ROYAL BANK OF CANADA
Form 424B2
January 30, 2019

RBC Capital Markets®

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Pricing Supplement

Dated January 29, 2019
To the Product Prospectus Supplement ERN-EI-1, Prospectus Supplement and Prospectus, Each Dated September 7, 2018

$612,000
Notes Linked to the S&P 500® Index,
Due February 1, 2024
Royal Bank of Canada

Royal Bank of Canada is offering the notes (the "Notes") linked to the performance of the S&P 500® Index (the "Reference Asset").
The CUSIP number for the Notes is 78013XWE4. The Notes do not pay interest. If the level of the Reference Asset increases from the Initial Level to the Final Level, the Notes provide a one-for-one return based on that increase, subject to the Maximum Redemption Amount of 156% of the principal amount of the Notes. If the Final Level of the Reference Asset is equal to or less than the Initial Level, the investor will receive the principal amount at maturity, and no additional payment. Any payments on the Notes are subject to our credit risk.
Issue Date: January 31, 2019
Maturity Date: February 1, 2024
The Notes will not be listed on any securities exchange.
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 P-6 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.

	Per Note	Total
Price to public[(1)]	100.00%	$612,000
Underwriting discounts and commissions[(1)]	0.25%	$1,530
Proceeds to Royal Bank of Canada	99.75%	$610,470

[(1)]Certain dealers who purchased the Notes for sale to certain fee-based advisory accounts may have foregone some or all of their underwriting discount or selling concessions. The public offering price for investors purchasing the Notes in these accounts was between $997.50 and $1,000 per $1,000 in principal amount.
The initial estimated value of the Notes as of the date of this pricing supplement is $981.04 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.

RBC Capital Markets, LLC, which we refer to as RBCCM, acting as agent for Royal Bank of Canada, received a commission of $2.50 per $1,000 in principal amount of the Notes and used a portion of that commission to allow selling concessions to other dealers of up to $2.50 per $1,000 in principal amount of the Notes. The other dealers may forgo, in their sole discretion, some or all of their selling concessions. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

RBC Capital Markets, LLC

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.

Issuer:	Royal Bank of Canada ("Royal Bank")
Issue:	Senior Global Medium-Term Notes, Series H
Underwriter:	RBC Capital Markets, LLC ("RBCCM")
Reference Asset:	S&P 500® Index
Bloomberg Ticker:	SPX
Currency:	U.S. Dollars
Minimum Investment:	$1,000 and minimum denominations of $1,000 in excess thereof
Trade Date (Pricing Date):	January 29, 2019
Issue Date:	January 31, 2019
CUSIP:	78013XWE4
Valuation Date:	January 29, 2024
Maturity Date:	February 1, 2024, subject to extension for market and other disruptions, as described in the product prospectus supplement dated September 7, 2018.
Payment at Maturity (if held to maturity):	If, on the Valuation Date, the Percentage Change is positive, then the investor will receive an amount per $1,000 principal amount per Note equal to the lesser of: 1. Principal Amount + (Principal Amount x Percentage Change); and 2. the Maximum Redemption Amount. If, on the Valuation Date, the Percentage Change is less than or equal to 0%, then the investor will receive the principal amount only.
Percentage Change:	The Percentage Change, expressed as a percentage, is calculated using the following formula:
Initial Level:	2,640.00, which was the closing level of the Reference Asset on the Trade Date.
Final Level:	The closing level of the Reference Asset on the Valuation Date.
Maximum Redemption Amount:	156% multiplied by the principal amount.
Calculation Agent:	RBCCM

