

ROYAL BANK OF CANADA  
Form 424B2  
March 04, 2019

RBC Capital Markets® Filed Pursuant to Rule 424(b)(2)  
Registration Statement No. 333-227001

Pricing Supplement  
Dated February 28, 2019

To the Product \$11,091,000  
Prospectus Supplement, Fixed Coupon Notes due March 3, 2023  
the Prospectus Linked to the S&P 500® Index  
Supplement and  
Prospectus, Each Dated  
September 7, 2018

Royal Bank of Canada is offering Fixed Coupon Notes (“Notes”) linked to the S&P 500 Index (the “Reference Asset”). The Notes offered are senior unsecured obligations of Royal Bank of Canada, will pay a semi-annual coupon at the interest rate specified below, and will have the terms described in the documents described above, as supplemented or modified by this pricing supplement, as set forth below.

The Notes do not guarantee any return of principal at maturity. All payments on the Notes are subject to our credit risk.

Investing in the Notes involves a number of risks. See “Risk Factors” beginning on page S-1 of the prospectus supplement dated September 7, 2018, “Additional Risk Factors Specific to the Notes” beginning on page PS-4 of the product prospectus supplement dated September 7, 2018 and “Selected Risk Considerations” beginning on page P7 of this pricing supplement.

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 these securities or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

Issuer:	Royal Bank of Canada	Stock Exchange Listing:	None
Trade Date:	February 28, 2019	Principal Amount:	\$1,000 per Note
Issue Date:	March 5, 2019	Coupon Payments:	The coupon will be paid in semi-annual installments at the rate of 4.85% per annum
Buffer Level:	2,227.59, which is equal to 80.00% of the Initial Level (rounded to two decimal places)		
Initial Level:	2,784.49		
Final Level:	The closing level of the Reference Asset on the Valuation Date.		
Payment at Maturity (if held to maturity):	For each \$1,000 principal amount, \$1,000 plus any accrued and unpaid interest at maturity, unless the Final Level of the Reference Asset is less than the Buffer Level. If the Final Level of the Reference Asset is less than the Buffer Level, then the investor will receive at maturity, instead of the principal amount, in addition to accrued and unpaid interest, an amount in cash equal to the sum of: (a) \$1,000 plus (b) the product of (i) \$1,000 times (ii) the sum of the Percentage Change plus 20.00% times (iii) the Downside Multiplier:		

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$\$1,000 + [\$1,000 \times (\text{Percentage Change} + 20.00\%) \times 1.25]$

Investors could lose some or all of their investment at maturity if there has been a decline in the trading price of the Reference Asset below its Buffer Level.

CUSIP	Coupon Rate	Principal Amount	Price to Public	Agent's Commission	Proceeds to Royal Bank of Canada
78013XZG6	4.85% per annum	\$11,091,000	100%	\$0 0%	\$11,091,000 100%

The initial estimated value of the Notes as of the Trade Date is \$996.67 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.

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Fixed Coupon Notes  
Linked to the S&P 500® Index

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.

General: This pricing supplement relates to an offering of Fixed Coupon Notes (“Notes”) linked to the S&P 500® Index (the “Reference Asset”)

Issuer: Royal Bank of Canada (“Royal Bank”)

Trade Date  
(Pricing Date): February 28, 2019

Issue Date: March 5, 2019

Valuation Date: February 28, 2023

Maturity Date: March 3, 2023

Denominations: Minimum denomination of \$1,000, and integral multiples of \$1,000 thereafter.

Designated  
Currency: U.S. Dollars

Coupon Rate: 4.85% per annum

Coupon Payment  
Dates: The coupon will be paid in semi-annual installments on September 3, 2019, March 3, 2020, September 3, 2020, March 3, 2021, September 3, 2021, March 3, 2022, September 6, 2022 and the Maturity Date. If any such date is not a business day, the payment will be made on the next subsequent business day, and no additional interest will accrue as a result of that postponement.

