ROYAL BANK OF CANADA
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The information in this preliminary pricing supplement is not complete and may be changed. This preliminary pricing supplement is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.
Subject to Completion. Dated April 3, 2019.
Pricing Supplement SPBELN 311-C to the Prospectus dated September 7, 2018, the Series H Prospectus Supplement dated September 7, 2018, and the Product Prospectus Supplement PB-1 dated September 20, 2018

Royal Bank of Canada
$
Digital S&P 500® Index-Linked Notes, due , 2020

The notes will not bear interest. The amount that you will be paid on your notes on the stated maturity date (expected to be the second scheduled business day after the determination date) is based on the performance of the S&P 500® Index (which we refer to as the "underlier") as measured from the trade date to and including the determination date (expected to be between 13 and 15 months after the trade date). If the final underlier level on the determination date is greater than or equal to the threshold level of 90.00% of the initial underlier level (set on the trade date and may be higher or lower than the actual closing level of the underlier on the trade date), you will receive the threshold settlement amount (expected to be between $1,069.80 and $1,081.90 for each $1,000 principal amount of the notes). However, if the final underlier level is less than the threshold level, the return on your notes will be negative. You could lose your entire investment in the notes.
To determine your payment at maturity, we will calculate the underlier return, which is the percentage increase or decrease in the final underlier level from the initial underlier level. On the stated maturity date, for each $1,000 principal amount of your notes, you will receive an amount in cash equal to:

- if the underlier return is greater than or equal to -10.00% (the final underlier level is greater than or equal to 90.00% of the initial underlier level), the threshold settlement amount; or
- if the underlier return is negative and is below -10.00% (the final underlier level is less than the initial underlier level by more than 10.00%), the sum of (i) $1,000 plus (ii) the product of (a) 100/90.00 (which is approximately 1.1111) times (b) the sum of the underlier return plus 10.00% times (c) $1,000. This amount will be less than $1,000.

The final pricing supplement relating to the notes will set forth our estimate of the initial value of the notes as of the trade date, which we expect to be between $977.50 and $997.50 per $1,000 in principal amount. We expect that this amount will be less than the original issue price. 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.
Your investment in the notes involves certain risks, including, among other things, our credit risk. See the section "Additional Risk Factors Specific to Your Notes" beginning on page PS-7 of this pricing supplement.
The foregoing is only a brief summary of the terms of your notes. You should read the additional disclosure provided in this pricing supplement so that you may better understand the terms and risks of your investment.

Original issue date:	, 2019	Original issue price:	[100.00]% of the principal amount
Underwriting discount:	[0.00]% of the principal amount	Net proceeds to the issuer:	[100.00]% of the principal amount

See "Supplemental Plan of Distribution (Conflicts of Interest)" on page PS-18 of this pricing supplement.
The issue price, underwriting discount and net proceeds listed above relate to the notes we sell initially. We may decide to sell additional notes after the date of this pricing supplement, at issue prices and with underwriting discounts

and net proceeds that differ from the amounts set forth above. The return (whether positive or negative) on your investment in the notes will depend in part on the issue price you pay for such notes.

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of the notes or passed upon the accuracy or adequacy of this pricing supplement, the accompanying product prospectus supplement, the accompanying prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense. The notes will not constitute deposits that are insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. governmental 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.

RBC Capital Markets, LLC

Pricing Supplement dated , 2019.

SUMMARY INFORMATION

We refer to the notes we are offering by this pricing supplement as the "offered notes" or the "notes." Each of the offered notes, including your notes, has the terms described below. Please note that in this pricing supplement, references to "Royal Bank of Canada," "we," "our" and "us" mean only Royal Bank of Canada and all references to "$" or "dollar" are to United States dollars. Also, references to the "accompanying prospectus" mean the accompanying prospectus, dated September 7, 2018, as supplemented by the accompanying prospectus supplement, dated September 7, 2018, of Royal Bank of Canada relating to the Senior Medium-Term Notes, Series H program of Royal Bank of Canada and references to the "accompanying product prospectus supplement PB-1" mean the accompanying product prospectus supplement PB-1, dated September 20, 2018, of Royal Bank of Canada.

This section is meant as a summary and should be read in conjunction with the section entitled "General Terms of the Notes" beginning on page PS-4 of the accompanying product prospectus supplement PB-1. Please note that certain features described in the accompanying product prospectus supplement PB-1 are not applicable to the notes. This pricing supplement supersedes any conflicting provisions of the accompanying product prospectus supplement PB-1.

Key Terms

Issuer: Royal Bank of Canada

Underlier: the S&P 500® Index (Bloomberg symbol, "SPX Index"), as published by S&P Dow Jones Indices LLC ("S&P," or the "underlier sponsor")

Specified currency: U.S. dollars ("$")

Denominations: $1,000 and integral multiples of $1,000 in excess of $1,000. The notes may only be transferred in amounts of $1,000 and increments of $1,000 thereafter

Principal amount: each note will have a principal amount of $1,000; $ in the aggregate for all the offered notes; the aggregate principal amount of the offered notes may be increased if the issuer, at its sole option, decides to sell an additional amount of the offered notes on a date subsequent to the date of this pricing supplement

Purchase at amount other than principal amount: the amount we will pay you at the stated maturity date for your notes will not be adjusted based on the issue price you pay for your notes, so if you acquire notes at a premium (or discount) to principal amount and hold them to the stated maturity date, it could affect your investment in a number of ways. The return on your investment in such notes will be lower (or higher) than it would have been had you purchased the notes at a price equal to the principal amount. Also, the threshold level would not offer the same measure of protection to your investment as would be the case if you had purchased the notes at the principal amount. Additionally, the threshold settlement amount would be triggered at a lower (or higher) percentage return than indicated below, relative to your initial investment. See "If the Original Issue Price for Your Notes Represents a Premium to the Principal Amount, the Return on Your Notes Will Be Lower Than the Return on Notes for Which the Original Issue Price Is Equal to the Principal Amount or Represents a Discount to the Principal Amount" on page PS-11 of this pricing supplement

Cash settlement amount (on the stated maturity date): for each $1,000 principal amount of your notes, we will pay you on the stated maturity date an amount in cash equal to:

- if the final underlier level is greater than or equal to the threshold level, the threshold settlement amount; or
- if the final underlier level is less than the threshold level, the sum of (1) $1,000 plus (2) the product of (i) the buffer rate times (ii) the sum of the underlier return plus the threshold amount times (iii) $1,000. In this case, the cash settlement amount will be less than the principal amount of the notes, and you will lose some or all of the principal amount.

Initial underlier level (to be set on the trade date and may be higher or lower than the actual closing level of the underlier on the trade date):

Final underlier level: the closing level of the underlier on the determination date, except in the limited circumstances described under "General Terms of the Notes — Determination Dates and Averaging Dates" on page PS-5 of the accompanying product prospectus supplement PB-1 and subject to adjustment as provided under "General Terms of the Notes — Unavailability of the Level of the Underlier" on page PS-6 of the accompanying product prospectus supplement PB-1.

