

ROYAL BANK OF CANADA  
Form FWP  
March 19, 2019

Free Writing Prospectus

(To the Prospectus, the Prospectus Supplement and the Product Prospectus Supplement, each dated September 7, 2018)

Filed Pursuant to Rule  
433

Registration No.  
333-227001  
March 19, 2019

\$  
Capped Dual Directional Buffered Notes  
Due April 8, 2020  
Linked to the EURO STOXX 50® Index  
Senior Global Medium Term Notes, Series H

Royal Bank of Canada

## General

The Notes are designed for investors who seek a positive return if the level of the EURO STOXX 50® Index (the “Index”) increases or decreases within the range set forth below. If the level of the Index increases, investors will receive a one-for-one positive return, subject to the Maximum Upside Return (as defined below). If the Index declines by no more than 14.56%, the Notes will provide a positive return equal to the percentage by which the level of the Index has decreased. However, investors will lose approximately 1.1704% of their principal amount for each 1% that the Percentage Change is less than -14.56%. Investors should also be willing to forgo interest and dividend payments.

· Senior unsecured obligations of Royal Bank of Canada maturing April 8, 2020.<sup>(a)(b)</sup>

· Minimum denominations of \$10,000 and integral multiples of \$1,000 in excess thereof.

The Notes are expected to price on or about March 22, 2019<sup>(b)</sup> (the “pricing date”) and are expected to be issued on or about March 27, 2019<sup>(b)</sup> (the “issue date”).

**Key Terms** Terms used in this free writing prospectus, but not defined herein, will have the meanings ascribed to them in the product prospectus supplement.

**Issuer:** Royal Bank of Canada

**Reference**

**Asset:** EURO STOXX 50® Index (Bloomberg ticker symbol “SX5E”)

If the Final Level is greater than or equal to the Initial Level, you will receive a cash payment that provides you with a return equal to the Percentage Change, subject to the Maximum Upside Return. Accordingly, if the Percentage Change is positive or zero, your payment per \$1,000 in principal amount of the Notes will be calculated as follows:

$\$1,000 + (\$1,000 \times \text{Percentage Change})$

However, the payment on the Notes if the Percentage Change is positive will not exceed \$1,050 for each \$1,000 in principal amount.

**Payment at Maturity:** If the Final Level is less than the Initial Level, but is not less than the Buffer Level, your payment per \$1,000 in principal amount of the Notes will be calculated as follows:

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

In this case, the return on the Notes will be positive, even though the Percentage Change is negative.

If the Final Level is less than the Buffer Level, your payment per \$1,000 in principal amount of the Notes will be calculated as follows:

$\$1,000 + [\$1,000 \times ((\text{Percentage Change} + \text{Buffer Percentage}) \times \text{Downside Multiplier})]$

If the Final Level is less than the Buffer Level, you will receive a payment that is less than the principal amount, and you will lose some or all of your investment.

**Percentage Change:** The performance of the Index from the Initial Level to the Final Level, calculated as follows:

Final Level – Initial Level

Initial Level

Maximum Upside Return: \$1,050 per \$1,000 in principal amount of the Notes.

Buffer Level: 85.44% of the Initial Level

Buffer Percentage: 14.56%

Downside Multiplier: 1 divided by 0.8544, which equals approximately 1.1704.

Initial Level: The closing level of the Index on the pricing date.

Final Level: The arithmetic average of the closing levels of the Index on each of the valuation dates.

Valuation Dates: March 30, 2020, March 31, 2020, April 1, 2020, April 2, 2020 and April 3, 2020<sup>(a)(b)</sup>

Maturity Date: April 8, 2020<sup>(a)(b)</sup>

Calculation Agent: RBC Capital Markets, LLC

CUSIP/ISIN: 78013X3T3/US78013X3T31

Estimated Value: The initial estimated value of the Notes as of the pricing date is expected to be between \$966.22 and \$986.22 per \$1,000 in principal amount, and will be less than the price to public. The final pricing supplement relating to the Notes will set forth our estimate of the initial value of the Notes as of the pricing date. 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.

