



Pricing Supplement

Dated August 22, 2022

To the Product Prospectus Supplement ERN-ERN-1 dated March 3, 2022, and the Prospectus Supplement and the Prospectus, each Dated September 14, 2021

\$1,500,000

Buffered Enhanced Return Notes Linked
to a Basket of Two Indices and an Exchange
Traded Fund, Due November 28, 2023
Royal Bank of Canada

Royal Bank of Canada is offering the **Buffered Enhanced Return Notes (the "Notes")** linked to the performance of a basket (the **"Basket"**) consisting of two indices (each, an **"Index"**) and an exchange traded fund (the **"ETF"**).

Basket Component	Component Weight	Initial Level
S&P 500® Index (SPX)	70%	4,137.99
Russell 2000® Index (RTY)	20%	1,915.743
iShares® MSCI Emerging Markets ETF (EEM)	10%	\$39.55

- The Notes provide a 125% leveraged positive return if the value of the Basket increases from the Initial Basket Level to the Final Basket Level, subject to the Maximum Redemption Amount of 121.50% of the principal amount.
- If the Final Basket Level is less than the Initial Basket Level by no more than 10%, investors will receive the principal amount. However, investors will lose 1% of the principal amount of the Notes for each 1% decrease from the Initial Basket Level to the Final Basket Level of more than 10%.
- Any payments on the Notes are subject to our credit risk.
- The Notes do not pay interest.
- The Notes will not be listed on any securities exchange.

Issue Date: August 25, 2022

Maturity Date: November 28, 2023

CUSIP: 78016FRZ9

Investing in the Notes involves a number of risks. See "Selected Risk Considerations" beginning on page P-8 of this pricing supplement, "Additional Risk Factors Specific to the Notes" beginning on page PS-6 of the product prospectus supplement dated March 3, 2022, and "Risk Factors" beginning on page S-2 of the prospectus supplement dated September 14, 2021.

The Notes will not constitute deposits insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. government agency or instrumentality. The Notes are not subject to conversion into our common shares under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Notes 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 ⁽¹⁾	100.00%	\$1,500,000
Underwriting discounts and commissions ⁽¹⁾	0.65%	\$9,750
Proceeds to Royal Bank of Canada	99.35%	\$1,490,250

⁽¹⁾ Certain dealers who purchase the Notes for sale to certain fee-based advisory accounts may forego some or all of their underwriting discount or selling concessions. The public offering price for investors purchasing the Notes in these accounts may be between \$993.50 and \$1,000 per \$1,000 in principal amount.

If the Notes priced on the date of this pricing supplement, RBC Capital Markets, LLC ("RBCCM"), acting as our agent, would receive a commission of approximately \$6.50 per \$1,000 in principal amount of the Notes and would use a portion of that commission to allow selling concessions to other dealers of up to approximately \$6.50 per \$1,000 in principal amount of the Notes. The other dealers may forgo, in their sole discretion, some or all of their selling concessions. See "Supplemental Plan of Distribution (Conflicts of Interest)" below.

The initial estimated value of the Notes as of the Trade Date was \$989.15 per \$1,000 in principal amount, which is less than the price to public. The actual value of the Notes 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.

SUMMARY

The information in this “Summary” section is qualified by the more detailed information set forth in this pricing supplement, the product prospectus supplement, the prospectus supplement, and the prospectus.

Issuer:	Royal Bank of Canada (“Royal Bank”)
Underwriter:	RBC Capital Markets, LLC (“RBCCM”)
Reference Assets:	The Notes are linked to the value of a basket (the “Basket”) consisting of two equity indices and one exchange traded fund (each, a “Basket Component,” collectively, the “Basket Components”). The Basket Components and their respective Component Weights are indicated in the table on the cover page of this document.
Minimum Investment:	\$1,000 and minimum denominations of \$1,000 in excess thereof
Trade Date (Pricing Date):	August 22, 2022
Issue Date:	August 25, 2022
Valuation Date:	November 22, 2023
Maturity Date:	November 28, 2023
Payment at Maturity (if held to maturity):	<p>If the Final Basket Level is greater than the Initial Basket Level (that is, the Percentage Change is positive, then the investor will receive, for each \$1,000 in principal amount, the <i>lesser</i> of:</p> <ol style="list-style-type: none">1. $\\$1,000 + [\\$1,000 \times (\text{Percentage Change} \times \text{Leverage Factor})]$ and2. Maximum Return. <p>If the Final Basket Level is less than or equal to the Initial Basket Level, but is not less than the Buffer Level (that is, the Percentage Change is between 0% and -10%), then the investor will receive the principal amount.</p> <p>If the Final Basket Level is less than the Buffer Level (that is, the Percentage Change is between -10.01% and -100%), then the investor will receive, for each \$1,000 in principal amount:</p> $\$1,000 + [\$1,000 \times (\text{Percentage Change} + \text{Buffer Percentage})]$ <p><i>In this case, the payment on the Notes will be less than the principal amount, and you could lose some or a substantial portion of the principal amount.</i></p>
Maximum Return:	\$1,215 per \$1,000 in principal amount (121.50% multiplied by the principal amount)
Leverage Factor:	125%

Buffer Percentage:	10%
Initial Basket Level:	The Initial Basket Level was set to 100 on the Trade Date.
Buffer Level:	The Buffer Level was 90 on the Trade Date.
Final Basket Level:	<p>The Final Basket Level will be calculated as follows:</p> $100 \times [1 + (\text{the sum of, for each Basket Component, the Basket Component return multiplied by its Component Weight})]$ <p>Each of the Basket Component returns set forth above refers to the percentage change from the applicable Initial Level to the applicable Final Level, calculated as follows:</p> $\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$
Percentage Change:	<p>The Percentage Change of the Basket, expressed as a percentage and rounded to two decimal places, will be equal to:</p> $\frac{\text{Final Basket Level} - \text{Initial Basket Level}}{\text{Initial Basket Level}}$
Initial Level:	With respect to each Basket Component, its closing level (in the case of an Index) or its closing price (in the case of the ETF) on the Trade Date. The Initial Level of each Basket Component is set forth on the cover page of this pricing supplement.
Final Level:	With respect to each Basket Component, its closing level (in the case of an Index) or its closing price (in the case of the ETF) on the Valuation Date.
Principal at Risk:	The Notes are NOT principal protected. You could lose a substantial portion of your principal amount at maturity if the Final Basket Level is less than the Initial Basket Level by more than the Buffer Percentage.
Calculation Agent:	RBCCM
U.S. Tax Treatment:	By purchasing a Note, each holder agrees (in the absence of a change in law, an administrative determination or a judicial ruling to the contrary) to treat the Note as a pre-paid cash-settled derivative contract in respect of the Basket for U.S. federal income tax purposes. However, the U.S. federal income tax consequences of your investment in the Notes are uncertain and the Internal Revenue Service could assert that the Notes should be taxed in a manner that is different from that described in the preceding sentence. Please see the section below, "Supplemental Discussion of U.S. Federal Income Tax Consequences," and the discussion (including the opinion of our special U.S. tax counsel, Ashurst LLP) in the product prospectus supplement dated March 3, 2022 under "Supplemental Discussion of U.S. Federal Income Tax Consequences," which apply to the Notes.
Secondary Market:	RBCCM (or one of its affiliates), though not obligated to do so, may maintain a secondary market in the Notes after the issue date. The amount that you may receive upon sale of your Notes prior to maturity may be substantially less than the principal amount of your Notes.