Record Dates: The record date for each Coupon Payment Date will be the date one business day prior to that scheduled Coupon Payment Date; provided, however, that any coupon payable at maturity will be payable to the person to whom the payment at maturity will be payable.

Percentage  
Change: Expressed as a percentage, an amount equal to:

Initial Level: The closing level of the Reference Asset on the Trade Date, as set forth on the cover page.

Buffer Level: 80.00% of the Initial Level, as set forth on the cover page.

Final Level: The closing level of the Reference Asset on the Valuation Date.

Downside  
Multiplier: 1.25

P2 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

For each \$1,000 in principal amount of the Notes, the investor will receive \$1,000 plus any accrued and unpaid interest at maturity, unless the Final Level of the Reference Asset is less than the Buffer Level.

Payment at Maturity (if held to maturity): If the Final Level of the Reference Asset is less than the Buffer Level, then the investor will receive at maturity, instead of the principal amount of the Notes, in addition to any accrued and unpaid interest, an amount in cash equal to the sum of:  
(a) \$1,000 plus (b) the product of (i) \$1,000 times (ii) the sum of the Percentage Change plus 20.00% times (iii) the Downside Multiplier:  
 $\$1,000 + [\$1,000 \times (\text{Percentage Change} + 20.00\%) \times 1.25]$   
Investors in the Notes could lose some or all of their investment at maturity if the Final Level is less than the Buffer Level.

Calculation Agent: RBC Capital Markets, LLC

Secondary Market: RBC Capital Markets, LLC (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 an investor may receive upon sale of the Notes prior to maturity may be less than their principal amount.

Listing: None

Settlement: DTC global note

Terms: All of the terms appearing above the item captioned "Secondary Market" on pages P2 and P3 of this pricing supplement and the terms appearing under the caption "General Terms of the Notes" in the the Master Note: product prospectus supplement.

P3 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

#### ADDITIONAL TERMS OF YOUR NOTES

You should read this pricing supplement together with the prospectus dated September 7, 2018, as supplemented by the prospectus supplement dated September 7, 2018 and the product prospectus supplement dated September 7, 2018, relating to our Senior Global Medium-Term Notes, Series H, 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, including as to the payment of the Coupon Payments. You should read this terms 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 7, 2018 and “Additional Risk Factors Specific to the Notes” in the product prospectus supplement dated September 7, 2018, 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 SEC website at [www.sec.gov](http://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 7, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465918005973/196181424b3.htm>

Prospectus Supplement dated September 7, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465918005975/f97180424b3.htm>

Product Prospectus Supplement ERN-EI-1 dated September 7, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000114036118038044/form424b5.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.

P4 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

**HYPOTHETICAL EXAMPLES OF AMOUNTS PAYABLE AT MATURITY**

The examples set forth below are provided for illustration purposes only. The assumptions in each of the examples are purely hypothetical and do not relate to the actual performance of the Reference Asset. The hypothetical terms do not purport to be representative of every possible scenario concerning increases or decreases in the Final Level of the Reference Asset relative to its Initial Level. We cannot predict the actual performance of the Reference Asset.

The table below illustrates the Payment at Maturity of the notes (excluding the final Coupon Payment) for a hypothetical range of performance for the Reference Asset, assuming an Initial Level of 100.00, a Buffer Level of 80.00 and an initial investment of \$1,000. Hypothetical Final Levels are shown in the first column on the left. The second column shows the Payment at Maturity for a range of Final Levels on the Valuation Date. The third column shows the Payment at Maturity as a percentage of the principal amount. The last column shows the hypothetical Payment at Maturity per \$1,000 in principal amount of the Notes.

