

**Pricing Supplement to Short Form Base Shelf Prospectus dated March 25, 2022,
the Prospectus Supplement thereto dated March 28, 2022, as supplemented November 11, 2022 and
the Prospectus Supplement thereto dated March 28, 2022, as supplemented November 11, 2022**

No securities regulatory authority has expressed an opinion about these securities and it is an offence to claim otherwise.

This pricing supplement together with the short form base shelf prospectus dated March 25, 2022, the prospectus supplement dated March 28, 2022 and the prospectus supplement dated March 28, 2022, to which it relates, as amended or supplemented, and each document incorporated by reference into such prospectus, constitutes a public offering of these securities only in those jurisdictions where they may be lawfully offered for sale and therein only by persons permitted to sell such securities.

The securities to be issued hereunder have not been, and will not be, registered under the United States Securities Act of 1933, as amended and, subject to certain exceptions, may not be offered, sold or delivered, directly or indirectly, in the United States of America or for the account or benefit of U.S. persons.



Royal Bank of Canada

January 26, 2023

Senior Note Program

Index Linked Securities

Maximum \$20,000,000 (200,000 Securities)

RBC Solactive Canada Utilities 160 AR Index Geared Buffered

Callable Yield 11.00% Securities (CAD), Series 45

Due February 13, 2030

Non-Principal Protected Securities

Royal Bank of Canada (the “**Bank**”) is offering up to \$20,000,000 of RBC Solactive Canada Utilities 160 AR Index Geared Buffered Callable Yield 11.00% Securities (CAD), Series 45 (which we refer to as the “**Securities**” for the purpose of this pricing supplement only and not for the purpose of the “base shelf prospectus” as defined below), designed for investors who are prepared and can afford to take the risk that they will lose substantially all of their investment, that regular Interest Payments (defined herein) will not be made on the Securities, and that the Securities will be redeemed early, because they believe that the Closing Level (defined herein) of the Solactive Canada Utilities 160 AR Index (the “**Underlying Index**”), an adjusted return index that aims to track the gross total return performance of the Solactive Canada Utilities Index TR (the “**Target Index**”), subject to a reduction of a synthetic dividend of 160 index points per annum calculated daily in arrears (the “**Adjusted Return Factor**”), will be greater than or equal to the Coupon Barrier Level (defined herein) but less than the Autocall Redemption Level (defined herein) on each Observation Date (defined herein) and that the Final Index Level (defined herein) will be greater than or equal to the Protection Buffer Level (defined herein). Payment at maturity (if no early redemption has occurred) will be based on the performance of the Underlying Index and subject to a buffer of 20.00% (the “**Buffer**”) with a Gearing Multiplier (defined herein) applied on declines in the performance of the Underlying Index beyond the Buffer, which means that the Principal Amount (defined herein) of the Securities will be protected against a decline of up to 20.00% in the performance of the Underlying Index, but investors will lose 1.25% of the Principal Amount of the Securities for each 1.00% decline in the performance of the Underlying Index beyond -20.00%. **For the avoidance of doubt, the return on the Securities is linked to the Underlying Index and is not linked to the Target Index.** Holders of the Securities will also receive Interest Payments payable semi-annually on each Interest Payment Date (defined herein) each at a fixed amount of \$5.50 per Security if there is a Digital Payout Event (defined herein) on the immediately preceding Observation Date. The return on the Securities is limited; even if a Digital Payout Event occurs on each Observation Date, the Securities are not redeemed prior to maturity and the Final Index Level is greater than or equal to the Protection Buffer Level, the maximum return on the Securities would be equal to \$77.00 per Security.

The initial estimated value of the Securities as of January 12, 2023 was \$95.14 per Security, which is less than the price to the public and is not an indication of the actual profit to the Bank or its affiliates. The actual value of the Securities at any time will reflect many factors, cannot be predicted with accuracy, and may be less than this amount. We describe our determination of the initial estimated value in more detail below. See “Risk Factors” and “Preparation of Initial Estimated Value”.

The Securities are described in this pricing supplement delivered together with our short form base shelf prospectus dated March 25, 2022 (the “**base shelf prospectus**”), the prospectus supplement establishing our Senior Note Program dated March 28, 2022, as supplemented November 11, 2022 (the “**program supplement**”) and a prospectus supplement which generally describes index linked securities that we may offer under our Senior Note Program dated March 28, 2022, as supplemented November 11, 2022 (the “**product supplement**”).

<p>The Securities are not fixed income securities and are not designed to be alternatives to fixed income or money market instruments. The Securities are structured products that possess downside risk.</p>
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The Securities will not constitute deposits insured under the *Canada Deposit Insurance Corporation Act*.

<p>An investment in the Securities involves risks. The Securities are linked to the Underlying Index which reflects (i) the applicable price changes of the constituent securities of the Target Index and any dividends and distributions paid in respect of such securities, without deduction of any withholding tax or other amounts accruing thereon to which an investor holding the constituent securities of the Target Index would typically be exposed, less (ii) the Adjusted Return Factor. An investment in the Securities is not the same</p>
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as a direct investment in the securities that comprise the Target Index and investors have no rights with respect to the securities underlying such index. The return on the Securities will not reflect the total return that an investor would receive if such investor owned the securities that comprise the Target Index. The Securities are considered to be “specified derivatives” under applicable Canadian securities laws. If you purchase Securities, you will be exposed to changes in the level of the Underlying Index and fluctuations in interest rates, among other factors. Index levels are volatile and an investment in the Securities may be considered to be speculative. Since the Securities are not principal protected and the Principal Amount will be at risk, you could lose substantially all of your investment. See “Risk Factors”.

Price: \$100 per Security
Minimum Subscription: \$5,000 (50 Securities)

	Price to public	Selling Commissions and Dealer’s fee⁽¹⁾	Net proceeds to the Bank
Per Security	\$100.00	\$2.50	\$97.50
Total ⁽²⁾	\$20,000,000	\$500,000	\$19,500,000

(1) A commission of 2.50% of the Principal Amount of Securities issued under this offering will be paid to the Dealers (defined below) for further payment to representatives, including representatives employed by the Dealers, whose clients purchase the Securities. An agency fee will also be paid, from the Bank’s own funds, to iA Private Wealth Inc. in an amount up to 0.15% of the Principal Amount of the Securities issued under this offering for acting as independent agent.

(2) Reflects the maximum offering size of the Securities. **There is no minimum amount of funds that must be raised under this offering. This means that the issuer could complete this offering after raising only a small proportion of the offering amount set out above.**

The Securities are offered severally by RBC Dominion Securities Inc. (“**RBC DS**”) and iA Private Wealth Inc. (collectively, the “**Dealers**”) as agents under a dealer agreement dated March 28, 2022, as amended or supplemented from time to time. **RBC DS is our wholly owned subsidiary. Consequently, we are a related and connected issuer of RBC DS within the meaning of applicable securities legislation.** See “Dealers” in this pricing supplement and “Plan of Distribution” in the program supplement.

The Securities will not be listed on any stock exchange. Securities may be resold using the Fundserv network at a price determined at the time of sale by the Calculation Agent (defined herein), which price may be lower than the Principal Amount of such Securities. The Securities will also be subject to specified early trading charges, depending on when the Securities are sold. There is no assurance that a secondary market for the Securities will develop or be sustained. See “Secondary Market for Securities”, “Description of the Securities–Calculation Agent” and “Risk Factors” in the program supplement and “Secondary Market” in this pricing supplement.

Bank Trademarks

Lion & Globe symbol is a registered trademark of Royal Bank of Canada.

Prospectus for Securities

Securities described in this pricing supplement will be issued under our Senior Note Program and will be unsecured, unsubordinated debt obligations. The Securities are Senior Debt Securities (as defined in the base shelf prospectus referred to below) and are described in four separate documents: (1) the base shelf prospectus, (2) the program supplement, (3) the product supplement, and (4) this pricing supplement, all of which collectively constitute the “prospectus” for the Securities. See “Prospectus for Securities” in the program supplement.

Marketing Materials

The version of the summary for the Securities that was filed with the securities commissions or similar regulatory authorities in each of the provinces and territories of Canada as “marketing materials” (as defined in National Instrument 41-101 – *General Prospectus Requirements*) on January 26, 2023 is deemed to be incorporated by reference into the base shelf prospectus solely for the purpose of our Senior Note Program and the Securities issued hereunder. Any version of marketing materials filed with the securities commission or similar regulatory authority in each of the provinces and territories of Canada in connection with this offering after the date hereof but prior to the termination of the distribution of the Securities under this pricing supplement (including any amendments to, or an amended version of, the marketing materials) is deemed to be incorporated by reference herein and in the base shelf prospectus solely for the purpose of our Senior Note Program and the Securities issued hereunder. Any such marketing materials are not part of this pricing supplement or the base shelf prospectus to the extent that the contents of the marketing materials have been modified or superseded by a statement contained in an amendment to this pricing supplement.

Documents Incorporated by Reference

This pricing supplement is deemed to be incorporated by reference into the base shelf prospectus solely for the purpose of our Senior Note Program and the Securities issued hereunder. Other documents are also incorporated or deemed to be incorporated by reference into the base shelf prospectus and reference should be made to the base shelf prospectus for full particulars.