Underlier return: the quotient of (1) the final underlier level minus the initial underlier level divided by (2) the initial underlier level, expressed as a percentage

Threshold settlement amount (to be set on the trade date): for each $1,000 principal amount of the notes, expected to be between $1,069.80 and $1,081.90
Threshold level: 90.00% of the initial underlier level (equal to an underlier return of -10.00%)
Threshold amount: 10.00%
Buffer rate: the quotient of the initial underlier level divided by the threshold level, which equals approximately 111.11%
Trade date:
Original issue date (settlement date) (to be set on the trade date): expected to be the fifth scheduled business day following the trade date
Determination date (to be set on the trade date): a specified date that is expected to be between 13 and 15 months after the trade date, subject to adjustment as described under “General Terms of the Notes — Determination Dates and Averaging Dates” on page PS-5 of the accompanying product prospectus supplement PB-1

Stated maturity date (to be set on the trade date): a specified date that is expected to be the second scheduled business day after the determination date, subject to adjustment as described under "General Terms of the Notes — Stated Maturity Date" on page PS-5 of the accompanying product prospectus supplement PB-1

No interest: the offered notes will not bear interest

No listing: the offered notes will not be listed on any securities exchange or interdealer quotation system

No redemption: the notes are not subject to redemption prior to maturity

Closing level: the official closing level of the underlier or any successor underlier published by the underlier sponsor on such trading day for such underlier

Business day: as described under "General Terms of the Notes — Special Calculation Provisions — Business Day" on page PS-11 of the accompanying product prospectus supplement PB-1

Trading day: as described under "General Terms of the Notes — Special Calculation Provisions — Trading Day — Indices" on page PS-11 of the accompanying product prospectus supplement PB-1

Use of proceeds and hedging: as described under "Use of Proceeds and Hedging" on page PS-13 of the accompanying product prospectus supplement PB-1

ERISA: as described under "Employee Retirement Income Security Act" on page PS-20 of the accompanying product prospectus supplement PB-1

Calculation agent: RBC Capital Markets, LLC ("RBCCM")

Dealer: 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 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 discussion in the accompanying prospectus under "Tax Consequences," the discussion in the accompanying prospectus supplement under "Certain Income Tax Consequences," and the discussion (including the opinion of our counsel Morrison & Foerster LLP) in the accompanying product prospectus supplement PB-1 under "Supplemental Discussion of U.S. Federal Income Tax Consequences," and the discussion below under "Supplemental Discussion of U.S. Federal Income Tax Consequences," which apply to the notes.

Canadian tax treatment: for a discussion of certain Canadian federal income tax consequences of investing in the notes, please see the section entitled "Tax Consequences — Canadian Taxation" in the accompanying prospectus

CUSIP no.: 78013X4R6

ISIN no.: US78013X4R65

FDIC: the notes will not constitute deposits that are insured by the Federal Deposit Insurance Corporation, the Canada Deposit Insurance Corporation or any other Canadian or U.S. governmental agency

Indenture: the notes will be issued under our senior debt indenture, as amended and supplemented through September 7, 2018, which is described in the accompanying prospectus. Please see the section "Description of Debt Securities" beginning on page 4 of the prospectus for a description of the senior debt indenture, including the limited circumstances that would constitute an event of default under the notes that we are offering

The trade date, the determination date and the stated maturity date are subject to change. These dates will be set forth in the final pricing supplement that will be made available in connection with sales of the notes.

HYPOTHETICAL EXAMPLES

The following table and chart are provided for purposes of illustration only. They should not be taken as an indication or prediction of future investment results and are intended merely to illustrate the impact that various hypothetical final underlier levels on the determination date could have on the cash settlement amount at maturity, assuming all other variables remain constant.

The examples below are based on a range of final underlier levels that are entirely hypothetical. No one can predict what the underlier level will be on any day during the term of your notes, and no one can predict what the final underlier level will be. The underlier has been highly volatile in the past—meaning that the underlier level has changed considerably in relatively short periods—and its performance cannot be predicted for any future period.

The information in the following examples reflects hypothetical rates of return on the notes assuming that they are purchased on the original issue date with a $1,000 principal amount and are held to maturity. If you sell your notes in any secondary market prior to maturity, your return will depend upon the market value of your notes at the time of sale, which may be affected by a number of factors that are not reflected in the table below, such as interest rates and the volatility of the underlier. In addition, assuming no changes in market conditions or our creditworthiness and any other relevant factors, the value of your notes on the trade date (as determined by reference to pricing models used by RBCCM and taking into account our credit spreads) will be, and the price you may receive for your notes may be, significantly less than the principal amount. For more information on the value of your notes in the secondary market, see "Additional Risk Factors Specific to Your Notes — The Price, if Any, at Which You May Be Able to Sell Your Notes Prior to Maturity May Be Less than the Original Issue Price and Our Initial Estimated Value" below. The information in the table also reflects the key terms and assumptions in the box below.

Key Terms and Assumptions	
Principal amount	$1,000
Hypothetical threshold settlement amount	$1,069.80
Threshold level	90.00% of the initial underlier level
Buffer rate	, which equals approximately 111.11%
Threshold amount	10.00%
Neither a market disruption event nor a non-trading day occurs on the originally scheduled determination date	
No change affecting the method by which the underlier sponsor calculates the underlier	
Notes purchased on original issue date at a price equal to the principal amount and held to the stated maturity date	

Moreover, we have not yet set the initial underlier level that will serve as the baseline for determining the underlier return and the amount that we will pay on your notes, if any, at maturity. We will not do so until the trade date. As a result, the actual initial underlier level may differ substantially from the underlier level prior to the trade date and may be higher or lower than the actual closing level of the underlier on the trade date.

For these reasons, the actual performance of the underlier over the term of your notes, as well as the amount payable at maturity, if any, may bear little relation to the hypothetical examples shown below or to the historical underlier levels shown elsewhere in this pricing supplement. For information about the historical levels of the underlier during recent periods, see "The Underlier—Historical Performance of the Underlier" below. Before investing in the notes, you should consult publicly available information to determine the levels of the underlier between the date of this pricing supplement and the date of your purchase of the notes.

Also, the hypothetical examples shown below do not take into account the effects of applicable taxes. Because of the U.S. tax treatment applicable to your notes, tax liabilities could affect the after-tax rate of return on your notes to a comparatively greater extent than the after-tax return on the stocks included in the underlier (the "underlier stocks").

The levels in the left column of the table below represent hypothetical final underlier levels and are expressed as percentages of the initial underlier level. The amounts in the right column represent the hypothetical cash settlement amounts, based on the corresponding hypothetical final underlier level (expressed as a percentage of the initial underlier level), and are expressed as percentages of the principal amount of a note (rounded to the nearest

one-thousandth of a percent). Thus, a hypothetical cash settlement amount of 100.000% means that the value of the cash payment that we would deliver for each $1,000 principal amount of the notes at maturity would equal the principal amount of a note, based on the corresponding hypothetical final underlier level (expressed as a percentage of the initial underlier level) and the assumptions noted above.

Hypothetical Final Underlier Level (as a Percentage of the Initial Underlier Level)	Hypothetical Cash Settlement Amount (as a Percentage of the Principal Amount)
150.000%	106.980%
140.000%	106.980%
130.000%	106.980%
120.000%	106.980%
110.000%	106.980%
107.000%	106.980%
106.980%	106.980%
105.000%	106.980%
100.000%	106.980%
95.000%	106.980%
90.000%	106.980%
80.000%	88.889%
75.000%	83.333%
50.000%	55.556%
25.000%	27.778%
0.000%	0.000%

If, for example, the final underlier level were determined to be 25.000% of the initial underlier level, the cash settlement amount that we would deliver on your notes at maturity would be approximately 27.778% of the principal amount of your notes, as shown in the hypothetical cash settlement amount column of the table above. As a result, if you purchased your notes at the principal amount on the settlement date and held them to maturity, you would lose approximately 72.222% of your investment.