<sup>(a)</sup> Subject to postponement if a market disruption event occurs, as described under “General Terms of the Notes—Market Disruption Events” in the product prospectus supplement.

<sup>(b)</sup> Expected. In the event we make any change to the expected pricing date and issue date, the valuation dates and the maturity date will be changed so that the stated term of the Notes remains the same.

Investing in the Notes involves a number of risks. See “Additional Risk Factors Specific to the Notes” beginning on page PS-4 of the product prospectus supplement, “Risk Factors” beginning on page S-1 of the prospectus supplement and beginning on page 1 of the prospectus and “Selected Risk Considerations” beginning on page FWP-5 of this free writing prospectus.

The Notes will not be listed on any U.S. securities exchange or quotation system. Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined that this free writing prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

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.

	Price to Public <sup>1</sup>	Underwriting Commission <sup>2</sup>	Proceeds to Royal Bank of Canada
Per Note \$1,000	\$10	\$	
Total	\$	\$	\$

<sup>1</sup> Certain fiduciary accounts purchasing the Notes will pay a purchase price of \$990 per Note, and the placement agents will forgo any fees with respect to sales made to those accounts. The price to the public for all other purchases of the Notes is 100%.

<sup>2</sup> JPMorgan Chase Bank, N.A., J.P. Morgan Securities LLC and their affiliates will act as placement agents for the Notes and will receive a fee from the Issuer that will not exceed \$10 per \$1,000 in principal amount of the Notes, but will forgo any fees for sales to certain fiduciary accounts.

RBC Capital Markets, LLC JPMorgan Chase Bank, N.A. J.P. Morgan Securities LLC  
Placement Agents

Royal Bank of Canada has filed a registration statement (including a product prospectus supplement, a prospectus supplement, and a prospectus) with the SEC for the offering to which this free writing prospectus relates. Before you invest, you should read those documents and the other documents relating to this offering that we have filed with the SEC for more complete information about us and this offering. You may obtain these documents without cost by visiting EDGAR on the SEC website at [www.sec.gov](http://www.sec.gov). Alternatively, Royal Bank of Canada, any agent or any dealer participating in this offering will arrange to send you the product prospectus supplement, the prospectus supplement and the prospectus if you so request by calling toll-free at 1-877-688-2301.

You may revoke your offer to purchase the Notes at any time prior to the pricing as described on the cover of this free writing prospectus. We reserve the right to change the terms of, or reject any offer to purchase the Notes prior to their issuance. In the event of any changes to the terms of the Notes, we will notify you and you will be asked to accept such changes in connection with your purchase. You may also choose to reject such changes, in which case we may reject your offer to purchase.

#### ADDITIONAL TERMS OF THE NOTES

You should read this free writing prospectus 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 free writing prospectus will have the meanings given to them in the product prospectus supplement. In the event of any conflict, this free writing prospectus will control. You should read this free writing prospectus carefully.

This free writing prospectus, 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 and “Additional Risk Factors Specific to the Notes” in the product prospectus supplement, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the “SEC”) website at [www.sec.gov](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 free writing prospectus, “Royal Bank”, “we,” “us,” or “our” refers to Royal Bank of Canada.

# What Is the Total Return on the Notes at Maturity Assuming a Range of Performance for the Index?

The following table illustrates the hypothetical total return at maturity on the Notes. The “total return,” as used in this free writing prospectus, is the number, expressed as a percentage, that results from comparing the payment at maturity per \$1,000 in principal amount of the Notes to \$1,000. The hypothetical total returns and examples set forth below assume a hypothetical Initial Level of 1,000, the Buffer Level of 85.44% of the Initial Level, the Maximum Upside Return of \$1,050 per \$1,000 in principal amount of the Notes, and hypothetical Final Levels, as set forth below. The actual Initial Level and Buffer Level will be determined on the pricing date, and the actual Final Level will be determined based on the arithmetic average of the closing levels of the Index on each of the valuation dates. The hypothetical total returns and examples set forth below are for illustrative purposes only and may not be the actual total returns applicable to a purchaser of the Notes. The numbers appearing in the following table and examples have been rounded for ease of analysis. The examples below do not take into account any tax consequences from investing in the Notes.