Caution Regarding Forward-Looking Statements

From time to time, we make written or oral 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. We may make forward-looking statements in the base shelf prospectus and in the documents incorporated by reference therein, in the program supplement, in the product supplement, in this pricing supplement, in other filings with Canadian regulators or the United States Securities and Exchange Commission, in other reports to shareholders, and in other communications. Forward-looking statements in, or incorporated by reference in, this prospectus include, but are not limited to, statements relating to our financial performance objectives, vision and strategic goals, the Economic, market and regulatory review and outlook section of our management’s discussion and analysis for the year ended October 31, 2022 (the “**2022 Management’s Discussion and Analysis**”) for Canadian, U.S., U.K., European and global economies, the regulatory environment in which we operate, the impact from rising interest rates, the expected closing of the transaction involving HSBC Bank Canada, the Strategic priorities and Outlook sections in the 2022 Management’s Discussion and Analysis for each of our business segments, the risk environment including our credit risk, market risk, liquidity and funding risk, the direction of the coronavirus (COVID-19) pandemic and its potential impact on our business operations, financial results, condition and objectives and on the global economy and financial market conditions, our climate- and sustainability-related beliefs, targets and goals (including our net-zero and sustainable finance commitments), and includes our President and Chief Executive Officer’s statements. The forward-looking information contained in, or incorporated by reference in, this prospectus is presented for the purpose of assisting the holders of our securities and financial analysts in understanding our financial position and results of operations as at and for the periods ended on the dates presented, as well as our financial performance objectives, vision and strategic goals, and may not be appropriate for other purposes. Forward-looking statements are typically identified by words such as “believe”, “expect”, “foresee”, “forecast”, “anticipate”, “intend”, “estimate”, “goal”, “commit”, “target”, “objective”, “plan” and “project” and similar expressions of future or conditional verbs such as “will”, “may”, “might”, “should”, “could” or “would”.

By their very nature, forward-looking statements require us to make assumptions and are subject to inherent risks and uncertainties, which give rise to the possibility that our predictions, forecasts, projections, expectations or conclusions will not prove to be accurate, that our assumptions may not be correct, that our financial performance, environmental & social or other objectives, vision and strategic goals will not be achieved, and that our actual results may differ materially from such predictions, forecasts, projections, expectations or conclusions. We caution readers not to place undue reliance on these statements as a number of risk factors could cause our actual results to differ materially from the expectations expressed in such forward-looking statements. These factors – many of which are beyond our control and the effects of which can be difficult to predict – include: credit, market, liquidity and funding, insurance, operational, regulatory compliance (which could lead to

us being subject to various legal and regulatory proceedings, the potential outcome of which could include regulatory restrictions, penalties and fines), strategic, reputation, competitive, model, legal and regulatory environment, systemic risks and other risks discussed in the risk sections of the 2022 Management's Discussion and Analysis incorporated by reference herein; including business and economic conditions in the geographic regions in which we operate, Canadian housing and household indebtedness, information technology and cyber risks, geopolitical uncertainty, environmental and social risk (including climate change), digital disruption and innovation, privacy, data and third-party related risks, regulatory changes, culture and conduct risks, the effects of changes in government fiscal, monetary and other policies, tax risk and transparency, and the emergence of widespread health emergencies or public health crises such as pandemics and epidemics, including the COVID-19 pandemic and its impact on the global economy, financial market conditions and our business operations, and financial results, condition and objectives. Additional factors that could cause actual results to differ materially from the expectations in such forward-looking statements can be found in the risk section of the 2022 Management's Discussion and Analysis.

We caution that the foregoing list of risk factors is not exhaustive and other factors could also adversely affect our results. When relying on our forward-looking statements to make decisions with respect to us or the Securities, investors and others should carefully consider the foregoing factors and other uncertainties and potential events. Material economic assumptions underlying the forward-looking statements contained in this prospectus are set out in the Economic, market and regulatory review and outlook section and for each business segment under the Strategic priorities and Outlook headings in our 2022 Management's Discussion and Analysis. Except as required by law, we do not undertake to update any forward-looking statement, whether written or oral, that may be made from time to time by us or on our behalf.

Additional information about these and other factors can be found in the risk sections of the 2022 Management's Discussion and Analysis incorporated by reference in this prospectus.

**Royal Bank of Canada
Senior Note Program
Index Linked Securities
Maximum \$20,000,000 (200,000 Securities)
RBC Solactive Canada Utilities 160 AR Index Geared Buffered Callable Yield 11.00% Securities (CAD),
Series 45
Due February 13, 2030
Non-Principal Protected Securities**

Issuer:	Royal Bank of Canada (the “Bank”)
Dealers:	RBC Dominion Securities Inc. (“RBC DS”) and iA Private Wealth Inc. iA Private Wealth Inc., a dealer to which we are neither related nor connected, participated in the due diligence activities performed by the Dealers in respect of the offering, but did not participate in the structuring and pricing of the offering or the calculation of the initial estimated value of the Securities. See “Plan of Distribution” in the program supplement.
Issue:	RBC Solactive Canada Utilities 160 AR Index Geared Buffered Callable Yield 11.00% Securities (CAD), Series 45 due February 13, 2030.
Fundserv Code:	RBC6595
Objective of the Securities:	The Securities have been designed for investors who are prepared and can afford to take the risk that they will lose substantially all of their investment, that regular Interest Payments (defined below) will not be made on the Securities, and that the Securities will be redeemed early, because they believe that the Closing Level (defined below) will be greater than or equal to the Coupon Barrier Level (defined below) but less than the Autocall Redemption Level (defined below) on each Observation Date (defined below) and that the Final Index Level (defined below) will be greater than or equal to the Protection Buffer Level (defined below). Holders of the Securities will receive an Interest Payment on each Interest Payment Date (defined below) for which a Digital Payout Event (defined below) occurred on the immediately preceding Observation Date.
Issue Price:	The Securities will be issued at a price equal to their Principal Amount (defined below).
Minimum Investment:	50 Securities or \$5,000.
Denomination:	Securities are issuable in denominations of \$100 (the “Principal Amount”) and in minimum increments of \$100.
Issue Date:	February 14, 2023 or such other date as may be agreed to by the Bank and the Dealers.
Issue Size:	The maximum issue size will be an aggregate amount of \$20,000,000.
Maturity Date:	February 13, 2030 (approximately a seven-year term), subject to earlier redemption on an Autocall Redemption Event (defined below) or earlier repayment in full on an Extraordinary Event. See “Description of the Index Linked Securities – Maturity Date and Amount Payable” in the product supplement.
Principal at Risk Securities:	All but 1% of the Principal Amount of the Securities is fully exposed. You could lose substantially all of your investment. See “Description of the Index Linked Securities — Principal at Risk Securities” and “Risk Factors” in the product supplement.
Underlying Index:	The return on the Securities is linked to the adjusted returns of the Solactive Canada Utilities 160 AR Index (the “Underlying Index”). The Underlying Index is an adjusted return index that aims to track the gross total return performance of the Solactive Canada Utilities Index TR (the “Target Index”), subject to a reduction of a synthetic dividend of 160 index points per annum calculated daily in arrears (the “Adjusted Return Factor”). For the avoidance of doubt, the return on the Securities is linked to the Underlying Index and is not linked to the Target Index. The Closing Level on January 12, 2023 was 3,453.73. The Adjusted Return Factor divided by the Closing Level was therefore equal to 4.633% on January 12, 2023. If an Autocall Redemption Event does not occur, over the term of the Securities, the sum of the Adjusted Return

Factor will be approximately 1,120 index points, representing 32.429% of the Closing Level on January 12, 2023.

The Target Index is a gross total return index that reflects the price changes of its constituent securities and the reinvestment in the index of any dividends and distributions paid in respect of such securities. For the calculation of the level of the Target Index, any dividends or other distributions paid on the constituent securities of the Target Index are assumed to be reinvested across all of the constituent securities of the Target Index. There is no assurance of the ability of issuers of the securities comprising the Target Index to declare and pay dividends or make distributions in respect of the constituents of the Target Index or to sustain or increase such dividends and distributions at or above historical levels. As of January 12, 2023, the annual dividend yield on the Target Index was 4.251%, representing an aggregate dividend yield of approximately 33.834% compounded annually over the term of the Securities, on the assumption that the dividend yield remains constant. The performance of the Underlying Index will vary higher or lower from the performance of a price return index (being an index which tracks the price performance of its constituent securities without taking into account the effects of dividends and distributions) with the same constituents and weights as the Target Index over the term of the Securities depending on whether the impact of the dividends and other distributions reinvested in the Target Index is greater or less than the impact the Adjusted Return Factor has on the Closing Level over the term of the Securities. The Target Index is adjusted ordinarily on the first Wednesday in February, May, August and November, and is also subject to extraordinary adjustments in compliance with the rules of the Index Sponsor (defined below). For further details regarding these adjustments and the methodology for the Target Index, refer to the Index Sponsor's website at www.solactive.com.

See "Description of the Index Linked Securities — Indices" in the product supplement. See Appendix A to this pricing supplement for summary information regarding the Underlying Index.

Securities do not represent an interest in the Underlying Index, the Target Index or in the securities of the entities that comprise the Target Index, and holders will have no right or entitlement to such securities including, without limitation, redemption rights (if any), voting rights or rights to receive dividends or other distributions paid on such securities. The return on the Securities will not reflect the total return that an investor would receive if such investor owned the securities that comprise the Target Index. There is no requirement for the Bank to hold any interest in the Underlying Index, the Target Index or in the securities of the entities that comprise the Target Index.