Listing:	The Notes will not be listed on any securities exchange.
Clearance and Settlement:	DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under "Ownership and Book-Entry Issuance" in the prospectus dated September 14, 2021).
Terms Incorporated in the Master Note:	All of the terms appearing on the cover page and above the item captioned "Secondary Market" on pages P-2 and P-3 of this pricing supplement, the section "Additional Terms Relating to the Indices" set forth below, and the terms appearing under the captions "General Terms of the Notes" and "Supplemental Discussion of U.S. Federal Income Tax Consequences" in the product prospectus supplement dated March 3, 2022, as modified by this pricing supplement.

ADDITIONAL TERMS OF YOUR NOTES

You should read this pricing supplement together with the prospectus dated September 14, 2021, as supplemented by the prospectus supplement dated September 14, 2021 and the product prospectus supplement dated March 3, 2022, relating to our Senior Global Medium-Term Notes, Series I, of which these Notes are a part. Capitalized terms used but not defined in this pricing supplement will have the meanings given to them in the product prospectus supplement. In the event of any conflict, this pricing supplement will control. ***The Notes vary from the terms described in the product prospectus supplement in several important ways. You should read this pricing supplement carefully.***

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in “Risk Factors” in the prospectus supplement dated September 14, 2021 and “Additional Risk Factors Specific to the Notes” in the product prospectus supplement dated September 14, 2021, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the “SEC”) website at www.sec.gov as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated September 14, 2021:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009470/rbc911212424b3.htm>

Prospectus Supplement dated September 14, 2021:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465921009472/rbc911210424b3.htm>

Product Prospectus Supplement ERN-ETF-1 dated March 3, 2022:

https://www.sec.gov/Archives/edgar/data/1000275/000114036122007839/brhc10034774_424b5.htm

Our Central Index Key, or CIK, on the SEC website is 1000275. As used in this pricing supplement, “we,” “us,” or “our” refers to Royal Bank of Canada.

HYPOTHETICAL RETURNS

The examples set out below are included for illustration purposes only. The **hypothetical** Percentage Changes of the Basket used to illustrate the calculation of the Payment at Maturity are not estimates or forecasts of the value of any Basket Component on any trading day prior to the Maturity Date. All examples are based on the Leverage Factor of 125%, the Maximum Return of 121.50% of the principal amount, the Buffer Percentage of 10%, that a holder purchased Notes with an aggregate principal amount of \$1,000, and that no market disruption event occurs on the Valuation Date.

Example 1— Calculation of the Payment at Maturity where the Percentage Change is positive.

Percentage Change: 5%

Payment at Maturity: $\$1,000 + [\$1,000 \times (5\% \times 125\%)] = \$1,062.50$

On a \$1,000 investment, a 5% Percentage Change results in a Payment at Maturity of \$1,062.50, a 6.25% return on the Notes.

Example 2— Calculation of the Payment at Maturity where the Percentage Change is positive, but the payment on the Notes is subject to the Maximum Return.

Percentage Change: 20%

Payment at Maturity: $\$1,000 + [\$1,000 \times (20\% \times 125\%)] = \$1,250$

On a \$1,000 investment, a 20% Percentage Change result would result in a Payment at Maturity of \$1,250. However, the Maximum Return is \$1,215. Accordingly, the payment on the Notes will be \$1,215, equal to a return of 21.50%.

Example 3— Calculation of the Payment at Maturity where the Percentage Change is negative (but the Final Basket Level is not less than the Initial Basket Level by more than the Buffer Percentage).

Percentage Change: -5%

Payment at Maturity: \$1,000

On a \$1,000 investment, a -5% Percentage Change results in a Payment at Maturity of \$1,000, a 0% return on the Notes.

Example 4— Calculation of the Payment at Maturity where the Final Basket Level is less than the Buffer Level.

Percentage Change: -40%

Payment at Maturity: $\$1,000 + [\$1,000 \times (-40\% + 10\%)] = \700

On a \$1,000 investment, a -40% Percentage Change results in a Payment at Maturity of \$700, a -30% return on the Notes.

The table set forth below is included for illustration purposes only. The table illustrates the hypothetical Redemption

Amount of the Notes for a hypothetical range of performance for the Basket, based on the Buffer Percentage of 10%, the Leverage Factor of 125% and the Maximum Return of 121.50% of the principal amount.

Hypothetical Final Basket Levels are shown in the first column on the left. The second column shows the corresponding Percentage Change of the Basket. The third column shows the Redemption Amount for a range of these Percentage Changes, expressed as a percentage of the principal amount of the Notes. The third column shows the Redemption Amount to be paid on the Notes per \$1,000 in principal amount.

Hypothetical Final Basket Level	Hypothetical Percentage Change	Redemption Amount as Percentage of Principal Amount	Redemption Amount per \$1,000 in Principal Amount
140.00	40.00%	150.00%	\$1,215.00
130.00	30.00%	137.50%	\$1,215.00
120.00	20.00%	125.00%	\$1,215.00
117.20	17.20%	121.50%	\$1,215.00
110.00	10.00%	112.50%	\$1,125.00
105.00	5.00%	106.25%	\$1,062.50
100.00	0.00%	100.00%	\$1,000.00
98.00	-2.00%	100.00%	\$1,000.00
95.00	-5.00%	100.00%	\$1,000.00
90.00	-10.00%	100.00%	\$1,000.00
80.00	-20.00%	90.00%	\$900.00
70.00	-30.00%	80.00%	\$800.00
60.00	-40.00%	70.00%	\$700.00
50.00	-50.00%	60.00%	\$600.00
40.00	-60.00%	50.00%	\$500.00
20.00	-80.00%	30.00%	\$300.00
10.00	-90.00%	20.00%	\$200.00
0.00	-100.00%	10.00%	\$100.00

SELECTED RISK CONSIDERATIONS

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in any of the Basket Components or in any of the securities included in or held by any Basket Component. These risks are explained in more detail in the section “Additional Risk Factors Specific to the Notes” in the product prospectus supplement. In addition to the risks described in the prospectus supplement and the product prospectus supplement, you should consider the following:

Risks Relating to the Terms of the Notes

- **You May Receive Less than the Principal Amount at Maturity** – Investors in the Notes will lose some or a substantial portion of their principal amount if the Final Basket Level is less than the Initial Basket Level by more than the Buffer Percentage. In such a case, you will lose 1% of the principal amount of your Notes for each 1% that the Final Basket Level is less than the Buffer Level. You could lose up to 90% of the principal amount at maturity.
- **The Notes Do Not Pay Interest and Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity** – There will be no periodic interest payments on the Notes as there would be on a conventional fixed-rate or floating-rate debt security having the same maturity. The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you would earn if you purchased one of our conventional senior interest bearing debt securities.
- **Your Potential Payment at Maturity Is Limited** – The Notes will provide less opportunity to participate in the appreciation of the Reference Asset than an investment in a security linked to the Reference Asset providing full participation in the appreciation, because the payment at maturity will not exceed the Maximum Redemption Amount. Accordingly, your return on the Notes may be less than your return would be if you made an investment in a security directly linked to the positive performance of the Basket.
- **You Will Not Have Any Rights to the Securities Represented by the Basket Components** – As a holder of the Notes, you will not have voting rights or rights to receive cash dividends or other distributions or other rights that holders of securities represented by a Basket Component would have. The Final Levels of the Indices will not reflect any dividends paid on the securities included in those Basket Components, and you will not be entitled to receive any dividends or distributions paid on the ETF; accordingly, any positive return on the Notes may be less than the potential positive return on those securities.
- **Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes** – The Notes are our senior unsecured debt securities. As a result, your receipt of the amount due on the Maturity Date is dependent upon our ability to repay our obligations at that time. This will be the case even if the value of the Basket increases after the Trade Date. No assurance can be given as to what our financial condition will be at the maturity of the Notes.
- **Changes in the Value of One Basket Component May Be Offset by Changes in the Value of the Other Basket Components** – A change in the value of one Basket Component may not correlate with changes in the value of the other Basket Components. The value of one Basket Component may increase, while the values of the other Basket Components may not increase as much, or may even decrease. Therefore, in determining the value of the Basket as of any time, increases in the value of one Basket Component may be moderated, or wholly offset, by lesser increases or decreases in the value of the other Basket Components. Because of its larger weight in the Basket, any decreases in the value of the SPX will have a greater adverse impact on the payments on the Notes as compared to similar decreases in the values of the other Basket Components.