Final Level Percentage Change		Payment at Total Return on the Maturity Notes	
1,500.00	50.00%	\$1,050.00	5.00%
1,400.00	40.00%	\$1,050.00	5.00%
1,300.00	30.00%	\$1,050.00	5.00%
1,200.00	20.00%	\$1,050.00	5.00%
1,150.00	15.00%	\$1,050.00	5.00%
1,100.00	10.00%	\$1,050.00	5.00%
1,080.00	8.00%	\$1,050.00	5.00%
1,050.00	5.00%	\$1,050.00	5.00%
1,025.00	2.50%	\$1,025.00	2.50%
1,010.00	1.00%	\$1,010.00	1.00%
1,000.00	0.00%	\$1,000.00	0.00%
950.00	-5.00%	\$1,050.00	5.00%
900.00	-10.00%	\$1,100.00	10.00%
854.40	-14.56%	\$1,145.60	14.56%
850.00	-15.00%	\$994.85	-0.515%
800.00	-20.00%	\$936.33	-6.367%
750.00	-25.00%	\$877.81	12.219%
700.00	-30.00%	\$819.29	-18.071%
600.00	-40.00%	\$702.25	-29.775%
500.00	-50.00%	\$585.21	-41.479%
400.00	-60.00%	\$468.16	-53.184%
300.00	-70.00%	\$351.12	-64.888%
200.00	-80.00%	\$234.08	-76.592%
100.00	-90.00%	\$117.04	-88.296%
0.00	-100.00%	\$0.0000	-100.00%

#### Hypothetical Examples of Amounts Payable at Maturity

The following examples illustrate how the payments set forth in the table above are calculated.

Example 1: The level of the Index increases from the Initial Level to a Final Level of 1,025, resulting in a Percentage Change of 2.50%.

Because the Percentage Change is positive, the investor will receive a payment at maturity of \$1,025 per \$1,000 in principal amount of the Notes, calculated as follows:

$$\$1,000 + (\$1,000 \times 2.50\%) = \$1,025$$

Example 2: The level of the Index increases from the Initial Level to a Final Level of 1,200, resulting in a Percentage Change of 20%.

In this example, the Percentage Change would result in a payment that is greater than the Maximum Upside Return. Accordingly, the payment on the notes would be \$1,050 per \$1,000 in principal amount, representing the Maximum Upside Return. In this case, your return on the Notes is less than the return represented by the Percentage Change.

Example 3: The level of the Index decreases from the Initial Level to a Final Level of 900, resulting in a Percentage Change of -10%.

Because the Percentage Change is negative, but the Final Level is not less than the Buffer Level, the investor will receive a payment at maturity of \$1,100 per \$1,000 in principal amount of the Notes, calculated as follows:

$$\$1,000 + [-1 \times (\$1,000 \times -10\%)] = \$1,100$$

In this case, your return is positive, even though the level of the Index has decreased.

Example 4: The level of the Index decreases from the Initial Level to a Final Level of 500, resulting in a Percentage Change of -50%.

Because the Final Level is less than the Buffer Level, the investor will receive a payment at maturity of approximately \$585.21 per \$1,000 in principal amount of the Notes, calculated as follows:

$$\$1,000 + [\$1,000 \times ((-50\% + 14.56\%) \times \text{Downside Multiplier})] = \$585.21$$

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### Selected Purchase Considerations

**Appreciation Potential** — If the Final Level is greater than or equal to the Buffer Level, you will receive a positive return equal to

the absolute value of the Percentage Change if the Percentage Change is negative (resulting in a maximum potential in this case of \$1,145.60 for each \$1000 in principal amount of the notes); or

if the Percentage Change is positive, the Percentage Change, subject to the Maximum Upside Return on the Notes of \$1,050 for every \$1,000 principal amount. If the Percentage Change is zero, you will receive an amount equal to the principal amount of the Notes. Because the Notes are our senior unsecured obligations, payment of any amount at maturity is subject to our ability to pay our obligations as they become due and is not guaranteed by any third party.