If the final underlier level were determined to be 150.000% of the initial underlier level, the cash settlement amount that we would deliver on your notes at maturity would be capped at the threshold settlement amount (expressed as a percentage of the principal amount), or 106.980% of the principal amount of your notes, as shown in the hypothetical cash settlement amount column of the table above. As a result, if you purchased your notes at the principal amount on the settlement date and held them to maturity, you would not benefit from any final underlier level greater than 90.00% of the initial underlier level.

The following chart also illustrates the hypothetical cash settlement amounts (expressed as a percentage of the principal amount of your notes) that we would pay on your notes on the stated maturity date, if the final underlier level (expressed as a percentage of the initial underlier level) were any of the hypothetical levels shown on the horizontal axis. The chart shows that any hypothetical final underlier level (expressed as a percentage of the initial underlier level) of less than the threshold level would result in a hypothetical cash settlement amount of less than 100.00% of the principal amount of your notes (the section below the 100.00% marker on the vertical axis) and, accordingly, in a loss of principal to the holder of the notes. On the other hand, any hypothetical final underlier level that is greater than or equal to the threshold level (the section right of the 90.00% marker on the horizontal axis) would result in a hypothetical cash settlement amount that is equal to the threshold settlement amount.

n The Note Performance n The Underlier Performance

No one can predict what the final underlier level will be. The actual amount that a holder of the notes will receive at maturity and the actual return on your investment in the notes, if any, will depend on the initial underlier level, the stated maturity date, and the threshold settlement amount that will be set on the trade date and the actual final underlier level determined by the calculation agent as described below. In addition, the actual return on your notes will further depend on the original issue price. Moreover, the assumptions on which the hypothetical table and chart are based may turn out to be inaccurate. Consequently, the return on your investment in the notes, if any, and the actual cash settlement amount to be paid in respect of the notes at maturity may be very different from the information reflected in the table and chart above.

ADDITIONAL RISK FACTORS SPECIFIC TO YOUR NOTES

An investment in your notes is subject to the risks described below, as well as the risks described under "Risk Factors" beginning on page S-1 of the accompanying prospectus supplement and page 1 of the accompanying prospectus. You should carefully review these risks as well as the terms of the notes described herein and in the accompanying prospectus, dated September 7, 2018, as supplemented by the accompanying prospectus supplement, dated September 7, 2018, and the accompanying product prospectus supplement PB-1, dated September 20, 2018, of Royal Bank of Canada. Your notes are a riskier investment than ordinary debt securities. Also, your notes are not equivalent to investing directly in the underlier stocks, i.e., the stocks included in the underlier. You should carefully consider whether the offered notes are suited to your particular circumstances.

You May Lose Your Entire Investment in the Notes

The principal amount of your investment is not protected and you may lose a significant amount, or even all of your investment in the notes. The cash settlement amount, if any, will depend on the performance of the underlier and the change in the level of the underlier from the trade date to the determination date, and you may receive significantly less than the principal amount of the notes. Subject to our credit risk, you will receive at least the principal amount of the notes at maturity only if the final underlier level is greater than or equal to the threshold level. If the final underlier level is less than the threshold level, then you will lose, for each $1,000 in principal amount of the notes, an amount equal to the product of (i) the buffer rate times (ii) the sum of underlier return plus the threshold amount times (iii) $1,000. You could lose some or all of the principal amount. Thus, depending on the final underlier level, you could lose a substantial portion, and perhaps all, of your investment in the notes, which would include any premium to the principal amount you may have paid when you purchased the notes.

In addition, if the notes are not held until maturity, assuming no changes in market conditions or to our creditworthiness and other relevant factors, the price you may receive for the notes may be significantly less than the price that you paid for them.

Our Initial Estimated Value of the Notes Will Be Less than the Original Issue Price

Our initial estimated value of the notes that will be set forth in the final pricing supplement for the notes, will be less than the original issue price of the notes. This amount does not represent a minimum price at which we, RBCCM or any of our other affiliates would be willing to purchase the notes in any secondary market (if any exists) at any time. This is due to, among other things, the fact that the original issue price of the notes reflects the borrowing rate we pay to issue securities of this kind (an internal funding rate that is lower than the rate at which we borrow funds by issuing conventional fixed rate debt), and the inclusion in the original issue price of the costs relating to our hedging of the notes.

The Price, if Any, at Which You May Be Able to Sell Your Notes Prior to Maturity May Be Less than the Original Issue Price and Our Initial Estimated Value

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 the original issue price and our initial estimated value. This is because any such sale price would not be expected to include our estimated profit and the costs relating to our hedging of the notes. In addition, any price at which you may sell the notes is likely to reflect customary bid-ask spreads for similar trades, and the cost of unwinding any related hedge transactions. In addition, the value of the notes determined for any secondary market price is expected to be based in part on the yield that is reflected in the interest rate on our conventional debt securities of similar maturity that are traded in the secondary market, rather than the internal funding rate that we used to price the notes and determine the initial estimated value. As a result, the secondary market price of the notes will be less than if the internal funding rate was used. These factors, together with various credit, market and economic factors over the term of the notes, and, potentially, changes in the level of the underlier, 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.

As set forth below in the section "Supplemental Plan of Distribution (Conflicts of Interest)," for a limited period of time after the trade date, your broker may repurchase the notes at a price that is greater than the estimated value of the notes at that time. However, assuming no changes in any other relevant factors, the price you may receive if you sell your notes is expected to decline gradually during that period.

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 Is an Estimate Only, Calculated as of the Time the Terms of the Notes Are Set

Our 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 internal funding rate (which represents a discount from our credit spreads), expectations as to dividends on the underlier stocks, 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 our initial estimated value of your notes.

Your Notes Will Not Bear Interest

You will not receive any interest payments on the notes. Even if the amount payable on the notes at maturity exceeds the principal amount of the notes, the overall return you earn on the notes may be less than you would otherwise have earned by investing in a non-indexed debt security of comparable maturity that bears interest at a prevailing market rate. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money.

The Return on the Notes Is Limited by the Return Represented by the Threshold Settlement Amount

You will not participate in any appreciation in the level of the underlier. Instead, you will receive a fixed threshold settlement amount if the final underlier level is greater than or equal to the threshold level. You will not receive a return on the notes greater than the return represented by the threshold settlement amount. Accordingly, the amount payable for each of your notes may be significantly less than it would have been had you invested directly in the underlier stocks.

Payment of the Amount Payable on Your Notes Is Subject to Our Credit Risk, and Market Perceptions About Our Creditworthiness May Adversely Affect the Market Value of Your Notes

The notes are our unsecured debt obligations. Investors are subject to our credit risk, and market perceptions about our creditworthiness may adversely affect the market value of the notes. Any decrease in the market's view on or confidence in our creditworthiness is likely to adversely affect the market value of the notes.

The Amount Payable on Your Notes Is Not Linked to the Level of the Underlier at Any Time Other than the Determination Date

The amount payable on your notes will be based on the final underlier level. Therefore, for example, if the closing level of the underlier decreased precipitously on the determination date, the amount payable at maturity may be significantly less than it would otherwise have been had the amount payable been linked to the closing level of the underlier prior to that decrease. Although the actual level of the underlier at maturity or at other times during the term of the notes may be higher than the final underlier level, you will not benefit from the closing level of the underlier at any time other than the determination date.