Risks Relating to the Secondary Market for the Notes

- **There May Not Be an Active Trading Market for the Notes—Sales in the Secondary Market May Result in Significant Losses** — There may be little or no secondary market for the Notes. The Notes will not be listed on any securities exchange. RBCCM and our other affiliates may make a market for the Notes; however, they are not required to do so. RBCCM or any of our other affiliates may stop any market-making activities at any time. Even if a secondary market for the Notes develops, it may not provide significant liquidity or trade at prices advantageous to you. We expect that transaction costs in any secondary market would be high. As a result, the difference between bid and asked prices for your Notes in any secondary market could be substantial.

Risks Relating to the Estimated Value of the Notes

- **The Initial Estimated Value of the Notes Is Less than the Price to the Public** — The initial estimated value that is set forth on the cover page of this pricing supplement does not represent a minimum price at which we, RBCCM or any of our affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the value of the Basket, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount and the estimated costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the underwriting discount and the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined by RBCCM for any secondary market price is expected to be based on the secondary rate rather than the internal funding rate used to price the Notes and determine the initial estimated value. As a result, the secondary price will be less than if the internal funding rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.
- **The Initial Estimated Value of the Notes that Is Set Forth on the Cover Page of this Pricing Supplement Is an Estimate Only, Calculated as of the Time the Terms of the Notes Were Set** — The initial estimated value of the Notes is based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See “Structuring the Notes” below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do.

The value of the Notes at any time after the Trade Date 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 Notes in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Notes.

Risks Relating to Conflicts of Interest and Our Trading Activities

- **Our Business Activities May Create Conflicts of Interest** — We and our affiliates expect to engage in trading activities related to the Basket Components or the securities that they represent that are not for the account of holders of the Notes or on their behalf. These trading activities may present a conflict between the holders’ interests in the Notes and the interests we and our affiliates will have in their proprietary accounts, in facilitating transactions, including options and other derivatives transactions, for their customers and in accounts under their management. These trading activities, if they influence the value of a Basket Component, could be adverse to the interests of the

holders of the Notes. We and one or more of our affiliates may, at present or in the future, engage in business with companies represented by the Basket Components, including making loans to or providing advisory services. These services could include investment banking and merger and acquisition advisory services. These activities may present a conflict between our or one or more of our affiliates' obligations and your interests as a holder of the Notes. Moreover, we, and our affiliates may have published, and in the future expect to publish, research reports with respect to the Basket Components. This research is modified from time to time without notice and may express opinions or provide recommendations that are inconsistent with purchasing or holding the Notes. Any of these activities by us or one or more of our affiliates may affect the value of each Basket Component, and therefore, the market value of the Notes.

Risks Relating to the Basket Components

- **An Investment in Notes Linked to the RTY Is Subject to Risks Associated in Investing in Stocks With a Small Market Capitalization** — The RTY consists of stocks issued by companies with relatively small market capitalizations. These companies often have greater stock price volatility, lower trading volume and less liquidity than large-capitalization companies. As a result, the level of the RTY may be more volatile than that of a market measure that does not track solely small-capitalization stocks. Stock prices of small-capitalization companies are also generally more vulnerable than those of large-capitalization companies to adverse business and economic developments, and the stocks of small-capitalization companies may be thinly traded, and be less attractive to many investors if they do not pay dividends. In addition, small capitalization companies are often less well-established and less stable financially than large-capitalization companies and may depend on a small number of key personnel, making them more vulnerable to loss of those individuals. Small capitalization companies tend to have lower revenues, less diverse product lines, smaller shares of their target markets, fewer financial resources and fewer competitive strengths than large-capitalization companies. These companies may also be more susceptible to adverse developments related to their products or services.
- **An Investment in the Notes Is Subject to Risks Relating to Non-U.S. Securities Markets** — Because foreign companies or foreign equity securities held by the EEM are publicly traded in the applicable foreign countries and are denominated in non-U.S. currencies, an investment in the Notes involves particular risks. For example, the non-U.S. securities markets may be more volatile than the U.S. securities markets, and market developments may affect these markets differently from the U.S. or other securities markets. Direct or indirect government intervention to stabilize the securities markets outside the U.S., as well as cross-shareholdings in certain companies, may affect trading prices and trading volumes in those markets. Also, the public availability of information concerning the foreign issuers may vary depending on their home jurisdiction and the reporting requirements imposed by their respective regulators. In addition, the foreign issuers may be subject to accounting, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.
- **An Investment in the Notes Is Subject to Risks Associated with Emerging Markets** — Investments in securities linked directly or indirectly to emerging market equity securities, such as the securities held by the EEM, involve many risks, including, but not limited to: economic, social, political, financial and military conditions in the emerging market; regulation by national, provincial, and local governments; less liquidity and smaller market capitalizations than exist in the case of many large U.S. companies; different accounting and disclosure standards; and political uncertainties. Stock prices of emerging market companies may be more volatile and may be affected by market developments differently than U.S. companies. Government intervention to stabilize securities markets and cross-shareholdings may affect prices and volume of trading of the securities of emerging market companies. Economic, social, political, financial and military factors could, in turn, negatively affect such companies' value. These factors could include changes in the emerging market government's economic and fiscal policies, possible imposition of, or changes in, currency exchange laws or other laws or restrictions applicable to the emerging market companies or investments in their securities, and the possibility of fluctuations in the rate of exchange between currencies. Moreover, emerging market economies may differ favorably or unfavorably from the U.S. economy in a variety of ways, including growth of gross national product, rate of inflation, capital reinvestment, resources and self-sufficiency. You should carefully

consider the risks related to emerging markets, to which the Notes are susceptible, before making a decision to invest in the Notes.

- **The Notes Are Subject to Exchange Rate Risks** — The share price of the EEM will fluctuate based in large part upon its net asset value, which will in turn depend in part upon changes in the value of the currencies in which the stocks held by the EEM are traded. Accordingly, investors in the Notes will be exposed to currency exchange rate risk with respect to each of the currencies in which the stocks held by the EEM are traded. An investor's net exposure will depend on the extent to which these currencies strengthen or weaken against the U.S. dollar. If the dollar strengthens against these currencies, the net asset value of the EEM will be adversely affected and the price of the EEM, and consequently, the market value of the Notes may decrease.
- **We Cannot Control Actions by the Sponsor of Any Index** — The policies of the sponsor of each Index, and the sponsor of the underlying index for the EEM, may adjust that index in a way that may adversely impact the payments on the Notes. A sponsor may change the composition of that index, or the methodology used to calculate that index. We are not affiliated with any of these sponsors, and have no control over their actions.
- **The Payments on the Notes Are Subject to Postponement Due to Market Disruption Events and Adjustments** — The Payment at Maturity and the Valuation Date are subject to adjustment as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event, see the section below, "Additional Terms Relating to the Indices" and the section "General Terms of the Notes—Market Disruption Events" in the product prospectus supplement.

