

ROYAL BANK OF CANADA  
Form FWP  
December 11, 2018

Free Writing Prospectus  
(To the Prospectus dated September 7, 2018, the Prospectus Supplement dated September 7, 2018, and the Product Prospectus Supplement dated September 10, 2018)

Filed Pursuant to  
Rule 433  
Registration No.  
333-227001  
December 11, 2018

\$  
Buffered Phoenix Autocallable Notes with Memory Coupon due January 2, 2020  
Linked to the Common Stock of Pioneer Natural Resources Company  
Royal Bank of Canada Senior Global Medium-Term Notes, Series H

**General**

The Notes are designed for investors who wish to receive Contingent Coupons (as defined below) if (i) on any of the Observation Dates (other than the final Observation Date), the closing price of the common stock of Pioneer Natural Resources Company (the “Reference Stock”) or (ii) with respect to the final Observation Date, the Final Stock Price (as defined below) is at or above the Coupon Barrier (as defined below). Investors should be willing to forgo fixed interest and dividend payments, in exchange for the opportunity to receive a Contingent Coupon for each Observation Date. Due to the memory feature described below, a Contingent Coupon that is not payable on a Coupon Payment Date may be paid on a subsequent Coupon Payment Date or at maturity.

Investors in the Notes should be willing to accept the risk of losing some or all of their principal and the risk that no Contingent Coupon payment may be made with respect to some or all of the Observation Dates. Contingent Coupon payments should not be viewed as periodic interest payments.

The Notes are subject to automatic call if the closing price of the Reference Stock on any Observation Date (other than the final Observation Date) is at or above the Initial Stock Price. If the Notes are not automatically called and the Final Stock Price is below the Buffer Price (as defined below), investors will be exposed to the depreciation in the Reference Stock, and could lose all or a portion of the principal amount. Investors in the Notes should be willing to accept this risk of loss. All payments on the Notes are subject to our credit risk.

Senior unsecured obligations of Royal Bank of Canada maturing January 2, 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 December 14, 2018<sup>(b)</sup> (the “trade date”) and are expected to be issued on or about December 19, 2018<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 Stock:** The common stock of Pioneer Natural Resources Company (Bloomberg symbol: “PXD”)

**Observation Dates:** March 28, 2019, June 27, 2019, September 26, 2019 and December 27, 2019 <sup>(a)(b)</sup>

**Coupon Payment Dates:** Three business days following each Observation Date, except that the final Coupon Payment Date will be the maturity date.

**Contingent Coupons and Memory Feature:** The Contingent Coupon will be paid on each Coupon Payment Date if (i) the closing price of the Reference Stock on the applicable Observation Date (other than the final Observation Date) or (ii) with respect to the final Observation Date, the Final Stock Price, is at or above the Coupon Barrier. If the Contingent Coupon is not payable on any Coupon Payment Date, it will be paid on any later Coupon Payment Date (or at maturity) on which the Contingent Coupon is payable, together with the payment otherwise due on that later date. For the avoidance of doubt, once a previously unpaid Contingent Coupon has been paid on a later Coupon Payment Date, it will not be paid again on a subsequent date.

\$25 per \$1,000 in principal amount of the Notes, if payable.

Contingent

Coupon:

Coupon Barrier: 67.08% of the Initial Stock Price

Call Feature: If the closing price of the Reference Stock on any Observation Date (other than the final Observation Date) is at or above the Initial Stock Price, the Notes will be automatically called for a cash payment equal to the principal amount plus the applicable Contingent Coupon for the applicable Observation Date, together with any previously unpaid Contingent Coupons.

Call Settlement Dates: The Coupon Payment Date corresponding to the applicable Observation Date.

Buffer Price: 67.08% of the Initial Stock Price. The Buffer Price is subject to the adjustment provisions set forth in the product prospectus supplement.

Buffer Percentage: 32.92%

Downside Multiplier: 100 divided by 67.08, or approximately 1.490757.

Payment at Maturity: If the Notes are not called and on the final Observation Date:  
 · the Final Stock Price is at or above the Buffer Price, then you will receive a cash amount equal to the principal amount plus the Contingent Coupon otherwise due on the maturity date and any previously unpaid Contingent Coupons with respect to the prior Coupon Payment Dates; or  
 · the Final Stock Price is below the Buffer Price, then you will receive a cash amount equal to: Principal amount x [(1 + ((Underlying Return + Buffer Percentage) x Downside Multiplier)].  
 In this case, you will incur a loss of approximately 1.490757% of the principal amount for each 1% that the Final Stock Price is less than the Buffer Price, and you will lose some or all of your initial investment.

Underlying Return: 
$$\frac{\text{Final Stock Price} - \text{Initial Stock Price}}{\text{Initial Stock Price}}$$

Initial Stock Price: The closing price of one share of the Reference Stock on the trade date.

Final Stock Price: The arithmetic average of the closing prices of one share of the Reference Stock on each of the Valuation Dates.

Valuation Dates: December 20, 2019, December 23, 2019, December 24, 2019, December 26, 2019 and the final Observation Date <sup>(a)(b)</sup>

Maturity Date: January 2, 2020<sup>(a)(b)</sup>

CUSIP/ISIN: 78013XUL0/ US78013XUL09

Estimated Value: The initial estimated value of the Notes as of the date of this document is \$983.71 per \$1,000 in principal amount, which is less than the price to public. The pricing supplement relating to the Notes will set forth our estimate of the initial value of the Notes as of the trade date, which will not be more than \$20 less than this amount. 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—Payment at Maturity” and “—Market Disruption Events” in the product prospectus supplement.

<sup>(b)</sup> Expected. In the event we make any change to the expected trade date and issue date, the Observation Dates, 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 “Risk Factors” beginning on page PS-5 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 U.S. 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.