The Notes May Not Have an Active Trading Market

The notes will not be listed on any securities exchange. The dealer intends to offer to purchase the notes in the secondary market, but is not required to do so. The dealer or any of its affiliates may stop any market-making activities at any time. Even if there is a secondary market, it may not provide enough liquidity to allow you to easily trade or sell the notes. Because other dealers are not likely to make a secondary market for the notes, the price at which you may be able to trade the notes is likely to depend on the price, if any, at which the dealer is willing to buy the notes. 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.

If you sell your notes before maturity, you may have to do so at a substantial discount from the price that you paid for them, and as a result, you may suffer substantial losses.

The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors

The following factors, among others, many of which are beyond our control, may influence the market value of your notes:

- the level of the underlier;
- the volatility—i.e., the frequency and magnitude of changes—of the level of the underlier;
- the dividend rates of the underlier stocks;
- economic, financial, regulatory, political, military and other events that affect stock markets generally and the underlier stocks;
- interest and yield rates in the market;
- the time remaining until the notes mature; and
- our creditworthiness, whether actual or perceived, and including actual or anticipated upgrades or downgrades in our credit ratings or changes in other credit measures.

These factors may influence the market value of your notes if you sell your notes before maturity, including the price you may receive for your notes in any market making transaction. If you sell your notes prior to maturity, you may receive less than the principal amount of your notes.

If the Level or Price of the Underlier or the Underlier Stocks Changes, the Market Value of the Notes May Not Change in the Same Manner

The notes may trade quite differently from the performance of the underlier or the underlier stocks. Changes in the level or price, as applicable, of the underlier or the underlier stocks may not result in a comparable change in the market value of the notes. Some of the reasons for this disparity are discussed under "— The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors" above.

The Return on the Notes Will Not Reflect Any Dividends Paid on the Underlier Stocks

The underlier sponsor calculates the levels of the underlier by reference to the prices of the underlier stocks without taking account of the value of dividends paid on those underlier stocks. Therefore, the return on the notes will not reflect the return you would realize if you actually owned the underlier stocks and received the dividends paid on those underlier stocks.

You Have No Shareholder Rights or Rights to Receive Any Underlier Stock

Investing in your notes will not make you a holder of any of the underlier stocks. Neither you nor any other holder or owner of your notes will have any voting rights, any right to receive dividends or other distributions, any rights to make a claim against the underlier stock issuers or any other rights with respect to the underlier stocks. Your notes will be paid in cash to the extent any amount is payable at maturity, and you will have no right to receive delivery of any of the underlier stocks.

We Will Not Hold Any of the Underlier Stocks for Your Benefit, if We Hold Them at All

The indenture and the terms governing your notes do not contain any restriction on our ability or the ability of any of our affiliates to sell, pledge or otherwise convey all or any portion of the underlier stocks that we or they may acquire. Neither we nor our affiliates will pledge or otherwise hold any assets for your benefit, including any of these securities. Consequently, in the event of our bankruptcy, insolvency or liquidation, any of those securities that we own will be subject to the claims of our creditors generally and will not be available for your benefit specifically.

Our Hedging Activities and/or Those of Our Distributors May Negatively Impact Investors in the Notes and Cause Our Interests and Those of Our Clients and Counterparties to Be Contrary to Those of Investors in the Notes

The dealer or one or more of our other affiliates and/or distributors expects to hedge its obligations under the hedging transaction that it may enter into with us by purchasing futures and/or other instruments linked to the underlier or the underlier stocks. The dealer or one or more of our other affiliates and/or distributors also expects to adjust the hedge by, among other things, purchasing or selling any of the foregoing, and perhaps other instruments linked to the underlier or one or more of the underlier stocks, at any time and from time to time, and to unwind the hedge by selling any of the foregoing on or before the determination date.

We, the dealer, or one or more of our other affiliates and/or distributors may also enter into, adjust and unwind hedging transactions relating to other basket- or index-linked notes whose returns are linked to changes in the level or price of the underlier or the underlier stocks. Any of these hedging activities may adversely affect the level of the underlier —directly or indirectly by affecting the price of the underlier stocks—and therefore the market value of the notes and the amount you will receive, if any, on the notes. In addition, you should expect that these transactions will cause us, the dealer or our other affiliates and/or distributors, or our clients or counterparties, to have economic interests and incentives that do not align with, and that may be directly contrary to, those of an investor in the notes. We, the dealer and our other affiliates and/or distributors will have no obligation to take, refrain from taking or cease taking any action with respect to these transactions based on the potential effect on an investor in the notes, and may receive substantial returns with respect to these hedging activities while the value of the notes may decline. Additionally, if the distributor from which you purchase notes is to conduct hedging activities for us in connection with the notes, that distributor may profit in connection with such hedging activities and such profit, if any, will be in addition to the compensation that the distributor receives for the sale of the notes to you. You should be aware that the potential to earn fees in connection with hedging activities may create a further incentive for the distributor to sell the notes to you in addition to the compensation they would receive for the sale of the notes.

Market Activities by Us and by the Dealer for Our Own Account or for Our Clients Could Negatively Impact Investors in the Notes

We, the dealer and our other affiliates provide a wide range of financial services to a substantial and diversified client base. As such, we each may act as an investor, investment banker, research provider, investment manager, investment advisor, market maker, trader, prime broker or lender. In those and other capacities, we, the dealer and/or our other affiliates purchase, sell or hold a broad array of investments, actively trade securities (including the notes or other securities that we have issued), the underlier stocks, derivatives, loans, credit default swaps, indices, baskets and other financial instruments and products for our own accounts or for the accounts of our customers, and we will have other direct or indirect interests, in those securities and in other markets that may be not be consistent with your interests and may adversely affect the level of the underlier and/or the value of the notes. Any of these financial market activities may, individually or in the aggregate, have an adverse effect on the level of the underlier and the market value of your notes, and you should expect that our interests and those of the dealer and/or our other affiliates, or our clients or counterparties, will at times be adverse to those of investors in the notes.

In addition to entering into these transactions itself, we, the dealer and our other affiliates may structure these transactions for our clients or counterparties, or otherwise advise or assist clients or counterparties in entering into these transactions. These activities may be undertaken to achieve a variety of objectives, including: permitting other

purchasers of the notes or other securities to hedge their investment in whole or in part; facilitating transactions for other clients or counterparties that may have business objectives or investment strategies that are inconsistent with or contrary to those of investors in the notes; hedging the exposure of us, the dealer or our other affiliates in connection with the notes, through their market-making activities, as a swap counterparty or otherwise; enabling us, the dealer or our other affiliates to comply with internal risk limits or otherwise manage firmwide, business unit or product risk; and/or enabling us, the dealer or our other affiliates to take directional views as to relevant markets on behalf of itself or our clients or counterparties that are inconsistent with or contrary to the views and objectives of investors in the notes.

We, the dealer and our other affiliates regularly offer a wide array of securities, financial instruments and other products into the marketplace, including existing or new products that are similar to the notes or other securities that we may issue, the underlier stocks or other securities or instruments similar to or linked to the foregoing. Investors in the notes should expect that we, the dealer and our other affiliates will offer securities, financial instruments, and other products that may compete with the notes for liquidity or otherwise.