Hypothetical Final Level of the Reference Asset	Percentage Change	Payment at Maturity as Percentage of Principal Amount	Hypothetical Payment at Maturity
150.00	50.00%	100.00%	\$1,000.00
130.00	30.00%	100.00%	\$1,000.00
120.00	20.00%	100.00%	\$1,000.00
110.00	10.00%	100.00%	\$1,000.00
100.00	\$0.00%	100.00%	\$1,000.00
90.00	-10.00%	100.00%	\$1,000.00
85.00	-15.00%	100.00%	\$1,000.00
80.00	-20.00%	100.00%	\$1,000.00
79.99	-20.01%	99.99%	\$999.90
75.00	-25.00%	93.75%	\$937.50
70.00	-30.00%	87.50%	\$875.00
60.00	-40.00%	75.00%	\$750.00
50.00	-50.00%	62.50%	\$625.00
30.00	-70.00%	37.50%	\$375.00
0.00	-100.00%	0.00%	\$0.00

P5 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

Hypothetical Examples of Amounts Payable at Maturity

The following hypothetical examples illustrate how the total returns set forth in the table above are calculated.

Example 1: The value of the Reference Asset increases by 25% from the Initial Level of 100.00 to the Final Level of 125.00. Because the Final Level of the Reference Asset on the Valuation Date is greater than the Buffer Level, the investor receives at maturity, in addition to any accrued and unpaid Coupon Payments on the Notes, a cash payment of \$1,000.00 per security, despite the 25% appreciation in the value of the Reference Asset.

Example 2: The value of the Reference Asset decreases by 15% from the Initial Level of 100.00 to the Final Level of 85.00. Because the Final Level of the Reference Asset is greater than the Buffer Level of 80.00, the investor receives at maturity, in addition to any accrued and unpaid Coupon Payments on the Notes, a cash payment of \$1,000 per security, despite the 15% decline in the value of the Reference Asset.

Example 3: The value of the Reference Asset decreases by 50% from the Initial Level of \$100.00 to the Final Level of 50.00. Because the Final Level of the Reference Asset is less than the Buffer Level, we will pay an amount in cash that will be calculated as follows:

$$\$1,000 + [\$1,000 \times (-50\% + 20\%) \times 1.25] = \$1,000 - \$375 = \$625.00$$

\* \* \*

The Payments at Maturity shown above are entirely hypothetical; they are based on market value for the Reference Asset that may not be achieved on the Valuation Date and on assumptions that may prove to be erroneous. The actual market value of your Notes on the Maturity Date or at any other time, including any time you may wish to sell your Notes, may bear little relation to the hypothetical Payments at Maturity shown above, and those amounts should not be viewed as an indication of the financial return on an investment in the Notes or on an investment in the Reference Asset. Please read “Additional Risk Factors Specific to the Notes” and “Hypothetical Returns on Your Notes” in the accompanying product prospectus supplement.

P6 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

#### SELECTED RISK CONSIDERATIONS

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Reference Asset. 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:

**Principal at Risk** — Investors in the Notes could lose all or a substantial portion of their principal amount if there is a decline in the level of the Reference Asset between the Trade Date and the Valuation Date. If the Final Level is less than the Buffer Level, you will lose 1.25% of the principal amount for each 1% that the Final Level is less than the Buffer Level. The Coupon Payments received on the Notes may not be sufficient to compensate for any such loss.

**Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable 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 bought a conventional senior interest bearing debt security of Royal Bank.

**Payments on the Notes Are Limited** — The payments on the Notes will be limited to the Coupon Payments. Accordingly, your return may be less than the return would be if you made a direct investment in the securities represented by the Reference Asset, or in a security directly linked to the positive performance of the Reference Asset.

**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 Coupon Payments and the amount due at maturity is dependent upon our ability to repay its obligations on the applicable payment dates. This will be the case even if the level of the Reference Asset increases after the Trade Date. No assurance can be given as to what our financial condition will be at any time during the term of 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 other affiliate of ours 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.