INFORMATION REGARDING THE BASKET COMPONENTS

All disclosures contained in this pricing supplement regarding the Basket Components, including, without limitation, their make-up, method of calculation, and changes in their components, have been derived from publicly available sources prepared by the sponsors of the Basket Components. That information reflects the policies of, and is subject to change by the applicable sponsor. Neither we nor RBCCM accepts any responsibility for the calculation, maintenance or publication of any Basket Component or any successor to that Basket Component.

S&P 500® Index ("SPX")

The SPX is intended to provide an indication of the pattern of price movements among U.S. large capitalization stocks. The calculation of the level of the SPX is based on the relative value of the aggregate market value of the common stocks of 500 companies as of a particular time compared to the aggregate average market value of the common stocks of 500 similar companies during the base period of the years 1941 through 1943.

S&P calculates the SPX by reference to the prices of the constituent stocks of the SPX without taking account of the value of dividends paid on those stocks. As a result, the return on the Notes will not reflect the return you would realize if you actually owned the SPX constituent stocks and received the dividends paid on those stocks.

Effective with the September 2015 rebalance, consolidated share class lines will no longer be included in the SPX. Each share class line will be subject to public float and liquidity criteria individually, but the company's total market capitalization will be used to evaluate each share class line. This may result in one listed share class line of a company being included in the SPX while a second listed share class line of the same company is excluded.

Computation of the SPX

While S&P currently employs the following methodology to calculate the SPX, no assurance can be given that S&P will not modify or change this methodology in a manner that may affect the Payment at Maturity.

Historically, the market value of any component stock of the SPX was calculated as the product of the market price per share and the number of then outstanding shares of such component stock. In March 2005, S&P began shifting the SPX halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the SPX to full float adjustment on September 16, 2005. S&P's criteria for selecting stocks for the SPX did not change with the shift to float adjustment. However, the adjustment affects each company's weight in the SPX.

Under float adjustment, the share counts used in calculating the SPX reflect only those shares that are available to investors, not all of a company's outstanding shares. Float adjustment excludes shares that are closely held by control groups, other publicly traded companies or government agencies.

In September 2012, all shareholdings representing more than 5% of a stock's outstanding shares, other than holdings by "block owners," were removed from the float for purposes of calculating the SPX. Generally, these "control holders" will include officers and directors, private equity, venture capital and special equity firms, other publicly traded companies that hold shares for control, strategic partners, holders of restricted shares, ESOPs, employee and family trusts, foundations associated with the company, holders of unlisted share classes of stock, government entities at all levels (other than government retirement/pension funds) and any individual person who controls a 5% or greater stake in a company as reported in regulatory filings. However, holdings by block owners, such as depository banks, pension funds, mutual funds and ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

Treasury stock, stock options equity participation units, warrants, preferred stock, convertible stock, and rights are not part of the float. Shares held in a trust to allow investors in countries outside the country of domicile, such as depository shares and Canadian exchangeable shares are normally part of the float unless those shares form a control block.

For each stock, an investable weight factor ("IWF") is calculated by dividing the available float shares by the total shares outstanding. Available float shares are defined as the total shares outstanding less shares held by control holders. This calculation is subject to a 5% minimum threshold for control blocks. For example, if a company's officers and directors hold 3% of the company's shares, and no other control group holds 5% of the company's shares, S&P would assign that company an IWF of 1.00, as no control group meets the 5% threshold. However, if a company's officers and directors hold 3% of the company's shares and another control group holds 20% of the company's shares, S&P would assign an IWF of 0.77, reflecting the fact that 23% of the company's outstanding shares are considered to be held for control. As of July 31, 2017, companies

with multiple share class lines are no longer eligible for inclusion in the SPX. Constituents of the SPX prior to July 31, 2017 with multiple share class lines were grandfathered in and continue to be included in the SPX. If a constituent company of the SPX reorganizes into a multiple share class line structure, that company will remain in the SPX at the discretion of the S&P Index Committee in order to minimize turnover.

The SPX is calculated using a base-weighted aggregate methodology. The level of the SPX reflects the total market value of all 500 component stocks relative to the base period of the years 1941 through 1943. An indexed number is used to represent the results of this calculation in order to make the level easier to use and track over time. The actual total market value of the component stocks during the base period of the years 1941 through 1943 has been set to an indexed level of 10. This is often indicated by the notation 1941-43 = 10. In practice, the daily calculation of the SPX is computed by dividing the total market value of the component stocks by the "index divisor." By itself, the index divisor is an arbitrary number. However, in the context of the calculation of the SPX, it serves as a link to the original base period level of the SPX. The index divisor keeps the SPX comparable over time and is the manipulation point for all adjustments to the SPX, which is index maintenance.

Index Maintenance

Index maintenance includes monitoring and completing the adjustments for company additions and deletions, share changes, stock splits, stock dividends, and stock price adjustments due to company restructuring or spinoffs. Some corporate actions, such as stock splits and stock dividends, require changes in the common shares outstanding and the stock prices of the companies in the SPX, and do not require index divisor adjustments.

To prevent the level of the SPX from changing due to corporate actions, corporate actions which affect the total market value of the SPX require an index divisor adjustment. By adjusting the index divisor for the change in market value, the level of the SPX remains constant and does not reflect the corporate actions of individual companies in the SPX. Index divisor adjustments are made after the close of trading and after the calculation of the SPX closing level.

Changes in a company's total shares outstanding of 5% or more due to public offerings are made as soon as reasonably possible. Other changes of 5% or more (for example, due to tender offers, Dutch auctions, voluntary exchange offers, company stock repurchases, private placements, acquisitions of private companies or non-index companies that do not trade on a major exchange, redemptions, exercise of options, warrants, conversion of preferred stock, notes, debt, equity participations, at-the-market stock offerings or other recapitalizations) are made weekly, and are generally announced on Fridays for implementation after the close of trading the following Friday (one week later). If a 5% or more share change causes a company's IWF to change by five percentage points or more, the IWF is updated at the same time as the share change. IWF changes resulting from partial tender offers are considered on a case-by-case basis.

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Russell 2000® Index ("RTY")

The RTY was developed by Russell Investments ("Russell") before FTSE International Limited and Russell combined in 2015 to create FTSE Russell, which is wholly owned by London Stock Exchange Group. Russell began dissemination of the RTY (Bloomberg L.P. index symbol "RTY") on January 1, 1984. FTSE Russell calculates and publishes the RTY. The RTY was set to 135 as of the close of business on December 31, 1986. The RTY is designed to track the performance of the small capitalization segment of the U.S. equity market. As a subset of the Russell 3000® Index, the RTY consists of the smallest 2,000 companies included in the Russell 3000® Index. The Russell 3000® Index measures the performance of the largest 3,000 U.S. companies, representing approximately 98% of the investable U.S. equity market. The RTY is determined, comprised, and calculated by FTSE Russell without regard to the Notes.