We, the Dealer and Our Other Affiliates Regularly Provide Services to, or Otherwise Have Business Relationships with, a Broad Client Base, Which Has Included and May Include Us and the Issuers of the Underlier Stocks

We, the dealer and our other affiliates regularly provide financial advisory, investment advisory and transactional services to a substantial and diversified client base. You should assume that we or they will, at present or in the future, provide such services or otherwise engage in transactions with, among others, us and the issuers of the underlier stocks, or transact in securities or instruments or with parties that are directly or indirectly related to these entities. These services could include making loans to or equity investments in those companies, providing financial advisory or other investment banking services, or issuing research reports. You should expect that we, the dealer and our other affiliates, in providing these services, engaging in such transactions, or acting for our own accounts, may take actions that have direct or indirect effects on the notes or other securities that we may issue, the underlier stocks or other securities or instruments similar to or linked to the foregoing, and that such actions could be adverse to the interests of investors in the notes. In addition, in connection with these activities, certain personnel within us, the dealer or our other affiliates may have access to confidential material non-public information about these parties that would not be disclosed to investors of the notes.

Past Underlier Performance Is No Guide to Future Performance

The actual performance of the underlier over the term of the notes may bear little relation to the historical levels of the underlier. Likewise, the amount payable at maturity may bear little relationship to the hypothetical return table or chart set forth elsewhere in this pricing supplement. We cannot predict the future performance of the underlier. Trading activities undertaken by market participants, including certain investors in the notes or their affiliates, including in short positions and derivative positions, may adversely affect the level of the underlier.

As the Calculation Agent, RBCCM Will Have the Authority to Make Determinations that Could Affect the Amount You Receive, if Any, at Maturity

As the calculation agent for the notes, RBCCM will have discretion in making various determinations that affect the notes, including determining the final underlier level, which will be used to determine the cash settlement amount at maturity, and determining whether to postpone the determination date because of a market disruption event or because that day is not a trading day. The calculation agent also has discretion in making certain adjustments relating to a discontinuation or modification of the underlier, as described under “General Terms of the Notes—Unavailability of the Level of the Underlier” on page PS-6 of the accompanying product prospectus supplement PB-1. The exercise of this discretion by RBCCM, which is our wholly owned subsidiary, could adversely affect the value of the notes and may create a conflict of interest between you and RBCCM. For a description of market disruption events as well as the consequences of the market disruption events, see the section entitled “General Terms of the Notes—Market Disruption Events” beginning on page PS-7 of the accompanying product prospectus supplement PB-1. We may change the calculation agent at any time without notice, and RBCCM may resign as calculation agent at any time.

The Policies of the Underlier Sponsor and Changes that Affect the Underlier or the Underlier Stocks Could Affect the Amount Payable on the Notes, if Any, and Their Market Value

The policies of the underlier sponsor concerning the calculation of the levels of the underlier, additions, deletions or substitutions of the underlier stocks and the manner in which changes affecting such underlier stocks or their issuers, such as stock dividends, reorganizations or mergers, are reflected in the level of the underlier, could affect the levels of the underlier and, therefore, the amount payable on the notes, if any, at maturity and the market value of the notes prior to maturity. The amount payable on the notes, if any, and their market value could also be affected if the underlier sponsor changes these policies, for example, by changing the manner in which it calculates the level of the underlier, or if the underlier sponsor discontinues or suspends calculation or publication of the level of the underlier, in which case it may become difficult to determine the market value of the notes. If events such as these occur, the calculation agent will determine the amount payable, if any, at maturity as described herein.

The Calculation Agent Can Postpone the Determination of the Final Underlier Level if a Market Disruption Event Occurs or Is Continuing

The determination of the final underlier level may be postponed if the calculation agent determines that a market disruption event has occurred or is continuing on the determination date with respect to the underlier. If such a postponement occurs, the calculation agent will use the closing level of the underlier on the first subsequent trading day on which no market disruption event occurs or is continuing, subject to the limitations set forth in the accompanying product prospectus supplement PB-1. If a market disruption event occurs or is continuing on a

determination date, the stated maturity date for the notes could also be postponed.

If the determination of the level of the underlier for any determination date is postponed to the last possible day, but a market disruption event occurs or is continuing on that day, that day will nevertheless be the date on which the level of the underlier will be determined by the calculation agent. In such an event, the calculation agent will make a good faith estimate in its sole discretion of the level that would have prevailed in the absence of the market disruption event. See "General Terms of the Notes—Market Disruption Events" in the accompanying product prospectus supplement PB-1.

There Is No Affiliation Between Any Underlier Stock Issuers or the Underlier Sponsor and Us or the Dealer, and Neither We Nor the Dealer Is Responsible for Any Disclosure by Any of the Underlier Stock Issuers or the Underlier Sponsor

We are not affiliated with the issuers of the underlier stocks or with the underlier sponsor. As discussed herein, however, we, the dealer, and our other affiliates may currently, or from time to time in the future, engage in business with the issuers of the underlier stocks. Nevertheless, none of us, the dealer, or our respective affiliates assumes any responsibility for the accuracy or the completeness of any information about the underlier or any of the underlier stocks. You, as an investor in

the notes, should make your own investigation into the underlier and the underlier stocks. See the section below entitled "The Underlier" for additional information about the underlier.

Neither the underlier sponsor nor any issuers of the underlier stocks are involved in this offering of the notes in any way, and none of them have any obligation of any sort with respect to the notes. Thus, neither the underlier sponsor nor any of the issuers of the underlier stocks have any obligation to take your interests into consideration for any reason, including in taking any corporate actions that might affect the value of the notes.

You Must Rely on Your Own Evaluation of the Merits of an Investment Linked to the Underlier

In the ordinary course of business, we, the dealer, our other affiliates and any additional dealers, including in acting as a research provider, investment advisor, market maker, principal investor or distributor, may express research or investment views on expected movements in the underlier or the underlier stocks, and may do so in the future. These views or reports may be communicated to our clients, clients of our affiliates and clients of any additional dealers, and may be inconsistent with, or adverse to, the objectives of investors in the notes. However, these views are subject to change from time to time. Moreover, other professionals who transact business in markets relating to the underlier or the underlier stocks may at any time have significantly different views from those of these entities. For these reasons, you are encouraged to derive information concerning the underlier or the underlier stocks from multiple sources, and you should not rely solely on views expressed by us, the dealer, our other affiliates, or any additional dealers.

We May Sell an Additional Aggregate Amount of the Notes at a Different Original Issue Price

At our sole option, we may decide to sell an additional aggregate amount of the notes subsequent to the trade date. The price of the notes in the subsequent sale may differ substantially (higher or lower) from the principal amount.

If the Original Issue Price for Your Notes Represents a Premium to the Principal Amount, the Return on Your Notes Will Be Lower Than the Return on Notes for Which the Original Issue Price Is Equal to the Principal Amount or Represents a Discount to the Principal Amount

The cash settlement amount will not be adjusted based on the original issue price. If the original issue price for your notes differs from the principal amount, the return on your notes held to maturity will differ from, and may be substantially less than, the return on notes for which the original issue price is equal to the principal amount. If the original issue price for your notes represents a premium to the principal amount and you hold them to maturity, the return on your notes will be lower than the return on notes for which the original issue price is equal to the principal amount or represents a discount to the principal amount.