This pricing supplement has been prepared for the sole purpose of assisting prospective investors in making an investment decision with respect to the Securities. This pricing supplement relates only to the Securities offered hereby and does not relate to the Underlying Index, the Target Index and/or the Index Sponsor. The Bank and the Dealers have not verified the accuracy or completeness of any information pertaining to the Underlying Index or determined whether there has been any omission by the Index Sponsor to disclose any facts, information or events which may have occurred prior to or subsequent to the date as of which any information has been furnished by the Index Sponsor which may affect the significance or accuracy of such information. Neither the Bank nor any Dealer makes any representation that such publicly available documents or any other publicly available information regarding the Underlying Index or Index Sponsor is accurate or complete. Prospective investors should independently investigate the Underlying Index and the Index Sponsor and decide whether an investment in the Securities is appropriate. The Index Sponsor has not participated in the preparation of this pricing supplement and the Securities are not in any way sponsored, endorsed, sold or promoted by the Index Sponsor. See "Description of the Index Linked Securities – Indices" in the product supplement.

Index Sponsor:

"Index Sponsor" means Solactive AG.

Initial Index Level:

The **"Initial Index Level"** is the Closing Level, as published by the Index Sponsor, on the Initial Valuation Date (defined below).

Initial Valuation Date:	The “ Initial Valuation Date ” is February 8, 2023.														
Buffer:	20.00%. The principal of the Securities will be protected against a decline of up to 20.00% in the performance of the Underlying Index, but declines in the performance of the Underlying Index beyond the Buffer will be subject to the Gearing Multiplier.														
Gearing Multiplier:	100/80, which is 1.25, applied only if the Percentage Change in the Underlying Index is negative, declining by more than 20.00%.														
Protection Buffer Level:	The “ Protection Buffer Level ” is 80.00% of the Initial Index Level.														
Coupon Barrier Level:	The “ Coupon Barrier Level ” is 80.00% of the Initial Index Level.														
Final Index Level:	The “ Final Index Level ” is the Closing Level, as published by the Index Sponsor, on February 8, 2030 (the “ Final Valuation Date ”).														
Closing Level:	The “ Closing Level ” on any date is the official closing level of the Underlying Index quoted on www.solactive.com for such date, as determined by the Calculation Agent (defined below). The official closing level of the Underlying Index is available from other sources, such as Bloomberg; however, neither the Bank nor the Dealers make any representation as to the accuracy of such information and all calculations regarding the Closing Level will be made by the Calculation Agent.														
Observation Dates:	<p>An “Observation Date” for the purposes of determining the amount of any Interest Payment will occur semi-annually on the dates specified below in each year that the Securities are outstanding, from and including August 8, 2023 to and including February 8, 2030. If any such Observation Date is not an Exchange Day (defined in the product supplement), it shall be postponed to the next succeeding Exchange Day.</p> <p>Provided that the Securities are not redeemed by the Bank as described below, the Bank intends the Observation Dates to be:</p> <table> <tr> <td>August 8, 2023</td><td>February 8, 2024</td></tr> <tr> <td>August 8, 2024</td><td>February 10, 2025</td></tr> <tr> <td>August 8, 2025</td><td>February 9, 2026</td></tr> <tr> <td>August 10, 2026</td><td>February 8, 2027</td></tr> <tr> <td>August 9, 2027</td><td>February 8, 2028</td></tr> <tr> <td>August 8, 2028</td><td>February 8, 2029</td></tr> <tr> <td>August 8, 2029</td><td>February 8, 2030</td></tr> </table>	August 8, 2023	February 8, 2024	August 8, 2024	February 10, 2025	August 8, 2025	February 9, 2026	August 10, 2026	February 8, 2027	August 9, 2027	February 8, 2028	August 8, 2028	February 8, 2029	August 8, 2029	February 8, 2030
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August 10, 2026	February 8, 2027														
August 9, 2027	February 8, 2028														
August 8, 2028	February 8, 2029														
August 8, 2029	February 8, 2030														
Interest Payment Dates:	<p>The “Interest Payment Date” for an Interest Payment, if any, will occur semi-annually on the dates specified below in each year that the Securities are outstanding, from and including August 11, 2023 to and including February 13, 2030. Provided that the Securities are not redeemed by the Bank as described below, the Bank intends the Interest Payment Dates to be:</p> <table> <tr> <td>August 11, 2023</td><td>February 13, 2024</td></tr> <tr> <td>August 13, 2024</td><td>February 13, 2025</td></tr> <tr> <td>August 13, 2025</td><td>February 12, 2026</td></tr> <tr> <td>August 13, 2026</td><td>February 11, 2027</td></tr> <tr> <td>August 12, 2027</td><td>February 11, 2028</td></tr> <tr> <td>August 11, 2028</td><td>February 13, 2029</td></tr> <tr> <td>August 13, 2029</td><td>February 13, 2030</td></tr> </table> <p>The final Interest Payment, if any, will be made on the earlier of the Autocall Redemption Date (defined below) (if applicable) and the Maturity Date.</p>	August 11, 2023	February 13, 2024	August 13, 2024	February 13, 2025	August 13, 2025	February 12, 2026	August 13, 2026	February 11, 2027	August 12, 2027	February 11, 2028	August 11, 2028	February 13, 2029	August 13, 2029	February 13, 2030
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August 13, 2029	February 13, 2030														
Interest Payments:	Interest payments (the “ Interest Payments ” and each, an “ Interest Payment ”), if any, on the Securities will be payable on each Interest Payment Date, in arrears, at a fixed														

interest rate of 5.5000% semi-annually ending on an Interest Payment Date (an “**Interest Period**”) for each Interest Period in which a Digital Payout Event occurs on the Observation Date occurring in the Interest Period. On the basis of the foregoing, the interest on each \$100 Principal Amount of Securities for an Interest Period in which a Digital Payout Event has occurred would equal $\$100 \times 5.5000\%$.

Thus, if a Digital Payout Event occurs:

(a) on each Observation Date in any twelve-month period, the amount of interest payable on each \$100 Principal Amount of Securities for that twelve-month period will be \$11.00; and

(b) on one out of the two Observation Dates in any twelve-month period, the amount of interest payable on each \$100 Principal Amount of Securities for that twelve-month period will be \$5.50.

If a Digital Payout Event does not occur on the Observation Date during a particular Interest Period, no interest will be payable on the Securities for such Interest Period.

Digital Payout Event:

A “**Digital Payout Event**” will occur if, on the relevant Observation Date, the Closing Level is greater than or equal to the Coupon Barrier Level. RBC DS intends to publish whether there has been a Digital Payout Event on each Observation Date on its website at www.rbcnotes.com.

Autocall Redemption Event:

An “**Autocall Redemption Event**” will occur if the Closing Level on an Observation Date other than the first and last Observation Dates is greater than or equal to 100.00% of the Initial Index Level (the “**Autocall Redemption Level**”). On the next succeeding Interest Payment Date following the occurrence of an Autocall Redemption Event (the “**Autocall Redemption Date**”) the Securities will be redeemed for an amount equal to the Principal Amount thereof (the “**Autocall Redemption Amount**”). In addition to the Autocall Redemption Amount, an Interest Payment will be paid on the Autocall Redemption Date.

Payment at Maturity:

On the Maturity Date, if the Securities have not been previously redeemed, the amount payable (the “**Final Redemption Amount**”) for each \$100 Principal Amount per Security will be equal to:

(a) if the Final Index Level is greater than or equal to the Protection Buffer Level, \$100; or

(b) if the Final Index Level is less than the Protection Buffer Level, the Final Redemption Amount will be reduced by the amount of any decline beyond the Buffer multiplied by the Gearing Multiplier, and the Final Redemption Amount will be:

$$\$100.00 + [\$100.00 \times (\text{Percentage Change} + 20.00\%) \times \text{Gearing Multiplier}]$$

As a result, the Final Redemption Amount will not be determinable before the Final Valuation Date. See “Risk Factors” below.

In addition to the Final Redemption Amount, an Interest Payment will be paid on the Maturity Date if a Digital Payout Event occurs on the Final Valuation Date. The minimum payment at maturity is \$1.00.

Percentage Change:

The “**Percentage Change**” is the amount, expressed as a percentage rounded to three decimal places, equal to:

$$\frac{(\text{Final Index Level} - \text{Initial Index Level})}{\text{Initial Index Level}}$$

Sample Calculations:

See Appendix B to this pricing supplement for sample calculations of the Final Redemption Amount or Autocall Redemption Amount (in the event of an Autocall Redemption Event) and any Interest Payments payable on the Securities at or prior to (in the event of an Autocall Redemption Event) the Maturity Date.

Issuer Credit Rating:

Moody’s:	Aa1
Standard & Poor’s:	AA-
DBRS:	AA

The Securities themselves have not been and will not be rated. See “Description of the Securities — Ratings” in the program supplement.

Extraordinary Events:

Determination of the Closing Level, including the Initial Index Level and/or Final Index Level, and the Final Redemption Amount may be postponed, or the Bank can accelerate determination of the Final Index Level and the Final Redemption Amount and repay the Securities in full prior to their maturity, in certain circumstances. If an Extraordinary Event occurs then the Calculation Agent may, but is not required to, make such adjustments to any payment or other term of the Securities as it determines to be appropriate, acting in good faith, to account for the economic effect of such event on the Securities and determine the effective date of any such adjustment. See “Description of the Securities — Special Circumstances” in the program supplement and “Description of the Index Linked Securities — Extraordinary Events” in the product supplement.

Summary of Fees and Expenses:

A commission of 2.50% of the Principal Amount of Securities issued under this offering will be paid to the Dealers for further payment to representatives, including representatives employed by the Dealers, whose clients purchase the Securities. An agency fee will also be paid, from the Bank’s own funds, to iA Private Wealth Inc. in an amount up to 0.15% of the Principal Amount of the Securities issued under this offering for acting as independent agent. The selling commissions and the agency fee are indirectly borne by holders of the Securities. There are no fees directly payable by a holder of Securities. See “Description of the Securities — Summary of Fees and Expenses” in the program supplement. An early trading charge may also apply. See “Secondary Market” below.