Selection of Stocks Underlying the RTY

All companies eligible for inclusion in the RTY must be classified as a U.S. company under FTSE Russell's country-assignment methodology. If a company is incorporated, has a stated headquarters location, and trades in the same country (American Depositary Receipts and American Depositary Shares are not eligible), then the company is assigned to its country of incorporation. If any of the three factors are not the same, FTSE Russell defines three Home Country Indicators ("HCIs"): country of incorporation, country of headquarters, and country of the most liquid exchange (as defined by a two-year average daily dollar trading volume) ("ADDTV") from all exchanges within a country. Using the HCIs, FTSE Russell compares the primary location of the company's assets with the three HCIs. If the primary location of its assets matches any of the HCIs, then the company is assigned to the primary location of its assets. If there is insufficient information to determine the country in which the company's assets are primarily located, FTSE Russell will use the primary country from which the company's revenues are primarily derived for the comparison with the three HCIs in a similar manner. FTSE Russell uses the average of two years of assets or revenues data to reduce potential turnover. If conclusive country details cannot be derived from assets or revenues data, FTSE Russell will assign the company to the country of its headquarters, which is defined as the address of the company's principal executive offices, unless that country is a Benefit Driven Incorporation "BDI" country, in which case the company will be assigned to the country of its most liquid stock exchange. BDI countries include: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bonaire, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Curacao, Faroe Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Liberia, Marshall Islands, Panama, Saba, Sint Eustatius, Sint Maarten, and Turks and Caicos Islands. For any companies incorporated or headquartered in a U.S. territory, including countries such as Puerto Rico, Guam, and U.S. Virgin Islands, a U.S. HCI is assigned. "N-shares" of companies controlled by individuals or entities in mainland China are not eligible for inclusion.

All securities eligible for inclusion in the RTY must trade on a major U.S. exchange. Stocks must have a closing price at or above \$1.00 on their primary exchange on the last trading day in May to be eligible for inclusion during annual reconstitution. However, in order to reduce unnecessary turnover, if an existing member's closing price is less than \$1.00 on the last day of

May, it will be considered eligible if the average of the daily closing prices (from its primary exchange) during the month of May is equal to or greater than \$1.00. Initial public offerings are added each quarter and must have a closing price at or above \$1.00 on the last day of their eligibility period in order to qualify for index inclusion. If an existing stock does not trade on the “rank day” (typically the last trading day in May, but a confirmed timetable is announced each spring), but does have a closing price at or above \$1.00 on another eligible U.S. exchange, that stock will be eligible for inclusion.

An important criterion used to determine the list of securities eligible for the RTY is total market capitalization, which is defined as the market price as of the rank day in May for those securities being considered at annual reconstitution times the total number of shares outstanding. Where applicable, common stock, non-restricted exchangeable shares and partnership units/membership interests are used to determine market capitalization. Any other form of shares such as preferred stock, convertible preferred stock, redeemable shares, participating preferred stock, warrants, rights, installment receipts or trust receipts, are excluded from the calculation. If multiple share classes of common stock exist, they are combined to determine total shares outstanding. In cases where the common stock share classes act independently of each other (e.g., tracking stocks), each class is considered for inclusion separately. If multiple share classes exist, the pricing vehicle will be designated as the share class with the highest two-year trading volume as of the rank day in May.

Companies with a total market capitalization of less than \$30 million are not eligible for the RTY. Similarly, companies with only 5% or less of their shares available in the marketplace are not eligible for the RTY. Royalty trusts, limited liability companies, closed-end investment companies (companies that are required to report Acquired Fund Fees and Expenses, as defined by the SEC, including business development companies), blank check companies, special purpose acquisition companies, and limited partnerships are also ineligible for inclusion. Exchange traded funds and mutual funds are also excluded. Bulletin board, pink sheets, and over-the-counter (“OTC”) traded securities are not eligible for inclusion.

Annual reconstitution is a process by which the RTY is completely rebuilt. Based on closing levels of the company’s common stock on its primary exchange on the rank day of May of each year, FTSE Russell reconstitutes the composition of the RTY using the then existing market capitalizations of eligible companies. Reconstitution of the RTY occurs on the last Friday in June or, when the last Friday in June is the 29th or 30th, reconstitution occurs on the prior Friday. In addition, FTSE Russell adds initial public offerings to the RTY on a quarterly basis based on total market capitalization ranking within the market-adjusted capitalization breaks established during the most recent reconstitution.

After membership is determined, a security’s shares are adjusted to include only those shares available to the public. This is often referred to as “free float.” The purpose of the adjustment is to exclude from market calculations the capitalization that is not available for purchase and is not part of the investable opportunity set.

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iShares® MSCI Emerging Markets ETF

All disclosures contained in this document regarding the EEM, including, without limitation, its make-up, method of calculation, and changes in its components, have been derived from publicly available sources. The information reflects the policies of, and is subject to change by iShares, Inc. ("iShares®") and the sponsor of its underlying index, as applicable.

iShares consists of numerous separate investment portfolios (the "iShares Funds"), including the iShares® MSCI Emerging Markets ETF (the "EEM"). The EEM seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of its underlying index, the MSCI Emerging Markets Index. The EEM typically earns income from dividends from securities held by the EEM. These amounts, net of expenses and taxes (if applicable), are passed along to shareholders of the EEM as "ordinary income." In addition, the EEM realize capital gains or losses whenever it sells securities. Net long-term capital gains are distributed to their respective shareholders as "capital gain distributions." However, because the applicable notes are linked only to the share price of the EEM, you will not be entitled to receive income, dividend, or capital gain distributions from the EEM or any equivalent payments.

The shares of the EEM are issued by iShares, Inc., a registered investment company. The EEM trades on the NYSE Arca under the ticker symbol "EEM." BlackRock Fund Advisors ("BFA") serves as the investment advisor to the EEM. Reports filed with the EEM relating to the EEM may be found on the SEC's website at www.sec.gov. Information on that website will not be deemed to be included or incorporated by reference in this document.

BFA, as the investment advisor to the EEM, employs a technique known as representative sampling to track the MSCI Emerging Markets Index. The EEM generally invests at least 90% of its assets in the securities of the MSCI Emerging Markets Index and in American Depositary Receipts or Global Depositary Receipts based on the securities of the MSCI Emerging Markets Index. The EEM may invest the remainder of its assets in securities not included in the MSCI Emerging Markets Index, but which BFA believes will help the EEM track the MSCI Emerging Markets Index, or in futures contracts, options on futures contracts, other types of options and swaps related to the MSCI Emerging Markets Index, as well as cash and cash equivalents, including shares of money market funds affiliated with BFA or its affiliates. BFA will waive portfolio management fees in an amount equal to the portfolio management fees of such other iShares funds for any portion of the EEM's assets invested in shares of such other funds.

The MSCI Emerging Markets Index ("MXEF")

The MXEF is intended to measure equity market performance in the global emerging markets. The index is a free float-adjusted market capitalization index with a base date of December 31, 1987 and an initial value of 100. The index is calculated daily in U.S. dollars and published in real time every 60 seconds during market trading hours. The MXEF currently consists of the following emerging market country indices: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, South Korea, Kuwait, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates.

As of the close on May 31, 2018, MSCI began a multi-step process to include, in the MSCI Emerging Markets Index, large cap China A shares that are not in trading suspension. As part of the first step of the inclusion process, which resulted from the May 2018 quarterly review, MSCI added such large cap China A shares to the MSCI Emerging Markets Index at 2.5% of their foreign inclusion factor-adjusted market capitalization. In connection with the August 2018 quarterly index review, MSCI implemented the second step of the inclusion process by increasing the foreign inclusion factor-adjusted market capitalization of those existing China A share constituents from 2.5% to 5%. With the implementation of this second step, and the inclusion of

additional China A shares in connection with the August 2018 quarterly index review, China A shares were initially expected to represent approximately 0.75% of the MSCI Emerging Markets Index. In February 2019, MSCI announced a three-step process between May 2019 and November 2019 that would increase the number of Chinese A shares in the Index. In January 2021, in response to an executive order from the U.S. government which prohibited investments in certain Chinese securities, MSCI removed 10 Chinese securities from the MSCI Emerging Markets Index, which accounted for less than 1% of the index weight. As of July 29, 2022, Chinese securities represented 32.04% of the MSCI Emerging Markets Index.