In addition, the impact of the threshold level and the threshold settlement amount on the return on your investment will depend upon the price you pay for your notes relative to the principal amount. For example, if you purchase your notes at a premium to the principal amount, the threshold settlement amount will only permit a lower percentage increase in your investment in the notes than would have been the case for notes purchased at the principal amount or a discount to the principal amount. Similarly, the threshold level, while still providing some protection for the return on the notes, will allow a greater percentage decrease in your investment in the notes than would have been the case for notes purchased at the principal amount or a discount to the principal amount.

Significant Aspects of the Income Tax Treatment of an Investment in the Notes Are Uncertain

The tax treatment of an investment in the notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or the Canada Revenue Agency regarding the tax treatment of an investment in the notes, and the Internal Revenue Service, the Canada Revenue Agency or a court may not agree with the tax treatment described in this pricing supplement.

The Internal Revenue Service has issued a notice indicating that it and the U.S. Treasury Department are actively considering whether, among other issues, a holder should be required to accrue interest over the term of an instrument such as the notes even though that holder will not receive any payments with respect to the notes until maturity or earlier sale or exchange and whether all or part of the gain a holder may recognize upon sale, exchange or maturity of an instrument such as the notes could be treated as ordinary income. The outcome of this process is uncertain and could apply on a retroactive basis.

Please read carefully the section entitled "Supplemental Discussion of U.S. Federal Income Tax Consequences" in the accompanying product prospectus supplement PB-1, the section entitled "Certain Income Tax Consequences" in the accompanying prospectus supplement and the section entitled "Tax Consequences" in the accompanying prospectus. You should consult your tax advisor about your own tax situation.

Non-U.S. Investors May Be Subject to Certain Additional Risks

The notes will be denominated in U.S. dollars. If you are a non-U.S. investor who purchases the notes with a currency other than U.S. dollars, changes in rates of exchange may have an adverse effect on the value, price or returns of your investment.

This pricing supplement contains a general description of certain U.S. tax considerations relating to the notes. If you are a non-U.S. investor, you should consult your tax advisors as to the consequences, under the tax laws of the country where you are resident for tax purposes, of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

For a discussion of certain Canadian federal income tax consequences of investing in the notes, please see the section entitled “Tax Consequences — Canadian Taxation” in the accompanying prospectus. If you are not a Non-resident Holder (as that term is defined in “Tax Consequences — Canadian Taxation” in the accompanying prospectus) or if you acquire the notes in the secondary market, you should consult your tax advisor as to the consequences of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

Certain Considerations for Insurance Companies and Employee Benefit Plans

Any insurance company or fiduciary of a pension plan or other employee benefit plan that is subject to the prohibited transaction rules of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), or the Internal Revenue Code of 1986, as amended (the "Internal Revenue Code"), including an IRA or a Keogh plan (or a governmental plan to which similar prohibitions apply), and that is considering purchasing the notes with the assets of the insurance company or the assets of such a plan, should consult with its counsel regarding whether the purchase or holding of the notes could become a "prohibited transaction" under ERISA, the Internal Revenue Code or any substantially similar prohibition in light of the representations a purchaser or holder in any of the above categories is deemed to make by purchasing and holding the notes. This is discussed in more detail under "Employee Retirement Income Security Act" in the accompanying product prospectus supplement PB-1.

THE UNDERLIER

General

The underlier is the S&P 500® Index (Bloomberg ticker "SPX"). All information contained in this pricing supplement regarding the underlier including, without limitation, its make-up, method of calculation and changes in its components and its historical closing values, is derived from publicly available information prepared by the underlier sponsor. Such information reflects the policies of, and is subject to change by, the underlier sponsor. The underlier sponsor owns the copyright and all rights to the underlier. The underlier sponsor is under no obligation to continue to publish, and may discontinue publication of, the underlier. The consequences of the underlier sponsor discontinuing or modifying the underlier are described in the section entitled "Description of the Notes—Unavailability of the Level of the Underlier" on page PS-6 of the accompanying product prospectus supplement PB-1.

The underlier is calculated and maintained by the underlier sponsor. Neither we nor RBCCM has participated in the preparation of such documents or made any due diligence inquiry with respect to the underlier or underlier sponsor in connection with the offering of the notes. In connection with the offering of the notes, neither we nor RBCCM makes any representation that such publicly available information regarding the underlier or underlier sponsor is accurate or complete. Furthermore, we cannot give any assurance that all events occurring prior to the offering of the notes (including events that would affect the accuracy or completeness of the publicly available information described in this pricing supplement) that would affect the level of the underlier or have been publicly disclosed. Subsequent disclosure of any such events could affect the value received at maturity and therefore the market value of the notes.

We, the dealer or our respective affiliates may presently or from time to time engage in business with one or more of the issuers of the underlier stocks of the underlier without regard to your interests, including extending loans to or entering into loans with, or making equity investments in, one or more of such issuers or providing advisory services to one or more of such issuers, such as merger and acquisition advisory services. In the course of business, we, the dealer or our respective affiliates may acquire non-public information about one or more of such issuers and none of us, the dealer or our respective affiliates undertake to disclose any such information to you. In addition, we, the dealer or our respective affiliates from time to time have published and in the future may publish research reports with respect to such issuers. These research reports may or may not recommend that investors buy or hold the securities of such issuers. As a prospective purchaser of the notes, you should undertake an independent investigation of the underlier or of the issuers of the underlier stocks to the extent required, in your judgment, to allow you to make an informed decision with respect to an investment in the notes.

We are not incorporating by reference the website of the underlier sponsor or any material it includes into this pricing supplement. In this pricing supplement, unless the context requires otherwise, references to the underlier will include any successor underlier to the underlier and references to the underlier sponsor will include any successor thereto.

Description of the Underlier

The S&P 500® Index

The underlier includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The underlier is calculated, maintained and published by S&P Dow Jones Indices LLC. Additional information is available on the following website: http://www.standardandpoors.com. Information on that website is not included or incorporated by reference in this pricing supplement.

The underlier is intended to provide an indication of the pattern of common stock price movement. The calculation of the level of the underlier is based on the relative value of the aggregate market value (as defined below) 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. The "market value" of any underlier stock is the product of the market price per share times the number of the then outstanding shares of such underlier stock. The 500 companies are not the 500 largest companies listed on the New York Stock Exchange and not all 500 companies are listed on such exchange.

As of March 29, 2019, the 500 companies included in the underlier were divided into eleven Global Industry Classification Sectors. The Global Industry Classification Sectors include (with the approximate percentage currently included in such sectors indicated in parentheses): Information Technology (21.2%), Health Care (14.6%), Financials (12.7%), Communication Services (10.1%), Consumer Discretionary (10.1%), Industrials (9.5%), Consumer Staples (7.3%), Energy (5.4%), Utilities (3.3%), Real Estate (3.1%) and Materials (2.6%). (Sector designations are determined by the underlier sponsor using criteria it has selected or developed. Index sponsors may use very different standards