Eligibility for Investment:

Eligible for RRSPs, RRIFs, RESPs, RDSPs, DPSPs and TFSA’s. See “Eligibility for Investment” in Appendix C, including the summary of the “prohibited investment” rule.

Risk Factors:

You should carefully consider all the information set out in this prospectus for any Securities in which you are considering investing. **In particular, you should evaluate the risks described under “Risk Factors” in each of the base shelf prospectus and the product supplement, as well as the risks described below.** The return on the Securities is unknown and subject to many variables, including interest rate fluctuations and changes in the Underlying Index levels. You should independently determine, with your own advisors, whether an investment in the Securities is suitable for you having regard to your own investment objectives and expectations.

Limited Upside Participation by the Securities

The return on the Securities is limited; even if the Closing Level is greater than the Coupon Barrier Level but less than the Autocall Redemption Level on each Observation Date and the Final Index Level is greater than or equal to the Protection Buffer Level, the maximum return on the Securities would be equal to \$77.00 per Security. The Securities will not participate in any upside performance of the Underlying Index.

Concentration of the Constituent Securities in the Target Index

The constituent securities in the Target Index are all Canadian utilities company stocks and are therefore all concentrated in one industry sector. This means that the performance of the Securities will be tied entirely to the success of this one industry sector. Canadian utilities companies are subject to risks that are specific to that industry sector and which may therefore result in the performance of the Securities being substantially different, and potentially worse, than other industry sectors or the securities/equity markets generally.

Investors May Not Receive the Full Principal Amount at Maturity and the Protection Provided by the Buffer May be Affected by the Gearing Multiplier

All but 1.00% of the Principal Amount of the Securities is fully exposed. Investors in the Securities could lose substantially all of their investment if there is a decline in the level of the Underlying Index beyond the Buffer. While investors in the Securities will be fully protected from a decline in the level of the Underlying Index within the Buffer,

payment at maturity on the Securities will be subject to the Gearing Multiplier in the case of a decline in the level of the Underlying Index beyond the Buffer. This means that investors will lose 1.25% of the Principal Amount of their investment in the Securities for each 1.00% that the Final Index Level is less than the Buffer (i.e., for each 1.00% decrease in the Percentage Change of more than 20.00%). As a result of the application of the Gearing Multiplier, if there is a decline in the level of the Underlying Index beyond the Buffer, the protection provided by the Buffer will progressively decrease as the level of the Underlying Index increasingly declines beyond 20.00% and investors could lose substantially all of their investment.

Uncertain Return until Final Valuation Date

The return, if any, on the Securities will be uncertain until the Final Valuation Date, unless the Securities are called for redemption prior to the Final Valuation Date. Whether there is a return on the Securities will depend on the Closing Level on the Observation Dates and the Final Valuation Date. No Interest Payment will be made on an Interest Payment Date unless there is a Digital Payout Event on the immediately preceding Observation Date. There can be no assurance that the Securities will generate a positive return or that the objectives of the Securities will be achieved. Holders of the Securities may not be repaid the amount they invested in the Securities (other than \$1.00 per Security), depending on the performance of the Underlying Index. Historical levels of the Underlying Index should not be considered as an indication of the future performance of the Underlying Index. Investors should understand that the risk involved in this type of investment is greater than that normally associated with other types of investments.

Volatility May Affect the Return on or Trading Value of the Securities

Volatility is the term used to describe the size and frequency of price and/or market fluctuations. If the volatility, or anticipated volatility, of the Underlying Index changes over the term of the Securities, the trading value of the Securities may be adversely affected. In addition, if the Closing Level on an Observation Date is less than the Coupon Barrier Level, you will not receive an Interest Payment on the relevant Interest Payment Date, and if the Final Index Level is less than the Protection Buffer Level, the Final Redemption Amount will be reduced such that you will receive less than the Principal Amount on the Maturity Date. In periods of high volatility, the likelihood of an investor not receiving some or all of the Interest Payments or a return of the full Principal Amount of the Securities increases.

The Securities may be Redeemed prior to the Maturity Date

The Securities will be automatically redeemed by the Bank on the Autocall Redemption Date if the Closing Level on an Observation Date, other than the first and last Observation Dates, is greater than or equal to the Autocall Redemption Level. In such event, investors will receive an Autocall Redemption Amount equal to the Principal Amount of the Securities. If the Securities are redeemed by the Bank, investors will not be entitled to receive any further interest that they may have been entitled to receive if the Securities had not been redeemed by the Bank.

The Underlying Index and Target Index Have Limited Performance Histories

The Underlying Index and Target Index have limited performance histories. The Underlying Index and Target Index were first launched and published on November 30, 2022 and July 28, 2020, respectively. Accordingly, there is limited trading history for the Underlying Index and Target Index and as such, the Securities may perform in unexpected ways and may involve greater risk than securities linked to one or more indices with a more established record of performance. This may make it more difficult for an investor to make an informed decision with respect to the Securities.

Changes Affecting the Underlying Index or the Target Index Could Impact the Securities

The policies of the Index Sponsor in respect of the Underlying Index, the Target Index and their calculations, additions, deletions or substitutions of the constituent securities of the Target Index and the manner in which changes affecting the constituent securities

of the Target Index, such as stock dividends, reorganizations or mergers, are reflected, could affect the Closing Level and, therefore, could affect the amounts payable on the Securities, and the price of the Securities prior to maturity.

Return Calculated With Reference to Performance of the Underlying Index

The return on the Securities is calculated with reference to the performance of the Underlying Index, which is not a price return index and instead aims to track the gross total return performance of the Target Index less the Adjusted Return Factor. Although the Target Index is a gross total return index that reflects the applicable performance of the constituent securities of the Target Index and any dividends and distributions paid in respect of such securities, without deduction of any withholding tax or other amounts to which an investor holding the constituent securities of the Target Index would typically be exposed, an investment in the Securities is not the same as making a direct investment in the constituent securities of the Target Index, including the fact that an investor will not have the right to receive any dividends, distributions or other income or amounts accruing or paid on such securities, nor will an investor have the right to exercise any voting rights on such securities. In addition, the Adjusted Return Factor is not representative of an estimate or a forecast of any dividends that may be paid or payable, or of any distributions that may be made, now or in the future on the constituent securities of the Target Index.

Returns on the Underlying Index Are Reduced by the Adjusted Return Factor and will be Lower than Returns on the Target Index

Since the Closing Level is based on the application of the Adjusted Return Factor to daily changes in the closing level of the Target Index, the performance of the Underlying Index will be less than that of the Target Index or a direct investment in the constituent securities of the Target Index. Furthermore, the difference between the Underlying Index and the Target Index over a longer period is subject to the effects of compounding returns and, as a result, may be greater or less than the Adjusted Return Factor pro-rated over the same period.

The Adjusted Return Factor is a Fixed Point Deduction

The Adjusted Return Factor is a fixed point deduction which means that the Underlying Index is based on the daily gross total return performance of the Target Index less a fixed number of points. The Adjusted Return Factor does not vary with the level of the Target Index and, as a result, the Adjusted Return Factor will result in the subtraction of a greater percentage of the level of the Target Index in circumstances where the level of the Target Index decreases over time.

Dividends and Distributions of the Constituent Securities of the Target Index May Vary When Compared to Historical Levels

The Underlying Index is not a price return index and instead aims to track the gross total return performance of the Target Index less the Adjusted Return Factor, which represents a reduction for a synthetic dividend of 160 index points per annum calculated daily in arrears. The level of the Target Index and, in turn, the Closing Level, may be affected by the ability of issuers comprising the Target Index to declare and pay dividends or make distributions in respect of the equity securities of the issuers comprising the Target Index. Historical levels of dividends and distributions paid in respect of the constituent securities comprising the Target Index are not indicative of future payments, which payments are uncertain and depend upon various factors, including, without limitation, the financial position, earnings ratio and cash requirements of the applicable issuer and the state of financial markets in general. It is not possible to predict if dividends or distributions paid in respect of the constituent securities comprising the Target Index will increase, decrease or remain the same over the term of the Securities. If the dividends paid out by the constituent securities comprising the Target Index over a period of time decrease below the synthetic dividends represented by the Adjusted Return Factor (taking into account the reinvestment and compounding impacts), the Closing Level at the end of such period will be lower than the closing level of a price return index comprised of the same constituent securities at the end of such period.

The Initial Estimated Value of the Securities Is Less than the Price to the Public and May not Reflect the Secondary Market Price, if any, of the Securities

The initial estimated value set forth on the cover page of this pricing supplement does not represent a minimum price at which the Bank, RBC DS or any of our affiliates would be willing to purchase the Securities in any secondary market (if any exists) at any time. If you attempt to sell the Securities prior to maturity, their market value may be lower than the initial estimated value and the price you paid for them. This is due to, among other things, changes in the level of the Underlying Index and the inclusion in the price to the public of the selling commissions and the agency fee, as well as an amount retained by the Bank to compensate it for the creation, issuance and maintenance of the Securities (which may or may not also include any costs of its hedging obligations thereunder). These factors, together with various market and economic factors over the term of the Securities, could reduce the price at which you may be able to sell the Securities in any secondary market and will affect the value of the Securities in complex and unpredictable ways. Even if there is no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Securities prior to maturity may be less than your original purchase price. The Securities are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Securities to maturity.