General - MSCI Indices

MSCI provides global equity indices intended to measure equity performance in international markets and the MSCI International Equity Indices are designed to serve as global equity performance benchmarks. In constructing these indices, MSCI applies its index construction and maintenance methodology across developed, emerging, and frontier markets.

Constructing the MSCI Global Investable Market Indices. MSCI undertakes an index construction process, which involves:

- defining the equity universe;
- determining the market investable equity universe for each market;
- determining market capitalization size segments for each market;
- applying index continuity rules for the MSCI Standard Index;
- creating style segments within each size segment within each market; and
- classifying securities under the Global Industry Classification Standard (the "GICS").

Defining the Equity Universe. The equity universe is defined by:

- **Identifying Eligible Equity Securities:** the equity universe initially looks at securities listed in any of the countries in the MSCI Global Index Series, which will be classified as either Developed Markets ("DM") or Emerging Markets ("EM"). All listed equity securities, including Real Estate Investment Trusts and certain income trusts in Canada, are eligible for inclusion in the equity universe. Conversely, mutual funds, ETFs, equity derivatives, and most investment trusts, are not eligible for inclusion, are eligible for inclusion in the equity universe. Conversely, mutual funds, ETFs, equity derivatives, and most investment trusts, are not.
- **Classifying Eligible Securities into the Appropriate Country:** each company and its securities (i.e., share classes) are classified in only one country.

Effective with the November 2015 semi-annual index review, companies traded outside of their country of classification (i.e. "foreign listed companies") will become eligible for inclusion in the MSCI Country Investable Market Indexes along with the applicable MSCI Global Index. In order for a MSCI Country Investable Market Index to be eligible to include foreign listed companies, it must meet the Foreign Listing Materiality Requirement. To meet the Foreign Listing Materiality Requirement, the aggregate market capitalization of all securities represented by foreign listings should represent at least 5% of the free float-adjusted market capitalization of the relevant MSCI Country Investable Market Index.

Determining the Market Investable Equity Universes. A market investable equity universe for a market is derived by applying investability screens to individual companies and securities in the equity universe that are classified in that market. A market is equivalent to a single country, except in DM Europe, where all DM countries in Europe are aggregated into a single market for index construction purposes. Subsequently, individual DM Europe country indices within the MSCI Europe Index are derived from the constituents of the MSCI Europe Index under the global investable market indices methodology.

A security may be listed in the country where it is classified (i.e. local listing) and/or in a different country (i.e. "foreign listing"). Securities may be represented by either a local or foreign listing. A security may be represented by a foreign listing only if:

- The security is classified in a country that meets the Foreign Listing Materiality Requirement, and
- The security's foreign listing is traded on an eligible stock exchange of: a DM country if the security is classified in a DM country, a DM or an EM country if the security is classified in an EM country, or a DM or an EM or a FM country if the security is classified in a FM country. Securities in that country may not be represented by a foreign listing in the global investable equity universe if a country does not meet the requirement.

The investability screens used to determine the investable equity universe in each market are as follows:

- *Equity Universe Minimum Size Requirement:* this investability screen is applied at the company level. In order to be included in a market investable equity universe, a company must have the required minimum full market capitalization.
- *Equity Universe Minimum Free Float–Adjusted Market Capitalization Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have a free float–adjusted market capitalization equal to or higher than 50% of the equity universe minimum size requirement.
- *DM and EM Minimum Liquidity Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have adequate liquidity. The twelve-month and three-month Annual Traded Value Ratio (“ATVR”), a measure that screens out extreme daily trading volumes and takes into account the free float–adjusted market capitalization size of securities, together with the three-month frequency of trading are used to measure liquidity. A minimum liquidity level of 20% of three- and twelve-month ATVR and 90% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of a DM, and a minimum liquidity level of 15% of three- and twelve-month ATVR and 80% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of an EM.
- *Global Minimum Foreign Inclusion Factor Requirement:* this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security’s Foreign Inclusion Factor (“FIF”) must reach a certain threshold. The FIF of a security is defined as the proportion of shares outstanding that is available for purchase in the public equity markets by international investors. This proportion accounts for the available free float of and/or the foreign ownership limits applicable to a specific security (or company). In general, a security must have an FIF equal to or larger than 0.15 to be eligible for inclusion in a market investable equity universe.
- *Minimum Length of Trading Requirement:* this investability screen is applied at the individual security level. For an initial public offering (“IPO”) to be eligible for inclusion in a market investable equity universe, the new issue must have started trading at least three months before the implementation of a semi-annual index review (as described below). This requirement is applicable to small new issues in all markets. Large IPOs are not subject to the minimum length of trading requirement and may be included in a market investable equity universe and the Standard Index outside of a Quarterly or Semi-Annual Index Review.
- *Minimum Foreign Room Requirement:* this investability screen is applied at the individual security level. For a security that is subject to a foreign ownership limit to be eligible for inclusion in a market investable equity universe, the proportion of shares still available to foreign investors relative to the maximum allowed (referred to as “foreign room”) must be at least 15%.

Defining Market Capitalization Size Segments for Each Market. Once a market investable equity universe is defined, it is segmented into the following size-based indices:

- Investable Market Index (Large + Mid + Small);
- Standard Index (Large + Mid);
- Large Cap Index;
- Mid Cap Index; or
- Small Cap Index.

Creating the size segment indices in each market involves the following steps:

- defining the market coverage target range for each size segment;
- determining the global minimum size range for each size segment;
- determining the market size–segment cutoffs and associated segment number of companies;
- assigning companies to the size segments; and

- applying final size–segment investability requirements.

Index Continuity Rules for the Standard Indices. In order to achieve index continuity, as well as to provide some basic level of diversification within a market index, and notwithstanding the effect of other index construction rules described in this section, a minimum number of five constituents will be maintained for a DM Standard Index and a minimum number of three constituents will be maintained for an EM Standard Index.

Creating Style Indices within Each Size Segment. All securities in the investable equity universe are classified into value or growth segments using the MSCI Global Value and Growth methodology.

Classifying Securities under the Global Industry Classification Standard. All securities in the global investable equity universe are assigned to the industry that best describes their business activities. To this end, MSCI has designed, in conjunction with S&P, the GICS. Under the GICS, each company is assigned to one sub–industry according to its principal business activity. Therefore, a company can belong to only one industry grouping at each of the four levels of the GICS.

Calculation Methodology for the Underlying Index

The performance of the underlying index is a free float weighted average of the U.S. dollar values of its component securities.

Prices used to calculate the component securities are the official exchange closing prices or prices accepted as such in the relevant market. In the case of a market closure, or if a security does not trade on a specific day or during a specific period, MSCI carries forward the previous day's price (or latest available closing price). In the event of a market outage resulting in any component security price to be unavailable, MSCI will generally use the last reported price for such component security for the purpose of performance calculation unless MSCI determines that another price is more appropriate based on the circumstances. Closing prices are converted into U.S. dollars, as applicable, using the closing exchange rates calculated by WM/Reuters at 4:00 P.M. London time.