Notes Linked to the S&P 500® Index

U.S. Tax Treatment:	We intend to take the position that the Notes will be treated as debt instruments subject to the special tax rules governing contingent payment debt instruments for U.S. federal income tax purposes. Please see the section below, "Supplemental Discussion of U.S. Federal Income Tax Consequences" which applies to the Notes.
Secondary Market:	RBCCM (or one of its affiliates), though not obligated to do so, may maintain a secondary market in the Notes after the Issue Date. The amount that you may receive upon sale of your Notes prior to maturity may be less than the principal amount of your Notes.
Listing:	The Notes will not be listed on any securities exchange.
Clearance and Settlement:	DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under "Description of Debt Securities — Ownership and Book-Entry Issuance" in the prospectus dated September 7, 2018).
Terms Incorporated in the Master Note:	All of the terms appearing above the item captioned "Secondary Market" on pages P-2 and P-3 of this pricing supplement and the terms appearing under the caption "General Terms of the Notes" in the product prospectus supplement dated September 7, 2018, as modified by this pricing supplement.

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. You should read this pricing supplement carefully.

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in “Risk Factors” in the prospectus supplement dated September 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 Securities and Exchange Commission (the “SEC”) website at www.sec.gov as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated September 7, 2018:
https://www.sec.gov/Archives/edgar/data/1000275/000121465918005973/l96181424b3.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.

Notes Linked to the S&P 500® Index

HYPOTHETICAL RETURNS

The examples set out below are included for illustration purposes only. The hypothetical Percentage Changes of the Reference Asset used to illustrate the calculation of the Payment at Maturity (rounded to two decimal places) are not estimates or forecasts of the Final Level or the level of the Reference Asset on any trading day prior to the Maturity Date. All examples are based on the Maximum Redemption Amount of 156%, and assume that a holder purchased Notes with an aggregate principal amount of $1,000 and that no market disruption event occurs on the Valuation Date.

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

Percentage Change:	-10%
Payment at Maturity:	In this case, even though the Percentage Change is negative, you will receive the principal amount of your Notes at maturity.

In this case, on a $1,000 investment, a -10% Percentage Change results in a Payment at Maturity of $1,000.00, a 0.00% return on the Notes.

Example 2 — Calculation of the Payment at Maturity where the Percentage Change is positive, but less than the return represented by the Maximum Redemption Amount.

Percentage Change: 10%

Payment at Maturity: $1,000 + ($1,000 x 10%) = $1,000 + $100.00 = $1,100.00

On a $1,000 investment, a 10% Percentage Change results in a Payment at Maturity of $1,100.00, a 10.00% return on the Notes.

Example 3 — Calculation of the Payment at Maturity where the Percentage Change is positive (and the Payment at Maturity is subject to the Maximum Redemption Amount).
Percentage Change: 60%
Payment at Maturity: $1,000 + ($1,000 x 60%) = $1,000 + $600.00 = $1,600.00
However, the hypothetical Maximum Redemption Amount is $1,560. Accordingly, you will receive a payment at maturity equal to $1,560 per $1,000 in principal amount of the Notes.
On a $1,000 investment, a 60% Percentage Change results in a Payment at Maturity of $1,560, a 56% return on the Notes.

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," 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:

- You May Not Earn a Return on Your Investment – The payment you will receive at maturity will depend on whether the level of the Reference Asset increases from the Initial Level to the Final Level. If the level of the Reference Asset decreases from the Initial Level to the Final Level (or if the level of the Reference Asset is unchanged), you will not receive any positive return on the Notes and you will only receive the principal amount.
- 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 zero, 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. As a result, your investment in the Notes may not reflect the full opportunity cost to you when you consider factors, such as inflation, that affect the time value of money.
- Your Potential Payment at Maturity Is Limited – The Notes will provide less opportunity to participate in the appreciation of the Reference Asset than an investment in a security linked to the Reference Asset providing full participation in the appreciation, because the payment at maturity will not exceed the Maximum Redemption Amount. Accordingly, your return on the Notes may be less than your return would be if you made an investment in a security directly linked to the positive performance of the 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 Royal Bank's senior unsecured debt securities. As a result, your receipt of the amount due on the maturity date is dependent upon Royal Bank's ability to repay its obligations at that time. 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 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 other affiliates of Royal Bank may make a market for the Notes; however, they are not required to do so. RBCCM or any other affiliate of Royal Bank 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. The stated payment by Royal Bank, including the potential repayment of principal, only applies if you hold the Notes to maturity. Sales prior to maturity could result in a loss on your investment.
- You Will Not Have Any Rights to the Securities Included in the Reference Asset – 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 Reference Asset would have. The Final Level will not reflect any dividends paid on the securities included in the Reference Asset, and accordingly, any positive return on the Notes may be less than the potential positive return on those securities.
- 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 the public of the underwriting discount and the