The Initial Estimated Value of the Securities Is an Estimate Only, Calculated as of the Time the Terms of the Securities Were Set

The initial estimated value of the Securities is based on the value of the Bank's obligation to make the payments on the Securities. The return on the Securities can be replicated by purchasing and selling a combination of financial instruments, such as call options and put options. The fair value of the financial instrument components that would replicate the return on the Securities is equal to the fair value of the Securities. The Bank's estimate is based on a variety of assumptions, which may include expectations as to dividends, interest rates, the Bank's internal funding rates and volatility, and the term to maturity and any earlier call date of the Securities. The Bank's internal funding rates may differ from the market rates for the Bank's conventional debt securities. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Securities or similar securities at a price that is significantly different than the Bank does. The value of the Securities at any time after the date of this pricing supplement will vary based on many factors, including changes in market conditions, and cannot be predicted with accuracy. As a result, the actual value you would receive if you sold the Securities in the secondary market, if any, should be expected to differ materially from the initial estimated value of the Securities.

Preparation of Initial Estimated Value:

The Securities are debt securities of the Bank, the return on which is linked to the performance of the Underlying Index. In order to satisfy the Bank's payment obligations under the Securities, the Bank may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the Issue Date which may or may not be with RBC DS or one of our other subsidiaries. The terms of these hedging arrangements, if any, take into account a number of factors, including the Bank's creditworthiness, interest rate movements, the volatility of the Underlying Index, and the term to maturity and any earlier call date of the Securities.

The price of the Securities to the public also reflects the selling commissions and the agency fee, as well as an amount retained by the Bank to compensate it for the creation, issuance and maintenance of the Securities (which may or may not also include any costs of its hedging obligations thereunder). The initial estimated value for the Securities shown on the cover page will therefore be less than their public offering price. See "Risk Factors – The Initial Estimated Value of the Securities Is Less than the Price to the Public and May not Reflect the Secondary Market Price, if any, of the Securities" above.

The Bank has adopted written policies and procedures for determining the fair value of Securities issued by it pursuant to the Senior Note Program. These policies and procedures include: (a) methodologies used for valuing each type of financial

instrument component that can be used in combination to replicate the return of the Securities; (b) the methods by which the Bank will review and test valuations to assess the quality of the prices obtained as well as the general functioning of the valuation process; and (c) how to deal with conflicts of interest.

Suitability for Investment:

You should consult with your advisors regarding the suitability of an investment in the Securities. The Securities may be suitable for:

- investors seeking an investment product with exposure to the common shares of the Canadian utilities companies comprising the Target Index.
- investors who believe that the Closing Level will be equal to or above the Coupon Barrier Level on each Observation Date
- investors who believe that the Final Index Level will not be below the Protection Buffer Level
- investors who are willing and can afford to risk substantially all of the principal amount of their investment
- investors looking for the potential to earn a return linked to the performance of the Underlying Index, which is not a price return index and instead aims to track the gross total return performance of the Target Index less the Adjusted Return Factor, and who are prepared to assume the risks associated with an investment linked to the performance of the Underlying Index
- investors with an investment horizon equal to the term to maturity of the Securities who are prepared to hold the Securities until maturity, but who are willing to assume the risk that the Securities will be redeemed prior to the Maturity Date if the Closing Level is equal to or exceeds the Autocall Redemption Level on an Observation Date (other than the first and last Observation Dates)
- investors who are prepared to take the risk that regular Interest Payments will not be made on the Securities
- investors who understand that the potential return on the Securities is limited; the maximum return on the Securities is equal to \$77.00 per Security

Book-entry Only Securities:

The Securities will be Fundserv Securities (defined in the program supplement) and will be issued through the “book-entry-only system”. See “Description of the Securities – Global Securities” and “– Legal Ownership” in the program supplement. If the Securities are issued in fully registered and certificated form in the circumstances described in the program supplement under “Description of the Securities – Legal Ownership – Book-Entry-Only Fundserv Securities”, the Autocall Redemption Amount (in the event of an Autocall Redemption Event) and any Interest Payments will be paid by the Bank to the registered holder.

Listing:

The Securities will not be listed on any stock exchange. See “Risk Factors” in the product supplement.

Secondary Market:

Securities may be purchased through dealers and other firms that facilitate purchase and related settlement using the Fundserv network. Securities may be resold using the Fundserv network at a sale price equal to the price posted on Fundserv as of the close of business on the Exchange Day on which the order is placed, as determined by and posted to Fundserv by the Calculation Agent, which sale price may be lower than the Principal Amount of such Securities, and such purchase price may be less an early trading charge as specified below. Generally, to be effective on a Business Day (defined in the program supplement), a redemption request will need to be initiated by 2:00 p.m. (Toronto time) on that Business Day (or such other time as may be established by Fundserv). Any request received after such time will be deemed to be a request sent and received on the next following Business Day.

See “Risk Factors – The Initial Estimated Value of the Securities Is Less than the Price to the Public and May not Reflect the Secondary Market Price, if any, of the Securities” above and “Secondary Market for Securities – Fundserv” in the program supplement.

Information regarding the Closing Level, the Coupon Barrier Level, the Protection Buffer Level and the daily closing price for the Securities may be accessed at

www.rbcnotes.com. There is no assurance that a secondary market for the Securities will develop or be sustained. See “Secondary Market for Securities” in the program supplement.

If a Security is sold within the first 270 days from the Issue Date, the proceeds from the sale of the Securities will be reduced by an early trading charge (“**Early Trading Charge**”) equal to a percentage of the Principal Amount determined as set out below.

If Sold Within the Following No. of Days from Issue Date	Early Trading Charge (% of Principal Amount)
1 - 45 days	3.00%
46 - 90 days	2.75%
91 - 135 days	2.50%
136 - 180 days	2.00%
181 - 225 days	1.50%
226 - 270 days	1.00%
Thereafter	Nil

Fiscal Agent: RBC DS. See “Description of the Securities – Fiscal Agency, Calculation Agency and Fundserv Depository Agreement” in the program supplement.

Calculation Agent: RBC DS. See “Description of the Securities – Calculation Agent” in the program supplement and “Risk Factors” in the product supplement.

Tax: An initial purchaser of Securities who acquires Securities from the Bank on the Issue Date and who, at all relevant times, for purposes of the *Income Tax Act* (Canada), is an individual (other than a trust), is a resident of Canada, deals at arm’s length with and is not affiliated with the Bank, and acquires and holds the Securities as capital property will be required to include in computing income all interest received or receivable on the Securities, as well as certain accrued interest thereon on a disposition thereof. If, on maturity or other disposition (including on early redemption or repayment in full by the Bank), such a holder receives an amount that is less than the adjusted cost base of the Securities, such holder will realize a capital loss equal to the shortfall. See “Certain Canadian Tax Considerations” in Appendix C. **Potential purchasers of Securities should consult with their own tax advisors having regard to their particular circumstances.**

APPENDIX A

Summary Information Regarding the Underlying Index

The Solactive Canada Utilities 160 AR Index

The following is a summary description of the Solactive Canada Utilities 160 AR Index based on information obtained from the Index Sponsor's website at www.solactive.com. The Solactive Canada Utilities 160 AR Index is owned, calculated, administered and published by the Index Sponsor, Solactive AG, assuming the role as administrator under the Regulation (EU) 2016/1011.

Underlying Index	Solactive Canada Utilities 160 AR Index
Target Index	Solactive Canada Utilities Index TR
Adjusted Return Factor	160 index points per annum (see below)
Number of Constituents comprising Target Index	14
Country	Canada
Index Sponsor	Solactive AG
Closing Level (January 12, 2023)	3,453.73

Public Information

Information contained in this pricing supplement with respect to the Underlying Index, the Target Index and the constituent securities in the Target Index was obtained from a number of public sources that the Bank believes to be reliable. Information relating to the Underlying Index and the Target Index can be obtained from the website maintained by the Index Sponsor, www.solactive.com, as well as other publicly available sources. The Bank and the Dealers, as well as their respective affiliates and associates, have not independently verified the accuracy or completeness of any such information, including the calculation, maintenance or publication of the Underlying Index or the Target Index.

The Solactive Canada Utilities 160 AR Index was first launched and published on November 30, 2022. The Solactive Canada Utilities Index TR was first launched on July 28, 2020. Additional information with respect to the Underlying Index and the Target Index can be found at www.solactive.com/indices.

The Underlying Index

The Solactive Canada Utilities 160 AR Index is an adjusted return index that aims to track the gross total return performance of the Target Index, subject to a reduction of a synthetic dividend of 160 index points per annum calculated daily in arrears. **For the avoidance of doubt, the return on the Securities is linked to the Underlying Index and is not linked to the Target Index.** The Closing Level on January 12, 2023 was 3,453.73. The Adjusted Return Factor divided by the Closing Level was therefore equal to 4.633% on January 12, 2023. If an Autocall Redemption Event does not occur, over the term of the Securities, the sum of the Adjusted Return Factor will be approximately 1,120 index points, representing 32.429% of the Closing Level on January 12, 2023.

The performance of the Underlying Index will vary higher or lower from the performance of a price return index with the same constituents and weights as the Target Index over the term of the Securities depending on whether the impact of the dividends and other distributions reinvested in the Target Index is greater or less than the impact the Adjusted Return Factor has on the Closing Level over the term of the Securities. An investment in the Securities does not represent a direct or indirect investment in any of the constituent securities that comprise the Target Index. Holders of the Securities have no right or entitlement to the dividends or distributions paid on such constituent securities.