Index Maintenance

The MSCI Global Investable Market Indices are maintained with the objective of reflecting the evolution of the underlying equity markets and segments on a timely basis, while seeking to achieve index continuity, continuous investability of constituents and replicability of the indices, index stability and low index turnover. In particular, index maintenance involves:

- (i) Semi–Annual Index Reviews (“SAIRs”) in May and November of the Size Segment and Global Value and Growth Indices which include:
 - updating the indices on the basis of a fully refreshed equity universe;
 - taking buffer rules into consideration for migration of securities across size and style segments; and
 - updating FIFs and Number of Shares (“NOS”).
- (ii) Quarterly Index Reviews (“QIRs”) in February and August of the Size Segment Indices aimed at:
 - including significant new eligible securities (such as IPOs that were not eligible for earlier inclusion) in the index;
 - allowing for significant moves of companies within the Size Segment Indices, using wider buffers than in the SAIR; and
 - reflecting the impact of significant market events on FIFs and updating NOS.
- (iii) Ongoing Event–Related Changes: changes of this type are generally implemented in the indices as they occur. Significantly large IPOs are included in the indices after the close of the company's tenth day of trading.

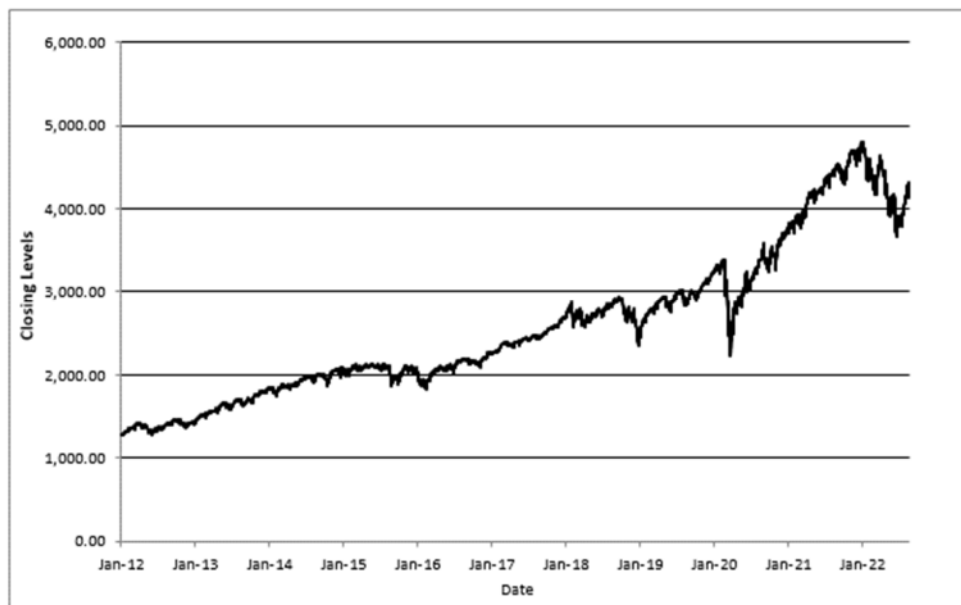
Neither we nor RBC Capital Markets, LLC accepts any responsibility for the calculation, maintenance, or publication of, or for any error, omission, or disruption in, the MXEF, or any successor to the MXEF.

Historical Information

The graph below sets forth the information relating to the historical performance of each Basket Component for the period from January 1, 2012 through August 22, 2022.

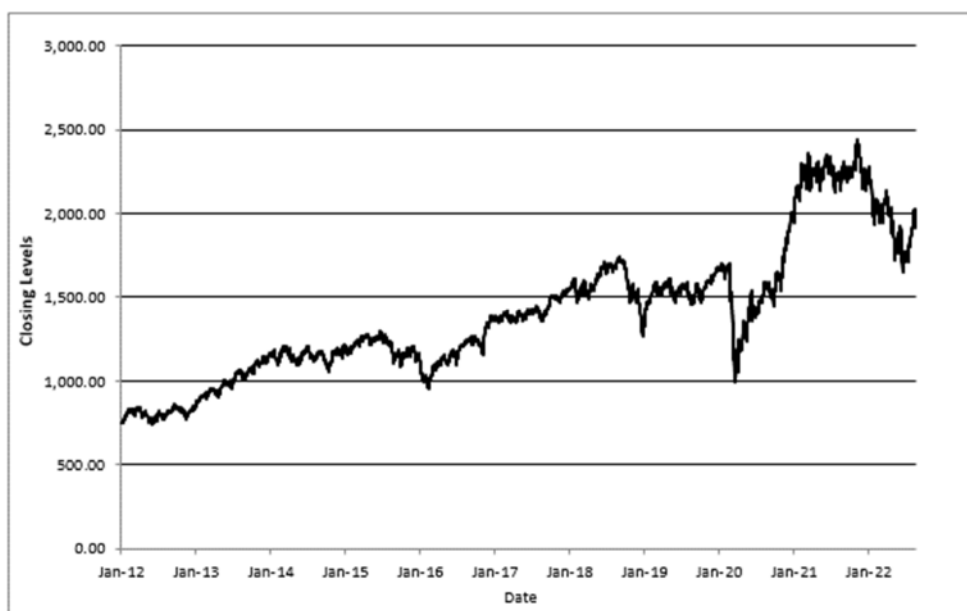
We obtained the information regarding the historical performance of the Basket Components in the graphs below from Bloomberg Financial Markets. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg Financial Markets. The historical performance of should not be taken as an indication of its future performance, and no assurance can be given as to the future values of any Basket Component.

SPX



PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS

RTY



PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS

EEM



PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS

ADDITIONAL TERMS RELATING TO THE INDICES

Unavailability of the Level of an Index

If the applicable index sponsor discontinues publication of an Index, and that index sponsor or another entity publishes a successor or substitute index that the Calculation Agent determines, in its sole discretion, to be comparable to the discontinued index (such successor or substitute index being referred to in this section as a “successor index”), then any subsequent index closing level will be determined by reference to the published level of that successor index at the regular weekday close of trading on the applicable trading day.

Upon any selection by the Calculation Agent of a successor index, the Calculation Agent will provide written notice to the trustee of the selection, and the trustee will furnish written notice thereof, to the extent the trustee is required to under the senior debt indenture, to each noteholder, or in the case of global notes, the depositary, as holder of the global notes.

If a successor index is selected by the Calculation Agent, that successor index will be used as a substitute for that Index for all purposes, including for purposes of determining whether a market disruption event exists with respect to that index.

If any applicable index sponsor discontinues publication of an Index prior to, and that discontinuance is continuing on, any trading day on which the level of that Index must be determined and the Calculation Agent determines, in its sole discretion, that no successor index is available at that time, then the Calculation Agent will determine the level of that Index for the relevant date in accordance with the formula for and method of calculating the index last in effect prior to the discontinuance, without rebalancing or substitution, using the closing level (or, if trading in the relevant underlying securities or components of the index have been materially suspended or materially limited, its good faith estimate of the closing level that would have prevailed but for that suspension or limitation) at the close of the principal trading session of the relevant exchange on that date of each security or component most recently comprising the index. Notwithstanding these alternative arrangements, discontinuance of the publication of an Index may adversely affect the value of the Notes.