estimated costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which

you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the underwriting discount and the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined 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 levels of the Reference Asset 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 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 and the Valuation Date are subject to adjustment as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event, see "General Terms of the Notes—Market Disruption Events" in the product prospectus supplement.
- You Will Be Required to Include Income on the Notes Over Their Term Based Upon a Comparable Yield, Even Though You Will Not Receive Any Payments Until Maturity – The Notes are considered to be issued with original issue discount. You will be required to include income on the Notes over their term based upon a comparable yield, even though you will not receive any payments until maturity. You are urged to review the section entitled "Supplemental Discussion of U.S. Federal Income Tax Consequences" and consult your own tax advisor.

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 depositary banks, pension funds, mutual funds and ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

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.

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.

Notes Linked to the S&P 500® Index

License Agreement

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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 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.

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. The information provided in this graph is for the period from January 1, 2009 through January 29, 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 result in any positive return on your initial investment.

S&P 500® Index (“SPX”)

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

Notes Linked to the S&P 500® Index

SUPPLEMENTAL DISCUSSION OF
U.S. FEDERAL INCOME TAX CONSEQUENCES

The following is a general description of the material U.S. tax considerations relating to the Notes. It does not purport to be a complete analysis of all tax considerations relating to the Notes. Prospective purchasers of the Notes should consult their tax advisors as to the consequences under the tax laws of the country of which they are resident for tax purposes and the tax laws of the U.S. of acquiring, holding and disposing of the Notes and receiving payments under the Notes. This summary is based upon the law as in effect on the date of this document and is subject to any change in law that may take effect after such date.

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement and it supersedes the discussion of U.S. federal income taxation in the accompanying product prospectus supplement. 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 holders that will purchase the Notes upon original issuance and will hold the Notes as capital assets for U.S. federal income tax purposes. Further, this discussion does not address the tax consequences applicable to any holders under section 451(b) of the U.S. Internal Revenue Code of 1986, as amended (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.

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.

We will not attempt to ascertain whether any of the entities whose stock is included in the Reference Asset would be treated as a "passive foreign investment company" within the meaning of Section 1297 of the Code, or a "U.S. real property holding corporation," within the meaning of Section 897 of the Code. If any of the entities whose stock is included in the Reference Asset 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 entities whose stock is included in the Reference Asset and consult your tax advisor regarding the possible consequences to you in this regard, if any.

Royal Bank intends to treat any interest with respect to the Notes, as determined for U.S. federal income tax purposes, as from sources within the U.S.

We intend to take the position that the Notes will be treated as debt instruments subject to the special tax rules governing contingent payment debt instruments for U.S. federal income tax purposes. Under those rules, the amount of interest you are required to take into account for each accrual period will be determined by constructing a projected payment schedule for the Notes, and applying the rules similar to those for accruing original issue discount on a hypothetical noncontingent debt instrument with that projected payment schedule. This method is applied by first determining the yield at which we would issue a noncontingent fixed rate debt instrument with terms and conditions similar to the Notes (the "comparable yield") and then determining a payment schedule as of the issue date that would produce the comparable yield. A projected payment schedule with respect to a note generally is a series of projected payments, the amount and timing of which would produce a yield to maturity on that note equal to the comparable yield. This projected payment schedule is solely for tax purposes and will consist of the Payment at Maturity. These rules will generally have the effect of requiring you to include amounts as income in respect of the Notes prior to your receipt of cash attributable to that income.