For a description of the risks with respect to our credit, see “Selected Risk Considerations—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” in this free writing prospectus.

**The Absolute Return Feature Applies Only if the Final Level Is Not Less than the Buffer Level** — If the Index declines over the term of the Notes, but the Final Level is greater than the Buffer Level, you will receive at maturity a positive return equal to the absolute value of the Percentage Change. If the Final Level is less than the Buffer Level, you will lose approximately 1.1704% of your principal amount for every 1% that the Final Level is less than the Buffer Level.

### Selected Risk Considerations

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Index. These risks are explained in more detail in the section “Additional Risk Factors Specific to the Notes,” beginning on page PS-4 of 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 will lose all or a substantial portion of their principal amount if the Final Level is less than the Buffer Level. In such a case, you will lose approximately 1.1704% of the principal amount of your Notes for each 1% that the Final Level is less than the Buffer Level. In such a case, you may lose up to 100% of your investment.

**The Notes Do Not Pay Interest and Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity** — There will be no periodic interest payments on the Notes as there would be on a conventional fixed-rate or floating-rate debt security having the same maturity. The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you would earn if you bought one of our conventional senior interest bearing debt securities.

**Your Potential Payment at Maturity Is Limited** - The Notes will provide less opportunity to participate in the appreciation of the Index than an investment in a security linked to the Index providing full participation in that appreciation, because the return on the Notes if the Percentage Change is positive will not exceed the Maximum Upside Return. Accordingly, your return on the Notes may be less than your return would be if you made an investment in a security directly linked to the positive performance of the Index.

**Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes** — The Notes are our senior unsecured debt securities. As a result, your receipt of the amount due on the maturity date is dependent upon our ability to repay our obligations at that time. This will be the case even if the level of the Index increases after the pricing date. No assurance can be given as to what our financial condition will be at the maturity 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.

**You Will Not Have Any Rights to the Securities Included in the Index** — As a holder of the Notes, you will not have voting rights or rights to receive cash dividends or other distributions or other rights that holders of securities included in the Index would have. The Final Level will not reflect any dividends paid on the securities included in the

Index, and accordingly, any positive return on the Notes may be less than the potential positive return on those securities.

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The Notes Are Subject to Non-U.S. Securities Markets Risks — An investment in securities linked to the SX5E involves risks associated with the Eurozone. The prices of such securities may be affected by political, legal, economic, financial and social factors in the home country of each such company and related international markets, including changes in governmental, economic and fiscal policies, currency exchange laws or other laws or restrictions, which could affect the value of the Notes. The foreign securities tracked by the SX5E may have less liquidity and could be more volatile than many of the securities traded in U.S. or other securities markets. Direct or indirect government intervention to stabilize the relevant foreign securities markets, as well as cross shareholdings in foreign companies, may affect trading levels or prices and volumes in those markets. The other special risks associated with foreign securities may include, but are not limited to: less liquidity; less or different rigorous regulation of securities markets; governmental interference; currency fluctuations; higher inflation; and social, economic and political uncertainties. Also, there is generally less publicly available information about foreign companies than about U.S. companies that are subject to the reporting requirements of the SEC, and foreign companies are subject to accounting, auditing and financial reporting standards and requirements different from those applicable to U.S. reporting companies. These factors may adversely affect the performance of the SX5E and, as a result, the value of the Notes.

Many Economic and Market Factors Will Impact the Value of the Notes — In addition to the level of the Index on any day, the value of the Notes will be affected by a number of economic and market factors that may either offset or magnify each other, including:

- the expected volatility of the Index;
- the time to maturity of the Notes;
- the dividend rate on the securities included in the Index;
- interest and yield rates in the market generally;
- the exchange rate between the U.S. dollar and the euro;
- a variety of economic, financial, political, regulatory or judicial events; and
- our creditworthiness, including actual or anticipated downgrades in our credit ratings.