for determining sector designations. In addition, many companies operate in a number of sectors, but are listed in only one sector and the basis on which that sector is selected may also differ. As a result, sector comparisons between indices with different index sponsors may reflect differences in methodology as well as actual differences in the sector composition of the indices.) As of the close of business on September 21, 2018, S&P Dow Jones Indices LLC and MSCI, Inc. updated the Global Industry Classification Sector structure. Among other things, the update broadened the Telecommunications Services sector and renamed it the Communication Services sector. The renamed sector includes the previously existing Telecommunication Services Industry group, as well as the Media Industry group, which was moved from the Consumer Discretionary sector and renamed the Media & Entertainment Industry group. The Media & Entertainment Industry group contains three industries: Media, Entertainment and Interactive Media & Services. The Media industry continues to consist of the Advertising, Broadcasting, Cable & Satellite and Publishing sub-industries. The Entertainment industry contains the Movies & Entertainment sub-industry (which includes online entertainment streaming companies in addition to companies previously classified in such industry prior to September 21, 2018) and the Interactive Home Entertainment sub-industry (which includes companies previously classified in the Home Entertainment Software sub-industry prior to September 21, 2018 (when the Home Entertainment Software sub-industry was a sub-industry in the Information Technology sector)), as well as producers of interactive gaming products, including mobile gaming applications). The Interactive Media & Services industry and sub-industry includes companies engaged in content and information creation or distribution through

proprietary platforms, where revenues are derived primarily through pay-per-click advertisements, and includes search engines, social media and networking platforms, online classifieds and online review companies. The Global Industry Classification Sector structure changes were effective for the S&P 500® Index as of the open of business on September 24, 2018 to coincide with the September 2018 quarterly rebalancing.

As of July 31, 2017, companies with multiple share class lines are no longer eligible for inclusion in the underlier. Constituents of the underlier prior to July 2017 with multiple share class lines will be grandfathered in and continue to be included in the underlier. If an S&P 500® Index constituent reorganizes into a multiple share class line structure, that company will be reviewed for continued inclusion in the S&P 500® Index at the discretion of the S&P Index Committee. In addition, a company must have a primary listing of its common stock on the NYSE, NYSE Arca, NYSE American (formerly NYSE MKT), Nasdaq Global Select Market, Nasdaq Select Market, Nasdaq Capital Market, IEX, Bats BZX, Bats BYX, Bats EDGA, or Bats EDGX.

Calculation of the S&P 500® Index

The underlier is calculated using a base-weighted aggregate methodology: the level of the underlier reflects the total market value of all 500 underlier stocks relative to the underlier's base period of 1941-43, which we refer to as the base period.

An indexed number is used to represent the results of this calculation in order to make the value easier to work with and track over time.

The actual total market value of the underlier stocks during the base period has been set equal to an indexed value of 10. This is often indicated by the notation 1941-43=10. In practice, the daily calculation of the underlier is computed by dividing the total market value of the underlier stocks by a number called the "S&P 500 index divisor." By itself, the S&P 500 index divisor is an arbitrary number. However, in the context of the calculation of the underlier, it is the only link to the original base period level of the underlier. The S&P 500 index divisor keeps the underlier comparable over time and is the manipulation point for all adjustments to the underlier, which we refer to as "S&P 500 index maintenance."

S&P 500 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 restructurings or spin-offs. Effective February 20, 2019, company additions to the underlier should have an unadjusted company market capitalization of $8.2 billion or more (an increase from the previous requirement of an unadjusted company market capitalization of $6.1 billion or more).

To prevent the level of the underlier from changing due to corporate actions, all corporate actions which affect the total market value of the underlier require an index divisor adjustment. By adjusting the index divisor for the change in total market value, the level of the underlier remains constant. This helps maintain the level of the underlier as an accurate barometer of stock market performance and ensures that the movement of the underlier does not reflect the corporate actions of individual companies in the underlier. All index divisor adjustments are made after the close of trading and after the calculation of the closing level of the underlier. Some corporate actions, such as stock splits and stock dividends, require simple changes in the common shares outstanding and the stock prices of the companies in the underlier and do not require index divisor adjustments.

The table below summarizes the types of index maintenance adjustments and indicates whether or not an index divisor adjustment is required:

Type of Corporate Action	Adjustment Factor	Divisor Adjustment Required
Stock Split (i.e., 2-for-1)	Shares outstanding multiplied by 2; Stock price divided by 2	No
Share Issuance (i.e., change ≥ 5%)	Shares outstanding plus newly issued shares	Yes
Share Repurchase (i.e., change ≥ 5%)	Shares outstanding minus repurchased shares	Yes
Special Cash Dividends	Share price minus special dividend	Yes
Company Change	Add new company market value minus old company market value	Yes
Rights Offering	Price of parent company minus price of rights offering	Yes

	rights ratio	
Spin-Off	Price of parent company minus price of spin-off co. / share exchange ratio	Yes

Stock splits and stock dividends do not affect the index divisor of the underlier, because following a split or dividend both the stock price and number of shares outstanding are adjusted by S&P Dow Jones Indices LLC so that there is no change

in the market value of the underlier stocks. All stock split and dividend adjustments are made after the close of trading on the day before the ex-date.

Each of the corporate events exemplified in the table requiring an adjustment to the index divisor has the effect of altering the market value of the underlier stocks and consequently of altering the aggregate market value of the underlier stocks, which we refer to as the post-event aggregate market value. In order that the level of the underlier, which we refer to as the pre-event underlier value, not be affected by the altered market value (whether increase or decrease) of the affected underlier stocks, a new index divisor, which we refer to as the new index divisor, is derived as follows:

$$\text{new index divisor} = \frac{\text{post-event aggregate market value}}{\text{pre-event underlier value}}$$

$$\text{new index divisor} = \frac{\text{post-event market value}}{\text{pre-event underlier value}}$$

A large part of the index maintenance process involves tracking the changes in the number of shares outstanding of each of the underlier companies. Four times a year, on a Friday close to the end of each calendar quarter, the share totals of companies in the underlier are updated as required by any changes in the number of shares outstanding. After the totals are updated, the index divisor is adjusted to compensate for the net change in the total market value of the underlier. In addition, any changes over 5% in the current common shares outstanding for the underlier companies are carefully reviewed on a weekly basis, and when appropriate, an immediate adjustment is made to the index divisor.

The underlier and other U.S. indices moved to a float adjustment methodology in 2005 so that the indices will reflect only those shares that are generally available to investors in the market rather than all of a company's outstanding shares. Under float adjustment, the share counts used in calculating the underlier 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 underlier. 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 depositary 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.

License Agreement

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The license agreement provides that the following language must be set forth in this pricing supplement:

The notes are not sponsored, endorsed, sold or promoted by S&P Dow Jones Indices LLC, Dow Jones, S&P or any of their respective affiliates (collectively, "S&P Dow Jones Indices"). S&P Dow Jones Indices does not make any representation or warranty, express or implied, to the holders of the notes or any member of the public regarding the advisability of investing in securities generally or in the notes particularly or the ability of the underlier to track general market performance. S&P Dow Jones Indices' only relationship to Royal Bank of Canada with respect to the underlier is the licensing of the underlier and certain trademarks, service marks and/or trade names of S&P Dow Jones Indices. The underlier is determined, composed and calculated by S&P Dow Jones Indices without regard to Royal Bank of Canada or the notes. S&P Dow Jones Indices have no obligation to take the needs of Royal Bank of Canada or the holders of the notes into consideration in determining, composing or calculating the underlier. S&P Dow Jones

Indices are not responsible for and have not participated in the determination of the prices and amount of the notes, or the timing of the issuance or sale of the notes, or in the determination or calculation of the equation by which the notes are to be converted into cash. S&P Dow Jones Indices shall have no obligation or liability in connection with the administration, marketing or trading of the notes. There is no assurance that investment products based on the underlier will accurately track underlier performance or provide positive investment returns. S&P Dow Jones Indices LLC and its subsidiaries are not investment advisors. Inclusion of a security or futures contract within an underlier is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security or futures contract, nor is it considered to be investment advice. Notwithstanding the foregoing, CME Group Inc. and its affiliates may independently issue and/or sponsor financial products unrelated to the notes currently being issued by Royal Bank of Canada, but which may be similar to and competitive with the notes. In addition, CME Group Inc. and its affiliates may trade financial products which are linked to the performance of the underlier. It is possible that this trading activity will affect the value of the notes.