**Owning the Notes Is Not the Same as Owning the Securities Represented by the Reference Asset** — The return on your Notes is unlikely to reflect the return you would realize if you actually owned the securities represented by the Reference Asset. For instance, you will not receive or be entitled to receive any dividend payments or other distributions on those securities during the term of your Notes. As an owner of the Notes, you will not have voting rights or any other rights that holders of the Reference Asset may have. Furthermore, the Reference Asset may appreciate substantially during the term of the Notes, while your potential return will be limited to the Coupon Payments.

**The Initial Estimated Value of the Notes Is Less than the Price to the Public** — The initial estimated value 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 level of the Reference Asset, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to





Fixed Coupon Notes  
Linked to the S&P 500® Index

the public of 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 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 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.

**Inconsistent Research** — Royal Bank or its affiliates may issue research reports on securities that are, or may become, components of the Reference Asset. We may also publish research from time to time on financial markets and other matters that may influence the level of the Reference Asset or the value of the Notes, or express opinions or provide recommendations that may be inconsistent with purchasing or holding the Notes or with the investment view implicit in the Notes or the Reference Asset. You should make your own independent investigation of the merits of investing in the Notes and the Reference Asset.

**Market Disruption Events and Adjustments** — The payment at maturity is 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 “General Terms of the Notes—Market Disruption Events” in the product prospectus supplement.

**Uncertain Tax Treatment** — The U.S. federal income tax treatment of an investment in the Notes is uncertain.

We do not plan to request a ruling from the Internal Revenue Service (the “IRS”) regarding the tax treatment of an investment in the Notes, and the IRS or a court may not agree with the tax treatment described in this document.

P8 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

#### U.S. FEDERAL TAX INFORMATION

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement, and supersedes the discussion in the product supplement under the caption “Supplemental Discussion of U.S. Federal Income Tax Consequences.” It applies only to those holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. This discussion applies only to U.S. holders and non-U.S. holders that will purchase the Notes upon original issuance and will hold the Notes as capital assets for U.S. federal income tax purposes. This discussion does not apply to holders subject to special rules including accrual method taxpayers subject to special tax accounting rules under Section 451(b) of the Code. You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the Notes in your particular circumstances, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

We intend to treat coupon payments as U.S. source income for U.S. federal income tax purposes.

We will not attempt to ascertain whether the issuer of any of the component stocks included in the Reference Asset would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Internal Revenue Code of 1986, as amended (the “Code”), or a “U.S. real property holding corporation” within the meaning of Section 897 of the Code. If the issuer of one or more of such stocks were so treated, certain adverse U.S. federal income tax consequences could possibly apply to a holder. You should refer to any available information filed with the SEC and other authorities by the issuers of the component stock included in the Reference Asset and consult your tax advisor regarding the possible consequences to you in this regard, if any.

**NO STATUTORY, JUDICIAL OR ADMINISTRATIVE AUTHORITY DIRECTLY DISCUSSES HOW THE NOTES SHOULD BE TREATED FOR U.S. FEDERAL INCOME TAX PURPOSES. AS A RESULT, THE U.S. FEDERAL INCOME TAX CONSEQUENCES OF AN INVESTMENT IN THE NOTES ARE UNCERTAIN. BECAUSE OF THE UNCERTAINTY, YOU SHOULD CONSULT YOUR TAX ADVISOR IN DETERMINING THE U.S. FEDERAL INCOME TAX AND OTHER TAX CONSEQUENCES OF YOUR INVESTMENT IN THE NOTES, INCLUDING THE APPLICATION OF STATE, LOCAL OR OTHER TAX LAWS AND THE POSSIBLE EFFECTS OF CHANGES IN FEDERAL OR OTHER TAX LAWS.**

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat your Notes as an investment unit consisting of (i) a non-contingent debt instrument issued by us to you (the “Debt Portion”) and (ii) a put option with respect to the Reference Stock written by you and purchased by us (the “Put Option”). The balance of this disclosure assumes this treatment is proper and will be respected for U.S. federal income tax purposes. Pursuant to this treatment, 2.85% of each stated interest payment (4.85% in total) will be treated as an interest payment and 2.00% of each stated interest payment will be treated as payment for the Put Option for U.S. federal income tax purposes.