The Estimated Initial Value of the Notes Will Be Less than the Price to the Public — The estimated initial value that will be set forth in the final pricing supplement for the Notes 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 estimated initial value. This is due to, among other things, changes in the level of the Index, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount and the 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. 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 Estimated Initial Value of the Notes That We Will Provide in the Final Pricing Supplement Will Be an Estimate Only, Calculated as of the Pricing Date — The value of the Notes at any time after the pricing 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 estimated initial value of your Notes.

We and Our Affiliates May Have Adverse Economic Interests to the Holders of the Notes — We, RBCCM and our other respective affiliates trade the securities represented by the Index, and other financial instruments related to the Index, on a regular basis, for their accounts and for other accounts under our or their management. We, RBCCM and our other affiliates may also issue or underwrite or assist unaffiliated entities in the issuance or underwriting of other securities or financial instruments that relate to the Index. To the extent that we or any of our affiliates serves as issuer, agent or underwriter for such securities or financial instruments, our or their interests with respect to such products may be adverse to those of the holders of the Notes. Any of these trading activities could potentially affect the performance of the Index and, accordingly, could affect the value of the Notes, and the amounts, if any, payable on the Notes.



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We or our affiliates may currently or from time to time engage in business with the issuers of the securities represented by the Index, including extending loans to, or making equity investments in, or providing advisory services to them, including merger and acquisition advisory services. In the course of this business, we or our affiliates may acquire non-public information about these companies, and we will not disclose any such information to you. None of us or our affiliates makes any representation or warranty to any purchaser of the Notes with respect to any matters whatsoever relating to our business with the issuer of any security included in the Index or future price movements of any such security.

Additionally, we or our affiliates may serve as issuer, agent or underwriter for additional issuances of securities with returns linked or related to changes in the level the Index. By introducing competing products into the marketplace in this manner, we could adversely affect the value of the Notes.

We may hedge our obligations under the Notes through certain affiliates, who would expect to make a profit on such hedge. We or our affiliates may adjust these hedges by, among other things, purchasing or selling those assets at any time, including around the time of the valuation dates, which could have an impact on the return of the Notes. Because hedging our obligations entails risk and may be influenced by market forces beyond our or our affiliates' control, such hedging may result in a profit that is more or less than expected, or it may result in a loss.

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

**Market Disruption Events or Unavailability of the Level of the Index and Adjustments** — The payment at maturity, the valuation dates and the Index are subject to adjustment as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event and the unavailability of the level of the Index on the valuation dates, see “General Terms of the Notes—Unavailability of the Level of the Reference Asset” and “—Market Disruption Events” in the product prospectus supplement.

Historical Information

The following graph sets forth the historical performance of the Index from January 1, 2014 to March 18, 2019. On March 18, 2019, the closing level of the Index was 3,387.94.

We obtained the Index closing levels below from Bloomberg L.P. We have not independently verified the accuracy or completeness of the information obtained from Bloomberg L.P. The historical levels of the Index should not be taken as an indication of future performance, and no assurance can be given as to the closing level of the Index on the valuation dates. We cannot give you assurance that the performance of the Index will result in the return of any of your initial investment.

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

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All disclosures contained in this pricing supplement 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, STOXX Limited, as the sponsor of the Index (“STOXX”). STOXX, which owns the copyright and all other rights to the Index, has no obligation to continue to publish, and may discontinue publication of, the Index. The consequences of STOXX discontinuing publication of the Index 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 Index or any successor index.

The Index was created by STOXX Limited, a subsidiary of Deutsche Börse AG. Publication of the Index began in February 1998, based on an initial index level of 1,000 at December 31, 1991.

#### Composition and Maintenance

The Index is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX® Supersector indices, which represent the Eurozone portion of the STOXX Europe 600® Supersector indices.

The composition of the Index is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the Index are made to ensure that the Index includes the 50 market sector leaders from within the Index.

The free float factors for each component stock used to calculate the Index, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review.