The Target Index

The Solactive Canada Utilities Index TR is a gross total return index that reflects the price changes of its constituent securities and the reinvestment in the index of any dividends and distributions paid in respect of such securities. For the calculation of the level of the Target Index, any dividends or other distributions paid on the constituent securities of the Target Index are assumed to be reinvested across all of the constituent securities of the Target Index. As of January 12, 2023, the annual dividend yield on the Target Index was 4.296%, representing an aggregate dividend yield of approximately 34.235% compounded

annually over the term of the Securities, on the assumption that the dividend yield remains constant. The Target Index is adjusted ordinarily on the first Wednesday in February, May, August and November, and is also subject to extraordinary adjustments in compliance with the rules of the Index Sponsor (defined below). For further details regarding these adjustments and the methodology for the Target Index, refer to the Index Sponsor's website at www.solactive.com.

The Target Index is a weighted free-float market capitalization index and, on each adjustment, the weighting of the constituents of the Target Index is subject to the weight constraints that the weight of a constituent does not exceed 25%. The methodology for the Target Index provides that the constituent securities fulfill all of the following criteria: (i) part of the Solactive Canada Broad Market Index (PR); and (ii) assigned to the Economy "Utilities" as defined by the Standard FactSet Classification.

Constituents of the Target Index

The following table shows, as of January 12, 2023, the top 10 constituent securities included in the Target Index and their respective weightings:

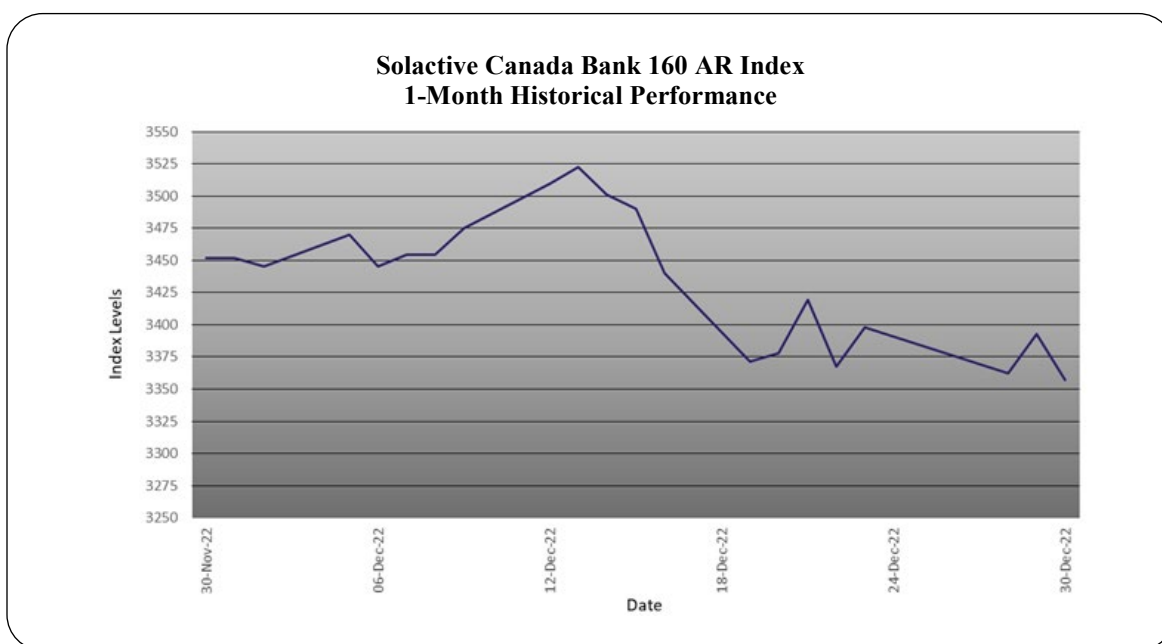
Constituent	Weighting
Fortis Inc.	24.59%
Emera Inc.	13.07%
Hydro One Limited	10.72%
Northland Power Inc.	8.55%
Canadian Utilities Limited	6.82%
AltaGas Ltd.	6.14%
Algonquin Power & Utilities Corp.	5.93%
Brookfield Infrastructure Corporation	5.89%
Capital Power Corporation	4.92%
Boralex Inc.	3.84%

Source: Solactive AG, www.solactive.com.

There can be no guarantee that the constituents of the Target Index or any component thereof will maintain their current level of capitalization or continue to operate their business with emphasis on the areas indicated. Historical performance is representative of historical performance only and is not indicative of, or a representation of, future performance.

Historical Performance

The following chart sets forth the historical level of the Solactive Canada Utilities 160 AR Index for the period from November 30, 2022 to December 30, 2022. The historical performance of the Solactive Canada Utilities 160 AR Index tracks the gross total return performance of the Target Index, subject to a reduction of a synthetic dividend of 160 index points per annum calculated daily in arrears.



Historical performance of the Solactive Canada Utilities 160 AR Index will not necessarily predict future performance of the Solactive Canada Utilities 160 AR Index or the Securities. The source of the data displayed in this chart is Bloomberg L.P. and its accuracy cannot be guaranteed.

Historical monthly percentage change of the Solactive Canada Utilities 160 AR Index	
Month	December 2022
Percentage change (%)	-2.75

Source: Bloomberg L.P.: Measures monthly period as of the last trading day of the previous month.

License Agreement and Disclaimer

All information contained in this pricing supplement regarding the Underlying Index and the Target Index, including, without limitation, the make-up, performance, method of calculation and changes in their constituents, has been derived from publicly available sources without independent verification. Such information reflects the policies of and is subject to change by the Index Sponsor. The Bank makes no representation or warranty as to the accuracy or completeness of such information. The Index Sponsor independently calculates, maintains and publishes the Underlying Index and Target Index. The Index Sponsor has no obligation to continue to publish, and may discontinue publication of, the Underlying Index or the Target Index. The Index Sponsor has no obligation relating to the Securities or amounts to be paid to an investor, including any obligation to take the needs of the Bank, the Dealers or the beneficial owners of the Securities into consideration for any reason. The Index Sponsor will not receive any of the proceeds of the offering of the Securities, is not responsible for and has not participated in, the offering of the Securities nor is it responsible for, nor will it participate in, the determination or calculation of the amount receivable by beneficial owners of the Securities. The Index Sponsor makes no representation or warranty, express or implied, regarding the advisability of investing in securities generally or the Securities in particular. Neither the Index Sponsor nor any of its affiliates are involved in the operation or distribution of the Securities and neither the Index Sponsor nor its affiliates shall have any liability for operation or distribution of the Securities or the failure of the Securities to achieve their investment objective.

The Index Sponsor is not related to the Bank or the Dealers. The Index Sponsor and the Bank have entered into a license agreement providing the Bank, in exchange for a fee, with the right to use the Underlying Index in connection with the Securities. The Index Sponsor does not guarantee the accuracy or completeness of the Underlying Index or the Target Index, any data included therein, or any data from which it is derived, and the Index Sponsor has no liability for any errors, omissions, or interruptions therein. The Index Sponsor does not make any warranty, express or implied, as to results to be obtained from use of information provided by the Index Sponsor in respect of the Underlying Index or the Target Index and the Index Sponsor expressly disclaims all warranties of suitability with respect thereto.

The Underlying Index and the Target Index are calculated by the Index Sponsor. The Securities are not sponsored, promoted, sold or supported in any other manner by the Index Sponsor nor does the Index Sponsor offer any express or implicit guarantee

or assurance either with regard to the results of using the Underlying Index and/or Underlying Index trade mark or the Closing Level at any time or in any other respect. The Underlying Index and the Target Index are calculated and published by the Index Sponsor. The Index Sponsor uses its best efforts to ensure that the Underlying Index and the Target Index are calculated correctly. Irrespective of its obligations towards the Bank, the Index Sponsor has no obligation to point out errors in the Underlying Index or the Target Index to third parties including but not limited to investors and/or financial intermediaries of the Securities. Neither publication of the Underlying Index or the Target Index by the Index Sponsor nor the use of the Underlying Index or the Underlying Index trade marks for the purpose of use in connection with the Securities constitutes a recommendation by the Index Sponsor to invest capital in the Securities nor does it in any way represent an assurance or opinion of the Index Sponsor with regard to any investment in the Securities.