The amount of interest that you will be required to include in income during each accrual period for the Notes will equal the product of the adjusted issue price for the Notes at the beginning of the accrual period and the comparable yield for

the Notes for such period. The adjusted issue price of the Notes will equal the Notes' original offering price plus any interest deemed to be accrued on the Notes (under the rules governing contingent payment debt instruments).

To obtain the comparable yield and projected payment schedule for your Note, you should call RBC Capital Markets, LLC toll free at 1-877-688-2301. You are required to use such comparable yield and projected payment schedule in determining your interest accruals in respect of your Notes, unless you timely disclose and justify on your federal income tax return the use of a different comparable yield and projected payment schedule.

The comparable yield and projected payment schedule are not provided to you for any purpose other than the determination of your interest accruals in respect of the Notes, and we make no representations regarding the amount of contingent payments with respect to the Notes.

If the contingent payment on the Notes becomes fixed on a day that is more than 6 months before the payment is due, applicable Treasury regulations provide that you should make adjustments to the prior and future interest inclusions in respect of your Notes over the remaining term for the Notes in a reasonable manner. You should consult your tax advisor as to what would be a "reasonable manner" in your particular situation.

You will recognize gain or loss on the sale or maturity of the Notes in an amount equal to the difference, if any, between the amount of cash you receive at such time and your adjusted basis in the Notes. In general, your adjusted basis in the Notes will equal the amount you paid for the Notes, increased by the amount of interest you previously accrued with respect to the Notes (in accordance with the comparable yield for the Notes).

Any gain you recognize on the sale or maturity of the Notes will be ordinary interest income. Any loss you recognize at such time will be ordinary loss to the extent of interest you included as income in the current or previous taxable years in respect of the Notes, and thereafter, capital loss. The deductibility of capital losses is limited.

Backup Withholding and Information Reporting. Payments made with respect to the Notes and proceeds from the sale 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 Internal Revenue Service ("IRS") or allowed as a credit against the holder's U.S. federal income tax, provided the holder makes a timely filing of an appropriate tax return or refund claim.

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 a Note and are for U.S. federal income tax purposes a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

Except as discussed below, payments made to a non-U.S. holder, and any gain realized on the sale or maturity of the Notes, generally should be exempt from U.S. federal income and withholding tax, subject to generally applicable exceptions set forth in the rules exempting "portfolio interest" from U.S. withholding tax, provided that (i) the holder complies 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 the holder certifies, under penalties of perjury, that the holder is not a U.S. person and provides its name and address, (ii) the payment or gain is not effectively connected with the conduct by the holder of a U.S. trade or business, and (iii) if the holder is a non-resident alien individual, the holder is 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, the holder generally should be subject to U.S. federal income tax with respect to any income or gain in the same manner as if the holder were a U.S. holder and, in the case of a holder that is a corporation, the holder 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 its 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 a non-U.S. holder may be subject to information reporting and to backup withholding unless the holder complies with applicable certification and identification requirements as to its 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.

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, including interest (and original issue discount), dividends, 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 FATCA. 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 U.S. Internal Revenue Service 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. Therefore, if such withholding applies, any payments on the Notes will be significantly less than what you would have otherwise received. Depending on your circumstances, these amounts withheld may be creditable or refundable to you. 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.

SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Delivery of the Notes will be made against payment for the Notes on January 31, 2019, which is the second (2nd) business day following the Trade Date (this settlement cycle being referred to as "T+2"). See "Plan of Distribution" in the prospectus dated September 7, 2018. For additional information as to the relationship between us and RBCCM, please see the section "Plan of Distribution — Conflicts of Interest" in the prospectus dated September 7, 2018.

In the initial offering of the Notes, they were offered to investors at a purchase price equal to par, except with respect to certain accounts as indicated on the cover page of this document.

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 12 months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM's estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may initially be a higher amount, reflecting the addition of RBCCM's underwriting discount and our estimated costs and profits from hedging the Notes. This excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value.

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

STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the 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 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 the 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.