The Index is also reviewed on an ongoing monthly basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the Index composition are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

#### Calculation of the Index

The Index is calculated with the “Laspeyres formula,” which measures the aggregate price changes in the component stocks against a fixed base quantity weight. The formula for calculating the Index value can be expressed as follows:

$$\text{Reference Asset} = \frac{\text{Free float market capitalization of the Index}}{\text{Divisor}}$$

The “free float market capitalization of the Index” is equal to the sum of the products of the price, the number of shares, the free float factor and the weighting cap factor for each component stock as of the time the Index is being calculated. The Index is also subject to a divisor, which is adjusted to maintain the continuity of the Index values across changes due to corporate actions, such as the deletion and addition of stocks, the substitution of stocks, stock dividends, and stock splits.

#### License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the Index) in connection with certain securities, including the Notes offered hereby.

The license agreement between us and STOXX requires that the following language be stated in this document:

STOXX has no relationship to us, other than the licensing of the Index and the related trademarks for use in connection with the Notes. STOXX does not:

- sponsor, endorse, sell, or promote the Notes;
- recommend that any person invest in the Notes offered hereby or any other securities;
- have any responsibility or liability for or make any decisions about the timing, amount, or pricing of the Notes;
- have any responsibility or liability for the administration, management, or marketing of the Notes; or
- consider the needs of the Notes or the holders of the Notes in determining, composing, or calculating the Index, or have any obligation to do so.

STOXX will not have any liability in connection with the Notes. Specifically:

- STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning:
  - the results to be obtained by the Notes, the holders of the Notes or any other person in connection with the use of the Index and the data included in the Index;
  - the accuracy or completeness of the Index and its data;
  - the merchantability and the fitness for a particular purpose or use of the Index and its data;
- STOXX will have no liability for any errors, omissions, or interruptions in the Index or its data; and

Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

The licensing agreement between us and STOXX is solely for their benefit and our benefit, and not for the benefit of the holders of the Notes or any other third parties.

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#### Supplemental Plan of Distribution

JPMorgan Chase Bank, N.A., J.P. Morgan Securities LLC and its affiliates will act as placement agents for the Notes, and will receive a fee from the Issuer that will not exceed \$10 per \$1,000 in principal amount of the Notes, but will forgo any fees for sales to certain fiduciary accounts.

We expect that delivery of the Notes will be made against payment for the Notes on or about March 27, 2019, which is more than two business days following the pricing 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 the Notes on any date prior to two business days before delivery will be required to specify alternative settlement arrangements to prevent a failed settlement.

In addition, RBCCM or another of its affiliates or agents may use this document in market-making transactions after the initial sale of the Notes, but is under no obligation to do so and may discontinue any market-making activities at any time without notice.

The value of the Notes shown on your account statement will 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 six (6) months after the issue date of the Notes, the price shown on your account statement may initially be higher than RBCCM's estimated value of the Notes. This is because the estimated value of the Notes will reflect the reduction of the underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period is expected to be a higher amount, reflecting the amortization of RBCCM's underwriting discount and our estimated profit from hedging the Notes. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect its estimated value.

The Notes are our debt securities, the return on which is linked to the performance of the Index. 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. 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 estimated initial value of the Notes at the time the terms of the Notes 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) 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 Index, and the tenor of the Notes. The economic terms of the Notes depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate, the underwriting commission and the hedging-related costs relating to the Notes reduce the economic terms of the Notes to you and result in the estimated initial value for the Notes (estimated at the time the terms of the Notes are set) being less than their public offering price. See "Selected Risk Considerations—The Estimated Initial Value of the Notes Will Be Less than the Price to the Public" above.

## U.S. Federal Tax Consequences

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

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat a Note with terms described herein as a pre-paid cash-settled derivative contract in respect of the Index for U.S. federal income tax purposes, and the terms of the Notes require a holder and us (in the absence of a change in law or an administrative or judicial ruling to the contrary) to treat the Notes for all tax purposes in accordance with such characterization.

However, the U.S. federal income tax consequences of your investment in the Notes are uncertain and the IRS could assert that the Notes should be taxed in a manner that is different from that described in the preceding sentence.

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 Index or the Notes (for example, upon the Index 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 Index 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.