#### Treatment as an Investment Unit

If your Notes are properly treated as an investment unit consisting of a Debt Portion and Put Option, it is likely that the Debt Portion of your Notes would be treated as having been issued for the principal amount of the Notes (if you are an initial purchaser) and that interest payments on the Notes would be treated in part as payments of interest and in part as payments for the Put Option. Amounts treated as interest would be included in income in accordance with your regular method of accounting for interest for U.S. federal income tax purposes. Amounts treated as payment for the Put Option would be deferred and accounted for upon the sale, call, or maturity of the Notes, as discussed below.

If you were to receive a cash payment of the full principal amount of your Notes upon the call or maturity of your Notes, such payment would likely be treated as (i) payment in full of the principal amount of the Debt Portion (which would not result in the recognition of gain or loss if you are an initial purchaser of your Notes) and (ii) the lapse of the Put Option which would likely result in your recognition of short-term capital gain in an amount equal to the amount paid to you for the Put Option and deferred as described above. If you were to receive a cash payment upon the maturity of your Notes (excluding cash received as a coupon) of less than the full principal amount of your Notes,

such payment would likely be treated as (i) payment in full of the principal amount of the Debt Portion (which would not result in the recognition of gain or loss if you are an initial purchaser of your Notes) and (ii) the cash settlement of the Put Option pursuant to which you paid to us an amount equal to the excess of the principal amount of your Notes over the amount that you received upon the maturity of your Notes (excluding cash received as a coupon) in order to settle the Put Option. If the aggregate amount paid to you for the Put Option and deferred as described above is greater than the amount you are deemed to have paid to us to settle the Put Option, you will likely recognize short-term capital gain in an amount that is equal to such excess. Conversely, if the amount paid to you for the Put Option and deferred as described above is less than the amount you are deemed to have paid to us to settle the Put Option, you will likely recognize short-term capital loss in an amount that is equal to such difference. The deductibility of capital losses is subject to limitations.

Upon the sale of your Notes, you would be required to apportion the value of the amount you receive between the Debt Portion and Put Option on the basis of the values thereof on the date of the sale. You would recognize gain or loss with respect to the Debt Portion in an amount equal to the difference between (i) the amount apportioned to the Debt Portion and (ii) your adjusted U.S.

P9 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

federal income tax basis in the Debt Portion (which would generally be equal to the principal amount of your Notes if you are an initial purchaser of your Notes). Except to the extent attributable to accrued but unpaid interest with respect to the Debt Portion, such gain or loss would be long-term capital gain or loss if your holding period is greater than one year. The amount of cash that you receive that is apportioned to the Put Option (together with any amount of premium received in respect thereof and deferred as described above) would be treated as short-term capital gain. If the value of the Debt Portion on the date of the sale of your Notes is in excess of the amount you receive upon such sale, you would likely be treated as having made a payment (to the purchaser in the case of a sale) equal to the amount of such excess in order to extinguish your rights and obligations under the Put Option. In such a case, you would likely recognize short-term capital gain or loss in an amount equal to the difference between the premium you previously received in respect of the Put Option and the amount of the deemed payment made by you to extinguish the Put Option. The deductibility of capital losses is subject to limitations.

Alternative Characterizations

There is no judicial or administrative authority discussing how your Notes should be treated for U.S. federal income tax purposes. Therefore, other treatments would also be reasonable and the IRS might assert that treatment other than that described above is more appropriate.