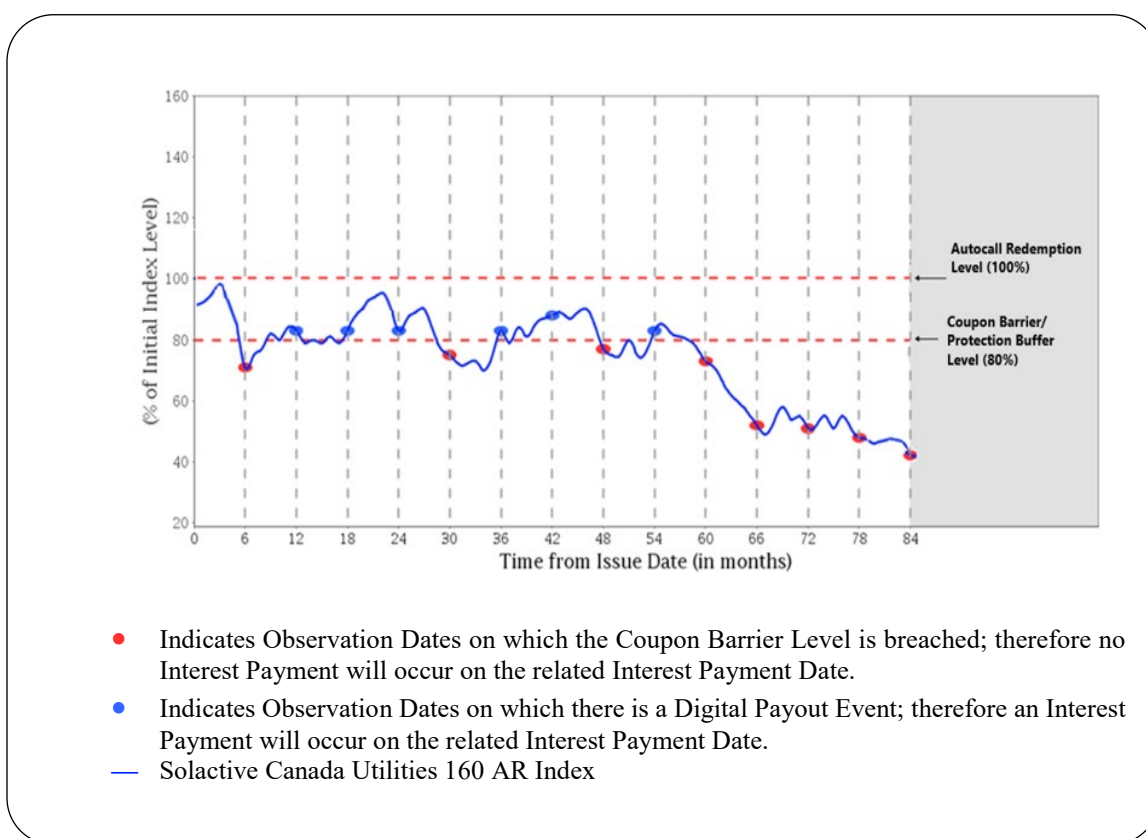
The name “Solactive” is a registered trademark of the Index Sponsor. The Index Sponsor is registered with and regulated by the German Federal Financial Supervisory Authority.

APPENDIX B

Sample Calculations of Final Redemption Amount or Autocall Redemption Amount and Interest Payments

The examples set out below are included for illustration purposes only. The performance of the Underlying Index used to illustrate the calculation of the Final Redemption Amount or Autocall Redemption Amount and the Interest Payments over the term of the Securities is not an estimate or forecast of the performance of the Underlying Index or the Securities. All examples assume that a holder of the Securities has purchased Securities with an aggregate Principal Amount of \$100 and that no Extraordinary Event has occurred. All examples assume a Buffer of 20.00%, a Gearing Multiplier of 100/80, which is 1.25, a Coupon Barrier Level of 80.00% of the Initial Index Level, a Protection Buffer Level of 80.00% of the Initial Index Level and an Autocall Redemption Level of 100.00% of the Initial Index Level. For convenience, each vertical line in the charts below represents both a hypothetical Observation Date and the next succeeding Interest Payment Date. Certain dollar amounts are rounded to the nearest whole cent.

Example #1 — Loss Scenario with Payment on the Maturity Date at Less Than the Principal Amount



In this scenario, there is no Observation Date on which the Closing Level is at or above the Autocall Redemption Level and, accordingly, the Securities would not be redeemed before the Maturity Date. On the Final Valuation Date, the Final Index Level is below the Protection Buffer Level.

(i) Interest Payments

In this example, there is a Digital Payout Event on 6 of the 14 Observation Dates. On the other 8 Observation Dates, no Digital Payout Event would occur because the Closing Level is below the Coupon Barrier Level. Therefore, the Interest Payment of \$5.50 per Interest Period would be payable for 6 Interest Periods on the applicable Interest Payment Date, for total Interest Payments of:

$$\begin{aligned} &\text{Principal Amount of Securities} \times 5.5000\% \text{ per Interest Period} \times 6 \text{ Interest Periods} \\ &\$100 \times 5.5000\% \times 6 = \$33.00 \end{aligned}$$

(ii) Final Redemption Amount

In this example, the Initial Index Level is 3,453.73 and the Final Index Level is 1,381.49. Therefore, the Final Redemption Amount would be calculated as follows:

Initial Index Level = 3,453.73

Final Index Level = 1,381.49

Percentage Change = $(1,381.49 - 3,453.73) / 3,453.73 = -0.60000$ or -60.000%

Since the Final Index Level is below its Protection Buffer Level, the Final Redemption Amount is reduced by the amount of any decline beyond the Buffer multiplied by the Gearing Multiplier and is calculated as follows:

Final Redemption Amount = $\$100.00 + [\$100.00 \times (-60.000\% + 20.00\%) \times 1.25] = \50.00

Therefore, the total amounts payable per Security from the Issue Date to the Maturity Date are:

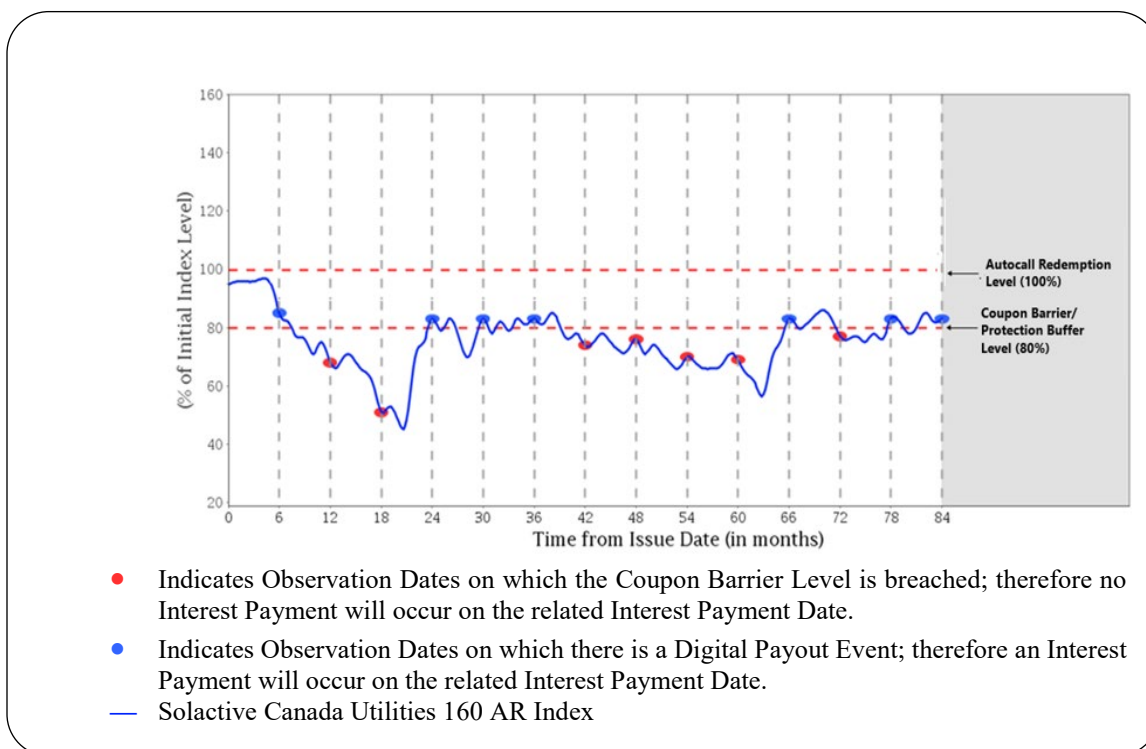
(a) Total Interest Payments: \$33.00

(b) Final Redemption Amount: \$50.00

(c) Total amount paid over the term of the Securities: \$83.00

The equivalent annually compounded rate of return in this example is -2.63% .

Example #2 — Gain Scenario with Payment on the Maturity Date at the Principal Amount



In this scenario, there is no Observation Date on which the Closing Level is at or above the Autocall Redemption Level and, accordingly, the Securities would not be redeemed before the Maturity Date. On the Final Valuation Date, the Final Index Level is at or above the Protection Buffer Level.

(i) Interest Payments

In this example, there is a Digital Payout Event on 7 of the 14 Observation Dates. On the other 7 Observation Dates, no Digital Payout Event would occur because the Closing Level is below the Coupon Barrier Level. Therefore, the Interest Payment of \$5.50 per Interest Period would be payable for 7 Interest Periods on the applicable Interest Payment Date for total Interest Payments of:

Principal Amount of Securities \times 5.5000% per Interest Period \times 7 Interest Periods

$$\$100 \times 5.5000\% \times 7 = \$38.50$$

(ii) Final Redemption Amount

In this example, since the Final Index Level is 2,832.06, which is above the Protection Buffer Level of 80.00% of the Initial Index Level of 3,453.73, being 2,762.98, the Final Redemption Amount per Security is equal to \$100.00.

Therefore, the total amounts payable per Security from the Issue Date to the Maturity Date are:

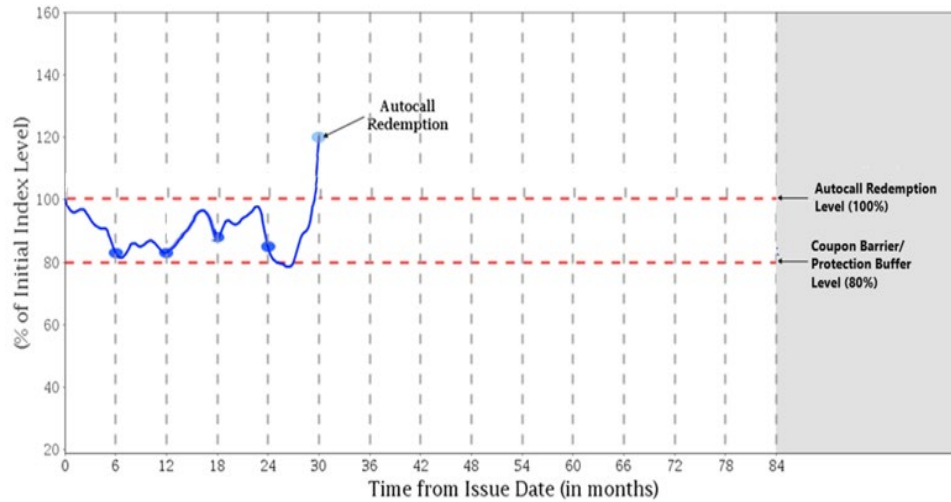
(a) Total Interest Payments: \$38.50

(b) Final Redemption Amount: \$100.00

(c) Total amount paid over the term of the Securities: \$138.50

The equivalent annually compounded rate of return in this example is 4.76%.