S&P DOW JONES INDICES DOES NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE UNDERLIER OR ANY DATA RELATED THERETO OR ANY COMMUNICATION, INCLUDING BUT NOT LIMITED TO, ORAL OR WRITTEN COMMUNICATION (INCLUDING ELECTRONIC

COMMUNICATIONS) WITH RESPECT THERETO. S&P DOW JONES INDICES SHALL NOT BE SUBJECT TO ANY DAMAGES OR LIABILITY FOR ANY ERRORS, OMISSIONS, OR DELAYS THEREIN. S&P DOW JONES INDICES MAKES NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE OR AS TO RESULTS TO BE OBTAINED BY ROYAL BANK OF CANADA, HOLDERS OF THE NOTES, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE UNDERLIER OR WITH RESPECT TO ANY DATA RELATED THERETO. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT WHATSOEVER SHALL S&P DOW JONES INDICES BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, TRADING LOSSES, LOST TIME OR GOODWILL, EVEN IF THEY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE. THERE ARE NO THIRD PARTY BENEFICIARIES OF ANY AGREEMENTS OR ARRANGEMENTS BETWEEN S&P DOW JONES INDICES AND ROYAL BANK OF CANADA, OTHER THAN THE LICENSORS OF S&P DOW JONES INDICES.

Historical Performance of the Underlier

The closing levels of the underlier have fluctuated in the past and may experience significant fluctuations in the future. Any historical upward or downward trend in the closing levels of the underlier during any period shown below is not an indication that the underlier is more or less likely to increase or decrease at any time during the term of the notes. The historical levels of the underlier are provided for informational purposes only. You should not take the historical levels of the underlier as an indication of its future performance. We cannot give you any assurance that the future performance of the underlier or the underlier stocks will result in your receiving an amount greater than the original issue price at maturity. Neither we nor any of our affiliates makes any representation to you as to the performance of the underlier. Moreover, in light of current market conditions, the trends reflected in the historical performance of the underlier may be less likely to be indicative of the performance of the underlier over the term of the notes than would otherwise have been the case. The actual performance of the underlier over the term of the notes, as well as the cash settlement amount, may bear little relation to the historical levels shown below.

The graph below shows the daily historical closing levels of the underlier from April 1, 2009 through April 1, 2019. We obtained the closing levels of the underlier listed in the graph below from Bloomberg Financial Services, without independent verification.

Historical Performance of the S&P 500® Index

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 September 20, 2018 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 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 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, 2021. 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 underlier or the notes (for example, upon the underlier 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 underlier 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.

The accompanying product prospectus supplement notes that FATCA withholding on payments of gross proceeds from a sale or redemption of notes will only apply to payments made after December 31, 2018. That discussion is modified to reflect regulations proposed by the U.S. Treasury Department in December 2018 indicating an intent to eliminate the requirement under FATCA of withholding on gross proceeds of the disposition of financial instruments. The U.S. Treasury Department has indicated that taxpayers may rely on these proposed regulations pending their finalization. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the notes.

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

We will agree to sell to RBCCM, and RBCCM will agree to purchase from us, the principal amount of the notes specified, at the price specified, on the cover page of this pricing supplement. RBCCM has informed us that, as part of its distribution of the notes, it will reoffer them at a purchase price equal to [100.00]% of the principal amount to one or more other dealers who will sell them to their customers. In the future, RBCCM or one of its affiliates, may repurchase and resell the notes in market-making transactions, with resales being made at prices related to prevailing market prices at the time of resale or at negotiated prices. For more information about the plan of distribution, the distribution agreement and possible market-making activities, see "Supplemental Plan of Distribution" in the accompanying prospectus supplement. For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution Conflicts of Interest" in the accompanying prospectus.

If the notes priced on the date of this pricing supplement, RBCCM, acting as agent for Royal Bank of Canada, would not receive an underwriting discount in connection with the sale of the notes.

We expect to deliver the notes against payment therefor in New York, New York on _____, 2019, which is expected to be the fifth scheduled business day following the trade date. Under Rule 15c6-1 of the Securities Exchange Act of 1934, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade notes on any date prior to two business days before delivery will be required, by virtue of the fact that the notes are initially expected to settle in five business days (T + 5), to specify alternative settlement arrangements to prevent a failed settlement.

RBCCM may use this pricing supplement in the initial sale of the notes. In addition, RBCCM or any other affiliate of Royal Bank of Canada may use this pricing supplement in a market-making transaction in a note after its initial sale. Unless RBCCM or its agent informs the purchaser otherwise in the confirmation of sale, this pricing supplement is being used in a market-making transaction.

RBCCM or another of our affiliates may make a market in the notes after the trade date; however, it is not obligated to do so. The price that it makes available from time to time after the issue date at which it would be willing to repurchase the notes will generally reflect its estimate of their value. That estimated value will be based upon a variety of factors, including then prevailing market conditions, our creditworthiness and transaction costs. However, for a period of approximately three months after the trade date, the price at which RBCCM may repurchase the notes is expected to be higher than their estimated value at that time. This is because, at the beginning of this period, that price will not include certain costs that were included in the original issue price, particularly our hedging costs and profits. As the period continues, these costs are expected to be gradually included in the price that RBCCM would be willing to pay, and the difference between that price and RBCCM's estimate of the value of the notes will decrease over time until the end of this period. After this period, if RBCCM continues to make a market in the notes, the prices that it would pay for them are expected to reflect its estimated value, as well as customary bid-ask spreads for similar trades. In addition, the value of the notes shown on your account statement may not be identical to the price at which RBCCM would be willing to purchase the notes at that time, and could be lower than RBCCM's price.

STRUCTURING THE NOTES

The notes are our debt securities. 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. 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 lower than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. This relatively lower implied borrowing rate, which is reflected in the economic terms of the notes, along with the fees and expenses associated with structured notes, typically reduces the initial estimated value of the notes at the time their terms are set.

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) with RBCCM and/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, 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. Our cost of hedging will include the projected profit that such counterparties expect to realize in consideration for assuming the risks inherent in hedging our obligations under the notes. Because hedging our obligations entails risks and may be influenced by market forces beyond the counterparties' control, such hedging may result in a profit that is more or less than expected, or could result in a loss. See "Use of Proceeds and Hedging" on page PS-13 of the accompanying product prospectus supplement PB-1.

The lower implied borrowing rate and the hedging-related costs relating to the notes reduce the economic terms of the notes to you and result in the initial estimated value for the notes on the trade date being less than their original issue price. See "Risk Factors—Our Initial Estimated Value of the Notes Will Be Less than the Original Issue Price."

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We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this pricing supplement, the accompanying product prospectus supplement PB-1, the accompanying prospectus supplement or the accompanying prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. These documents are an offer to sell only the notes offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in each such document is current only as of its respective date.

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Royal Bank of Canada

Digital S&P 500® Index-Linked Notes, due , 2020

RBC Capital Markets, LLC