For example, it is possible that the Notes could be treated as a single debt instrument. Because the Notes have a term that exceeds one year, such a debt instrument would be subject to the special tax rules governing contingent payment debt instruments. If the Notes are so treated, you would be required to accrue interest income over the term of the Notes based upon the yield at which we would issue a non-contingent fixed-rate debt instrument with other terms and conditions similar to the Notes. You would recognize gain or loss upon the sale, call, or maturity of the Notes in an amount equal to the difference, if any, between the amount you receive at such time and your adjusted basis in the Notes. In general, your adjusted basis in the Notes would be equal to the amount you paid for the Notes, increased by the amount of interest you previously accrued with respect to the Notes. Any gain you recognize upon the sale, call, or maturity of the Notes would generally be ordinary income and any loss recognized by you at such time would generally be ordinary loss to the extent of interest you included in income in the current or previous taxable years with respect to the Notes, and thereafter would be capital loss. The deductibility of capital losses is subject to limitations. In addition, the IRS has released a notice that may affect the taxation of holders of “prepaid forward contracts” and similar instruments. According to the notice, the IRS and the U.S. Treasury Department are actively considering whether the holder of such instruments should be required to accrue ordinary income on a current basis. While it is not clear whether the Notes would be viewed as similar to such instruments, it is possible that any future guidance could materially and adversely affect the tax consequences of an investment in the Notes, possibly with retroactive effect. Because of the absence of authority regarding the appropriate tax characterization of the Notes, it is possible that the IRS could seek to characterize the Notes in a manner that results in tax consequences to you that are different from those described above. For example, it is possible that you may be required to include the entire coupon into income when it is received. It is also possible that the Notes may be characterized in whole or in part as a notional principal contract or as a different type of derivative contract. You should consult your tax advisor as to the tax consequences of possible alternative characterizations of the Notes for U.S. federal income tax purposes.

Backup Withholding and Information Reporting

Payments made with respect to the Notes and proceeds from the call, sale or maturity of the Notes may be subject to a backup withholding tax unless, in general, the holder complies with certain procedures or is an exempt recipient. Any amounts so withheld generally will be refunded by the IRS or allowed as a credit against the holder’s U.S. federal income tax liability, provided the holder makes a timely filing of an appropriate tax return or refund claim to the IRS. Reports will be made to the IRS and to holders that are not exempted from the reporting requirements.

Non-U.S. Holders

The following discussion applies to non-U.S. holders of the Notes. You are a non-U.S. holder if you are a beneficial owner of the Notes and are for U.S. federal income tax purposes a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

As discussed above, the U.S. federal income tax treatment of the Notes is uncertain and withholding agents may withhold U.S. federal income tax at a 30% rate (or at a lower rate under an applicable income tax treaty) in respect of interest payments made on the Notes to a non-U.S. holder unless such payments are effectively connected with the conduct by the non-U.S. holder of a trade or business in the United States (in which case, to avoid withholding, the non-U.S. holder will be required to provide a Form W-8ECI). We will not pay any additional amounts in respect of such withholding. UBS, however, has informed us that they will not withhold U.S. federal income tax in respect of interest payments made on the Notes, provided you comply with applicable certification requirements, which certification may be made on Form W-8BEN or W-8BEN-E (or a substitute or successor form) on which you certify, under penalties of perjury, that you are not a U.S. person and provide your name and address, unless such payments are effectively connected with your conduct of a trade or business in the United States (in which case, to avoid withholding, you will be required to provide a Form W-8ECI (or a substitute or successor form)).

P10 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

Except as discussed below, you will generally not be subject to U.S. federal income or withholding tax on any gain upon the sale or maturity of the Notes, provided that (i) you comply with applicable certification requirements, which certification may be made on Form W-8BEN or W-8BEN-E (or a substitute or successor form) on which you certify, under penalties of perjury, that you are not a U.S. person and provide your name and address, (ii) your gain is not effectively connected with your conduct of a U.S. trade or business, and (iii) if you are a non-resident alien individual, you are not present in the U.S. for 183 days or more during the taxable year of the sale or maturity of the Notes. In the case of (ii) above, you generally would be subject to U.S. federal income tax with respect to any income or gain in the same manner as if you were a U.S. holder and, if you are a corporation, you may also be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable U.S. income tax treaty) of a portion of your earnings and profits for the taxable year that are effectively connected with its conduct of a trade or business in the U.S., subject to certain adjustments. Payments made to you may be subject to information reporting and to backup withholding unless you comply with applicable certification and identification requirements as to your foreign status.