Example #3 — Gain Scenario with Autocall Redemption Event



In this scenario, the Closing Level is at or above the Autocall Redemption Level on the Observation Date that falls 30 months into the term of the Securities. This would constitute an Autocall Redemption Event and, on the next succeeding Interest Payment Date, the Bank would redeem the Securities.

(i) Interest Payments

In this example, there is a Digital Payout Event on each of the 5 Observation Dates prior to the redemption of the Securities because the Closing Level is at or above the Coupon Barrier Level on each such date. Therefore, the Interest Payment of \$5.50 per Interest Period would be payable for each Interest Period on the applicable Interest Payment Date (including on the Autocall Redemption Date), for total Interest Payments of:

$$\begin{aligned} &\text{Principal Amount of Securities} \times 5.5000\% \text{ per Interest Period} \times 5 \text{ Interest Periods} \\ &\$100 \times 5.5000\% \times 5 = \$27.50 \end{aligned}$$

(ii) Autocall Redemption Amount

The Autocall Redemption Amount per Security is equal to \$100.00.

Therefore, the total amounts payable per Security from the Issue Date to the Autocall Redemption Date are:

(a) Total Interest Payments: \$27.50

(b) Autocall Redemption Amount: \$100.00

(c) Total amount paid over the term of the Securities: \$127.50

The equivalent annually compounded rate of return in this example is 10.21%.

APPENDIX C

Certain Canadian Tax Considerations

In the opinion of the Bank's counsel, Davies Ward Phillips & Vineberg LLP, the following summary fairly describes the principal Canadian federal income tax considerations under the *Income Tax Act* (Canada) (the "**Tax Act**") generally applicable to an initial purchaser of Securities under this pricing supplement who, at all relevant times, for purposes of the Tax Act, deals at arm's length with and is not affiliated with the Bank (a "**Holder**").

This summary is based upon the current provisions of the Tax Act and the regulations thereunder (the "**Regulations**"), all specific proposals to amend the Tax Act or such Regulations publicly announced by the federal Minister of Finance prior to the date hereof (the "**Proposals**") and counsel's understanding of the current administrative and assessing policies and practices of the Canada Revenue Agency ("**CRA**"). Except for the Proposals, this summary does not take into account or anticipate any changes (including retroactive changes) in the law or the administrative and assessing policies or practices of the CRA, whether by judicial, regulatory, governmental or legislative action, nor does it take into account tax laws of any province or territory of Canada, or of any jurisdiction outside Canada. Provisions of provincial income tax legislation vary from province to province in Canada and may differ from federal income tax legislation. No assurance can be given that the Proposals will be implemented in their current form, or at all. This summary assumes that the Holder will neither undertake nor arrange a transaction in respect of the Securities primarily for the purpose of obtaining a tax benefit, has not entered into a "derivative forward agreement" (as defined in the Tax Act) in respect of the Securities and that the Securities are not issued at a discount.

This summary is of a general nature only and is not intended to constitute, nor should it be relied upon or construed as, tax advice to any particular Holder, nor is it exhaustive of all possible Canadian federal income tax considerations. Holders should consult their own tax advisors as to the potential consequences to them of the acquisition, ownership and disposition of Securities having regard to their particular circumstances.

Holders Resident in Canada

The following discussion applies to a Holder who, at all relevant times, for the purposes of the Tax Act and any applicable income tax treaty or convention, is an individual (other than a trust) who is resident (or deemed to be resident) in Canada and who acquires and holds the Securities as capital property (a "**Resident Holder**"). Certain Resident Holders who might not otherwise be considered to hold their Securities as capital property may, in certain circumstances, be entitled to have their Securities, and all other "Canadian securities" (as defined in the Tax Act) owned by such Resident Holders in the taxation year and all subsequent taxation years, treated as capital property by making the irrevocable election permitted by subsection 39(4) of the Tax Act.

Interest

The amount of any interest received or receivable (depending on the method regularly followed in computing income under the Tax Act) by a Resident Holder in a taxation year (including on redemption or repayment in full by the Bank) will be required to be included in computing the Resident Holder's income for the taxation year, except to the extent that such amount has already been included in the Resident Holder's income for that or a preceding taxation year.

Disposition of Securities

On a disposition or deemed disposition of a Security by a Resident Holder to a person (other than the Bank), the amount of any interest accrued on the Security to the time of disposition will be required to be included in computing the Resident Holder's income for the taxation year in which the disposition takes place (except to the extent that such accrued interest has already been included in the Resident Holder's income for that or a preceding taxation year), and will be excluded from the proceeds of disposition of the Security. Because the interest entitlement of a Resident Holder for a particular Interest Period will generally only be determinable on the Observation Date for that period, whether any accrued interest will be payable on a Security at the time of disposition may, in some circumstances, be considered uncertain.

In addition, the Resident Holder should realize a capital gain (or capital loss) to the extent that the proceeds of disposition, net of amounts included in income as interest and any reasonable costs of disposition, exceed (or are exceeded by) the adjusted cost base of the Security to the Resident Holder. One-half of any capital gain realized by a Resident Holder must be included in the income of the Resident Holder. One-half of any capital loss realized by a Resident Holder is deductible against the taxable portion of capital gains realized in the year, in the three preceding years or in subsequent years, subject to the rules and restrictions contained in the Tax Act. Capital gains realized by an individual may give rise to a liability for alternative minimum tax.

Redemption or Repayment by the Bank

A Resident Holder who holds the Securities until maturity (or earlier redemption or repayment in full by the Bank) and who receives redemption or repayment proceeds that are less than the Principal Amount of the Securities will realize a capital loss to the extent that the amount received at such time (otherwise than on account of interest) is less than the Resident Holder's adjusted cost base of such Securities. The income tax considerations associated with the realization of a capital loss are described above.

Holders Not Resident in Canada

The following discussion applies to a Holder who, at all relevant times, for the purposes of the Tax Act is neither resident nor deemed to be resident in Canada, deals at arm's length with any Canadian resident (or deemed Canadian resident) to whom the Holder disposes of the Securities, is neither a "specified shareholder" of the Bank nor a person who does not deal at arm's length with a specified shareholder of the Bank for purposes of the "thin capitalization" rule contained in subsection 18(4) of the Tax Act, does not use or hold and is not deemed to use or hold the Securities in the course of carrying on a business in Canada and is not an insurer carrying on an insurance business in Canada and elsewhere (a "**Non-Resident Holder**").

Interest paid or credited or deemed to be paid or credited on the Securities (including any interest deemed to be paid in certain cases involving the assignment or other transfer of a Security to a resident or deemed resident of Canada) to a Non-Resident Holder will not be subject to Canadian non-resident withholding tax unless any portion of such interest is contingent or dependent on the use of or production from property in Canada or is computed by reference to revenue, profit, cash flow, commodity price or any other similar criterion or by reference to dividends paid or payable to shareholders of any class of shares of the capital stock of a corporation ("**Participating Debt Interest**").

Having regard to the terms of the Securities and, in particular, that the Target Index is computed, in part by reference to dividends on its constituent securities, interest paid or credited or deemed to be paid or credited on the Securities may be considered to be Participating Debt Interest, although there is uncertainty on this question. Accordingly, the Bank expects that Canadian non-resident withholding tax will be withheld and remitted at the rate of 25% of the gross amount of any interest paid to a Non-Resident Holder (although the rate of this withholding tax may ultimately be reduced pursuant to the terms of an applicable income tax treaty or convention between Canada and the country of residence of the Non-Resident Holder). **Non-Resident Holders should consult with their own tax advisors before acquiring Securities.**

Eligibility for Investment

The Securities, if issued on the date of this pricing supplement, would be qualified investments (for purposes of the Tax Act) for trusts governed by registered retirement savings plans ("**RRSPs**"), registered retirement income funds ("**RRIFs**"), tax-free savings accounts ("**TFSA**s"), registered disability savings plans ("**RDSPs**"), registered education savings plans ("**RESPs**") and deferred profit sharing plans ("**DPSPs**"), each within the meaning of the Tax Act (other than a DPSP to which payments are made by the Bank or a corporation or partnership with which the Bank does not deal at arm's length within the meaning of the Tax Act).

Notwithstanding the foregoing, if Securities are "prohibited investments" (as that term is defined in the Tax Act) for an RRSP, RRIF, TFSA, RDSP or RESP, the annuitant of the RRSP or RRIF, the holder of the TFSA or RDSP, or the subscriber of the RESP, as the case may be (each a "**Plan Holder**"), will be subject to a penalty tax as set out in the Tax Act. Securities will be prohibited investments for an RRSP, RRIF, TFSA, RDSP or RESP of a Plan Holder who has a "significant interest" (as defined in the Tax Act for purposes of the prohibited investment rules) in the Bank or who does not deal at arm's length, within the meaning of the Tax Act, with the Bank.