time of the trade. Accordingly, purchasers who wish to trade Notes on any date more than two business days prior to delivery of the Notes hereunder will be required, by virtue of the fact that the Notes will initially settle in three business days (T + 3) to specify alternative settlement arrangements to prevent a failed settlement.

Conflicts of Interest

RBC Capital Markets, LLC is our affiliate, and is deemed to have a conflict of interest under FINRA Rule 5121. Accordingly, the offering of the Notes will conform to the requirements of FINRA Rule 5121. The underwriters, with the exception of Commonwealth Bank of Australia, Desjardins Securities Inc. and Westpac Banking Corporation are members of FINRA. RBC Capital Markets, LLC is not permitted to sell the Notes to an account over which it exercises discretionary authority without the prior specific written approval of the account holder.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates have, from time to time, performed, and may in the future perform, various financial advisory and investment banking services for the Bank, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of the Bank. The underwriters and their respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Selling Restrictions

European Economic Area. PROHIBITION OF SALES TO EEA RETAIL INVESTORS. The Notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the European Economic Area ("EEA"). For these purposes, the expression "offer" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe the Notes, and a "retail investor" means a person who is one (or more) of: (a) a retail client, as defined in point (11) of Article 4(1) of Directive 2014/65/EU, as amended ("MiFID II"); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Regulation (E) 2017/1129, as amended (the "Prospectus Regulation"). Consequently, no key information document required by Regulation (EU) No 1286/2014, as amended (the "PRIIPs Regulation") for offering or selling the Notes or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the Notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation. This pricing supplement has been prepared on the basis that any offer of Notes in any Member State of the EEA or the UK will be made pursuant to an exemption under the Prospectus Regulation from the requirement to publish a prospectus for offers of Notes. This pricing supplement is not a prospectus for the purposes of the Prospectus Regulation.

United Kingdom. PROHIBITION OF SALES TO UK RETAIL INVESTORS.

The Notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the United Kingdom ("UK"). For these purposes, a retail investor means a person who is one (or more) of: (i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018 (the "EUWA"); or (ii) a customer within the meaning of the provisions of the Financial Services and Markets Act 2000 (the "FSMA") and any rules or regulations made under the FSMA to implement Directive (EU) 2016/97, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA; or (iii) not a qualified investor as defined in Article 2 of Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the EUWA (the "UK Prospectus Regulation"). Consequently, no key information document required by Regulation (EU) No 1286/2014 as it forms part of domestic law by virtue of the EUWA (the "UK PRIIPs Regulation") for offering or selling the Notes or otherwise making them available to retail investors in the United Kingdom has been prepared and therefore offering or selling the Notes or otherwise making them available to any retail investor in the United Kingdom may be unlawful under the UK PRIIPs Regulation. This pricing supplement has been prepared on the basis that any offer of Notes in the UK will be made pursuant to an exemption under the UK Prospectus Regulation from the requirement to publish a prospectus for offers of Notes. This pricing supplement is not a prospectus for the purposes of the UK Prospectus Regulation.

This pricing supplement and any other material in relation to the Notes are only being distributed to, and are only directed at, persons in the UK that are qualified investors within the meaning of Article 2(1)(e) of the UK Prospectus Regulation that also (i) have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "Order"), (ii) who fall within Article 49(2)(a) to (d) of the Order or (iii) to whom it may otherwise lawfully be communicated (all such persons together being referred to as "relevant persons"). The Notes are only available to, and any invitation, offer or agreement to purchase or otherwise acquire such Notes will be engaged in only with, relevant persons. This pricing supplement and its contents should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other person in the UK. Any person in the UK that is not a relevant person should not act or rely on this pricing supplement or any of its contents.

Hong Kong. The Notes may not be offered or sold in Hong Kong by means of any document other than (a) in circumstances which do not constitute an offer to the public within the meaning of the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) ("Companies (Winding Up and Miscellaneous Provisions) Ordinance") or which do not constitute an invitation to the public within the meaning of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) ("Securities and Futures Ordinance"), or (b) to "professional investors" as defined in the Securities and Futures Ordinance and any rules made thereunder, or (c) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance, and no advertisement, invitation or document relating to the Notes may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to Notes which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" in Hong Kong as defined in the Securities and Futures Ordinance and any rules made thereunder.

Singapore. This pricing supplement and the accompanying prospectus and prospectus supplement have not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this pricing supplement, the accompanying prospectus and prospectus supplement and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Notes may not be circulated or distributed, nor may the Notes be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (a) to an institutional investor (as defined in Section 4A of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA")) under Section 274 of the SFA, (b) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA or (c) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to conditions set forth in the SFA.

Where the Notes are subscribed or purchased under Section 275 of the SFA by a relevant person which is (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor, or (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for six months after that corporation has acquired the Notes under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation's securities pursuant to Section 275(1A) or Section 276(4)(i)(B) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

Notification under Section 309B(1)(c) of the SFA. The Bank has determined that the Notes are (a) prescribed capital markets products (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018) and (b) Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

Switzerland. The Notes are not offered, sold or advertised, directly or indirectly, in, into or from Switzerland on the basis of a public offering and will not be listed on the SIX Swiss Exchange or any other offering or regulated trading facility in Switzerland. Accordingly, neither this pricing supplement, the accompanying prospectus and prospectus supplement nor other marketing material constitute a prospectus as defined in article 652a or article 1156 of the Swiss Code of Obligations or a listing prospectus as defined in article 32 of the Listing Rules of the SIX Swiss Exchange or any other regulated trading facility in Switzerland. Any resales of the Notes may only be undertaken on a private basis to selected individual investors in compliance with Swiss law. This pricing supplement, the accompanying prospectus or prospectus supplement may not be copied, reproduced, distributed or passed on to others or otherwise made available in Switzerland without our prior written consent. By accepting this pricing supplement, the accompanying prospectus or prospectus supplement or by subscribing to the notes, investors are deemed to have acknowledged and agreed to abide by these restrictions.

Japan. The Notes have not been and will not be registered pursuant to Article 4, Paragraph 1 of the Financial Instruments and Exchange Act. Accordingly, none of the Notes nor any interest therein may be offered or sold, directly or indirectly, in Japan or to, or for the benefit of, any "resident" of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to or for the benefit of a resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Act and any other applicable laws, regulations and ministerial guidelines of Japan in effect at the relevant time.

Canada. Sales into Canada are permitted.

5.000% Senior Notes,
Due February 1, 2033
Royal Bank of Canada

VALIDITY OF NOTES

The validity of the Notes will be passed upon for us by Sullivan & Cromwell LLP, New York, New York, as to matters of New York law, and by Norton Rose Fulbright Canada LLP, Toronto, Ontario, as to matters of Canadian law and applicable matters of Ontario law. Certain legal matters will be passed upon for the underwriters by Davis Polk & Wardwell LLP, New York, New York.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

You should read this pricing supplement, together with the documents listed below, which together contain the terms of the Notes and supersede all prior or contemporaneous oral statements as well as any other written materials. You may access the following documents on the SEC Website at www.sec.gov as follows (or if such address has changed, by reviewing our filings for the relevant date on the SEC Website):

- Series I MTN prospectus supplement dated September 14, 2021:
<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009472/rbcsupp911210424b3.htm>
- Prospectus dated September 14, 2021:
<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009470/rbc911212424b3.htm>

Our Central Index Key, or CIK, on the SEC Website is 1000275.

The pricing supplement to which this Exhibit is attached is a final prospectus for the related offering. The maximum aggregate offering price of the offering is \$1,700,000,000.