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 Reference Asset or the Notes (for example, upon a Reference Asset 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 Reference Asset 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.

As discussed above, alternative characterizations of the Notes for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to the Notes to become subject to withholding tax, or if we or the institution through which you hold the Notes determine withholding is appropriate under current law, we or such institution will withhold tax at the applicable statutory rate. We will not be required to pay any additional amounts in respect of such withholding. Prospective investors should consult their own tax advisors in this regard.

Individual holders that own “specified foreign financial assets” may be required to include certain information with respect to such assets with their U.S. federal income tax return. You are urged to consult your own tax advisor regarding such requirements with respect to the Notes.

#### Foreign Account Tax Compliance Act

The Foreign Account Tax Compliance Act (“FATCA”) imposes a 30% U.S. withholding tax on certain U.S. source payments of interest (and OID), dividends, or other fixed or determinable annual or periodical gain, profits, and income, and on the gross proceeds from a disposition of property of a type which can produce U.S. source interest or dividends (“Withholdable Payments”), if paid to a foreign financial institution (including amounts paid to a foreign

financial institution on behalf of a holder), unless such institution enters into an agreement with the U.S. Treasury Department to collect and provide to the U.S. Treasury Department certain information regarding U.S. financial account holders, including certain account holders that are foreign entities with U.S. owners, with such institution or otherwise complies with the legislation. In addition, the Notes may constitute a “financial account” for these purposes and thus, be subject to information reporting requirements pursuant to FATCA. FATCA also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes.

The U.S. Treasury Department and the IRS have announced that withholding on payments of gross proceeds from a sale or redemption of the Notes will only apply to payments made after December 31, 2018. However, recently proposed regulations eliminate the requirement of withholding on gross proceeds from the sale or disposition of financial instruments. The U.S. Treasury Department has indicated that taxpayers may rely on these proposed regulations pending their finalization. If we determine withholding is appropriate with respect to the Notes, we will withhold tax at the applicable statutory rate, and we will not pay any additional amounts in respect of such withholding. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the Notes.

P11 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

#### INFORMATION REGARDING THE REFERENCE ASSET

All disclosures contained in this document regarding the Reference Asset, 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, S&P Dow Jones Indices LLC (“S&P”). S&P, which owns the copyright and all other rights to the Reference Asset, has no obligation to continue to publish, and may discontinue publication of, the Reference Asset. The consequences of S&P discontinuing publication of the Reference Asset are discussed in the section of the product prospectus supplement entitled “General Terms of the Notes—Unavailability of the Level of the Reference Asset.” Neither we nor RBCCM accepts any responsibility for the calculation, maintenance or publication of the Reference Asset or any successor index.

The Reference Asset is intended to provide an indication of the pattern of common stock price movement. The calculation of the level of the Reference Asset 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 Reference Asset by reference to the prices of the constituent stocks of the Reference Asset 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 Reference Asset 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 Reference Asset. 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 Reference Asset while a second listed share class line of the same company is excluded.

#### Computation of the Reference Asset

While S&P currently employs the following methodology to calculate the Reference Asset, 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 Reference Asset 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 Reference Asset halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the Reference Asset to full float adjustment on September 16, 2005. S&P’s criteria for selecting stocks for the Reference Asset did not change with the shift to float adjustment. However, the adjustment affects each company’s weight in the Reference Asset.

Under float adjustment, the share counts used in calculating the Reference Asset 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 Reference Asset. 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 depositary 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 Reference Asset. Constituents of the Reference Asset prior to July 31, 2017 with multiple share class lines will be grandfathered in and continue to be included in the Reference Asset. If a constituent company of the Reference Asset reorganizes into a multiple share class line structure, that company will remain in the Reference Asset at the discretion of the S&P Index Committee in order to minimize turnover.