If at any time the method of calculating a closing level for an Index or a successor index is changed in a material respect, or if the index is in any other way modified so that the index does not, in the opinion of the Calculation Agent, fairly represent the level of the index had those changes or modifications not been made, then, from and after that time, the Calculation Agent will, at the close of business in New York City on the applicable trading day, make such calculations and adjustments as, in the good faith judgment of the Calculation Agent, may be necessary in order to arrive at a level of an index comparable to that index as if those changes or modifications had not been made. Accordingly, if the method of calculating the index is modified so that the value of that index is a fraction of what it would have been if it had not been modified (e.g., due to a split in the index), then the Calculation Agent will adjust the index in order to arrive at a value of that index as if it had not been modified (e.g., as if such split had not occurred).

Market Disruption Events Relating to Indices

As to each Index, a market disruption event means any event, circumstance or cause which we determine, and the Calculation Agent confirms, has or will have a material adverse effect on our ability to perform our obligations under the Notes or to hedge our position in respect of the Notes, and more specifically includes the following events to the extent that they have such effect with respect to any Index:

- a suspension, absence or limitation of trading in index components constituting 20% or more, by weight, of that index;
- a suspension, absence or limitation of trading in futures or options contracts relating to that index on their respective markets;
- any event that disrupts or impairs, as determined by the Calculation Agent, the ability of market participants to (i) effect transactions in, or obtain market values for, index components constituting 20% or more, by weight, of that index, or (ii) effect transactions in, or obtain market values for, futures or options contracts relating to that index on their respective markets;
- the closure on any day of the primary market for futures or options contracts relating to that index or index components constituting 20% or more, by weight, of that index on a scheduled trading day prior to the scheduled

weekday closing time of that market (without regard to after hours or any other trading outside of the regular trading session hours) unless such earlier closing time is announced by the primary market at least one hour prior to the earlier of (i) the actual closing time for the regular trading session on such primary market on such scheduled trading day for such primary market and (ii) the submission deadline for orders to be entered into the relevant exchange system for execution at the close of trading on such scheduled trading day for such primary market;

- any scheduled trading day on which (i) the primary markets for index components constituting 20% or more, by weight, of that index or (ii) the exchanges or quotation systems, if any, on which futures or options contracts on that index are traded, fails to open for trading during its regular trading session; or
- any other event, if the Calculation Agent determines that the event interferes with our ability or the ability of any of our affiliates to unwind all or a portion of a hedge with respect to the Notes that we or our affiliates have effected or may effect.

Trading Day

As to each Index, a trading day with respect to the Notes means a day on which the principal trading market for that index is open for trading.

SUPPLEMENTAL DISCUSSION OF U.S. FEDERAL INCOME TAX CONSEQUENCES

The following disclosure supplements, and to the extent inconsistent supersedes, the discussion in the product prospectus supplement dated March 3, 2022 under “Supplemental Discussion of U.S. Federal Income Tax Consequences.”

Under Section 871(m) of the Code, a “dividend equivalent” payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference an interest, directly or indirectly, in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the Internal Revenue Service (the “IRS”) has issued guidance that states that the U.S. Treasury Department and the IRS intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2023. Based on our determination that the Notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes. However, it is possible that the Notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Basket Components or the Notes (for example, upon a Basket Component rebalancing), and following such occurrence the Notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Basket Components or the Notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Delivery of the Notes will be made against payment for the Notes on August 25, 2022, which is the third (3rd) business day following the Trade Date (this settlement cycle being referred to as "T+3"). See "Plan of Distribution" in the prospectus dated September 14, 2021. For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution—Conflicts of Interest" in the prospectus dated September 14, 2021.

We will deliver the Notes on a date that is greater than two business days following the Trade Date. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes more than two business days prior to the original issue date will be required to specify alternative settlement arrangements to prevent a failed settlement.

In the initial offering of the Notes, they will be offered to investors at a purchase price equal to par, except with respect to certain accounts as indicated on the cover page of this document. In addition to the underwriting discount set forth on the cover page of this document, we or one of our affiliates will also pay an expected fee to a broker-dealer that is unaffiliated with us for providing certain electronic platform services with respect to this offering.

The value of the Notes shown on your account statement may be based on RBCCM's estimate of the value of the Notes if RBCCM or another of our affiliates were to make a market in the Notes (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Notes in light of then prevailing market conditions, our creditworthiness and transaction costs. For a period of approximately 3 months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM's estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may be a higher amount, reflecting the addition of RBCCM's underwriting discount and our estimated costs and profits from hedging the Notes. This excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value.

We may use this pricing supplement in the initial sale of the Notes. In addition, RBCCM or another of our affiliates may use this pricing supplement in a market-making transaction in the Notes after their initial sale. ***Unless we or our agent informs the purchaser otherwise in the confirmation of sale, this pricing supplement is being used in a market-making transaction.***

STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the Basket Components. As is the case for all of our debt securities, including our structured notes, the economic terms of the Notes reflect our actual or perceived creditworthiness at the time of pricing. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these Notes at a rate that is more favorable to us than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. Using this relatively lower implied borrowing rate rather than the secondary market rate, is a factor that reduced the initial estimated value of the Notes at the time their terms were set. Unlike the estimated value that is set forth on the cover page of this pricing supplement, any value of the Notes determined for purposes of a secondary market transaction may be based on a different funding rate, which may result in a lower value for the Notes than if our initial internal funding rate were used.

In order to satisfy our payment obligations under the Notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the issue date with RBCCM or one of our other subsidiaries. The terms of these hedging arrangements take into account a number of factors, including our creditworthiness, interest rate movements, the volatility of the Basket Components, and the tenor of the Notes. The economic terms of the Notes and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduced the economic terms of the Notes to you. The initial offering price of the Notes also reflects the underwriting discount and our estimated hedging costs. These factors resulted in the initial estimated value for the Notes on the Trade Date being less than their public offering price. See “Selected Risk Considerations—The Initial Estimated Value of the Notes Is Less than the Price to the Public” above.

VALIDITY OF THE NOTES

In the opinion of Norton Rose Fulbright Canada LLP, the issue and sale of the Notes has been duly authorized by all necessary corporate action of the Bank in conformity with the Indenture, and when the Notes have been duly executed, authenticated and issued in accordance with the Indenture and delivered against payment therefor, the Notes will be validly issued and, to the extent validity of the Notes is a matter governed by the laws of the Province of Ontario or Québec, or the laws of Canada applicable therein, will be valid obligations of the Bank, subject to equitable remedies which may only be granted at the discretion of a court of competent authority, subject to applicable bankruptcy, to rights to indemnity and contribution under the Notes or the Indenture which may be limited by applicable law, to insolvency and other laws of general application affecting creditors' rights, to limitations under applicable limitations statutes, and to limitations as to the currency in which judgments in Canada may be rendered, as prescribed by the Currency Act (Canada). This opinion is given as of the date hereof and is limited to the laws of the Provinces of Ontario and Québec and the federal laws of Canada applicable thereto. In addition, this opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated September 14, 2021, which has been filed as Exhibit 5.3 to the Bank's Form 6-K filed with the SEC on September 14, 2021.

In the opinion of Ashurst LLP, when the Notes have been duly completed in accordance with the Indenture and issued and sold as contemplated by the prospectus supplement and the prospectus, the Notes will be valid, binding and enforceable obligations of the Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and subject to general principles of equity, public policy considerations and the discretion of the court before which any suit or proceeding may be brought. This opinion is given as of the date hereof and is limited to the laws of the State of New York. This opinion is subject to customary assumptions about the Trustee's authorization, execution and delivery of the Indenture and the genuineness of signatures and to such counsel's reliance on the Bank and other sources as to certain factual matters, all as stated in the legal opinion dated September 14, 2021, which has been filed as Exhibit 5.4 to the Bank's Form 6-K dated September 14, 2021.