P12 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

The Reference Asset is calculated using a base-weighted aggregate methodology. The level of the Reference Asset 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 Reference Asset 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 Reference Asset, it serves as a link to the original base period level of the Reference Asset. The index divisor keeps the Reference Asset comparable over time and is the manipulation point for all adjustments to the Reference Asset, 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 Reference Asset, and do not require index divisor adjustments.

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

License Agreement

S&P® is a registered trademark of Standard & Poor’s Financial Services LLC and Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC (“Dow Jones”). These trademarks have been licensed for use by S&P. “Standard & Poor®s”, “S&P 500” and “S&P” are trademarks of Standard & Poor’s Financial Services LLC. These trademarks have been sublicensed for certain purposes by us. The Reference Asset is a product of S&P and/or its affiliates and has been licensed for use by us.

The Notes are not sponsored, endorsed, sold or promoted by S&P Dow Jones Indices LLC, Standard & Poor’s Financial Services LLC or any of their respective affiliates (collectively, “S&P Dow Jones Indices”). S&P Dow Jones Indices make no 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 Reference Asset to track general market performance. S&P Dow Jones Indices’ only relationship to us with respect to the Reference Asset is the licensing of the Reference Asset and certain trademarks, service marks and/or trade names of S&P Dow Jones Indices and/or its third party licensors. The Reference Asset is determined, composed and calculated by S&P Dow Jones Indices without regard to us or the Notes. S&P Dow Jones Indices have no obligation to take our needs or the needs of holders of the Notes into consideration in determining, composing or calculating the Reference Asset. 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 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 Reference Asset will accurately track index 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 index 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 us, 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 Reference Asset. It is possible that this trading activity will affect the value of the Notes.

S&P DOW JONES INDICES DO NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS AND/OR THE COMPLETENESS OF THE REFERENCE ASSET 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 MAKE NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIMS ALL WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR

P13 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

USE OR AS TO RESULTS TO BE OBTAINED BY US, HOLDERS OF THE NOTES, OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE REFERENCE ASSET 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 US, OTHER THAN THE LICENSORS OF S&P DOW JONES INDICES.

P14 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

#### Historical Information

The graph below sets forth the information relating to the historical performance of the Reference Asset for the period from January 1, 2009 through February 28, 2019.

We obtained the information regarding the historical performance of the Reference Asset in the graph 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 the Reference Asset should not be taken as an indication of its future performance, and no assurance can be given as to the Final Level of the Reference Asset. We cannot give you assurance that the performance of the Reference Asset will not result in the loss of all or any part of your positive return on your investment.

S&P 500® Index (“SPX”)

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

P15 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

**SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)**

Delivery of the Notes will be made against payment for the Notes on March 5, 2019, which is the third (3<sup>rd</sup>) business day following the Trade Date (this settlement cycle being referred to as “T+3”). For additional information as to the relationship between us and RBC Capital Markets, LLC, please see the section “Plan of Distribution—Conflicts of Interest” in the prospectus dated September 7, 2018.

We expect to 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.

We may use this pricing supplement in the initial sale of the Notes. In addition, RBC Capital Markets, LLC 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.

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 9 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 our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may initially higher amount, reflecting the addition of 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.

P16 RBC Capital Markets, LLC

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Fixed Coupon Notes  
Linked to the S&P 500® Index

## STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the Reference Asset. 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 included in 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 Reference Asset, 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 commission 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, and 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 7, 2018, which has been filed as Exhibit 5.1 to Royal Bank's Form 6-K filed with the SEC dated September 7, 2018.

In the opinion of Morrison & Foerster 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 Royal Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith). 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 7, 2018, which has been filed as Exhibit 5.2 to the Bank's Form 6-K dated September 7, 2018.

P17 RBC Capital Markets, LLC

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