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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		\$990
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

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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 10, 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. In particular, please note that the return on the Notes is subject to the Buffer Price if the price of the Reference Stock decreases. 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 dated September 7, 2018 and “Risk Factors” in the product prospectus supplement dated September 10, 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](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 CCBN-1 dated September 10, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000114036118038091/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.

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What Is the Return on the Notes Assuming a Range of Performance for the Reference Stock?

The following table illustrates hypothetical payments on the Notes that could be realized on each Coupon Payment Date or at maturity per \$1,000 in principal amount of the Notes for a range of prices of the Reference Stock. The hypothetical payments and examples set forth below assume an Initial Stock Price of \$100.00, and a hypothetical Coupon Barrier and Buffer Price of \$67.08, and reflect the Contingent Coupon of \$25, if payable. The actual Initial Stock Price, Coupon Barrier and Buffer Price will be determined on the trade date.

The hypothetical payments and examples set forth below are for illustrative purposes only and may not be the actual payments applicable to 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.

Reference Stock Price	Reference Stock Percentage Change at Observation Date	Observation Dates Prior to the Final Observation Date		Final Observation Date			
		Payment on Coupon Payment Date or Call Settlement Date (as applicable) <sup>(1)(2)</sup>	Return on the Notes	Final Stock Price <sup>(3)</sup>	Underlying Return at Final Observation Date	Payment at Maturity <sup>(2)</sup>	Return on the Notes <sup>(4)</sup>
\$180.00	80.00%	\$1,025.00	2.50%	\$180.00	80.00%	\$1,025.00	2.50%
\$170.00	70.00%	\$1,025.00	2.50%	\$170.00	70.00%	\$1,025.00	2.50%
\$160.00	60.00%	\$1,025.00	2.50%	\$160.00	60.00%	\$1,025.00	2.50%
\$150.00	50.00%	\$1,025.00	2.50%	\$150.00	50.00%	\$1,025.00	2.50%
\$140.00	40.00%	\$1,025.00	2.50%	\$140.00	40.00%	\$1,025.00	2.50%
\$130.00	30.00%	\$1,025.00	2.50%	\$130.00	30.00%	\$1,025.00	2.50%
\$120.00	20.00%	\$1,025.00	2.50%	\$120.00	20.00%	\$1,025.00	2.50%
\$110.00	10.00%	\$1,025.00	2.50%	\$110.00	10.00%	\$1,025.00	2.50%
\$105.00	5.00%	\$1,025.00	2.50%	\$105.00	5.00%	\$1,025.00	2.50%
\$100.00	0.00%	\$1,025.00	2.50%	\$100.00	0.00%	\$1,025.00	2.50%
\$95.00	-5.00%	\$25.00	2.50%	\$95.00	-5.00%	\$1,025.00	2.50%
\$90.00	-10.00%	\$25.00	2.50%	\$90.00	-10.00%	\$1,025.00	2.50%
\$85.00	-15.00%	\$25.00	2.50%	\$85.00	-15.00%	\$1,025.00	2.50%
\$80.00	-20.00%	\$25.00	2.50%	\$80.00	-20.00%	\$1,025.00	2.50%
\$70.00	-30.00%	\$25.00	2.50%	\$70.00	-30.00%	\$1,025.00	2.50%
\$67.08	-32.92%	\$25.00	2.50%	\$67.08	-32.08%	\$1,025.00	2.50%
\$60.00	-40.00%	\$0.00	0.00%	\$60.00	-40.00%	\$894.45	-10.55%
\$50.00	-50.00%	\$0.00	0.00%	\$50.00	-50.00%	\$745.38	-25.46%
\$40.00	-60.00%	\$0.00	0.00%	\$40.00	-60.00%	\$596.30	-40.37%
\$30.00	-70.00%	\$0.00	0.00%	\$30.00	-70.00%	\$447.23	-55.28%
\$20.00	-80.00%	\$0.00	0.00%	\$20.00	-80.00%	\$298.15	-70.18%
\$10.00	-90.00%	\$0.00	0.00%	\$10.00	-90.00%	\$149.08	-85.09%
\$0.00	-100.00%	\$0.00	0.00%	\$0.00	-100.00%	\$0.00	-100.00%

<sup>(1)</sup> The Notes will be automatically called if the closing price of one share of the Reference Stock on any Observation Date (other than the final Observation Date) is greater than or equal to the Initial Stock Price.

<sup>(2)</sup> You will receive a Contingent Coupon in connection with an Observation Date (i) if the closing price of one share of the Reference Stock on that Observation Date (other than the final Observation Date) or (ii) with respect to the final Observation Date, the Final Stock Price is greater than or equal to the Coupon Barrier. As set forth above, an unpaid

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Contingent Coupon may be payable on a subsequent Coupon Payment Date, or at maturity. This column does not reflect any previously unpaid Contingent Coupons that may be payable at on a Coupon Payment Date or at maturity.

<sup>(3)</sup> The Final Stock Price is equal to the arithmetic average of the closing prices of one share of the Reference Stock on each of the Valuation Dates.

<sup>(4)</sup> This column reflects only the return received in respect of the payment on the maturity date. In addition to this payment, if the closing price of the Reference Stock is greater than or equal to the Coupon Barrier (but below the Initial Stock Price) on one or more of the preceding Observation Dates, investors would receive the applicable Contingent Coupons.

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Hypothetical Examples of Amounts Payable at Maturity or upon an Automatic Call

The following examples illustrate how the payments will be calculated.

Example 1: The closing price of the Reference Stock increases from the Initial Stock Price of \$100.00 to \$110.00 on the first Observation Date.

Because the closing price of the Reference Stock on the first Observation Date is above the Initial Stock Price, the Notes are automatically called, and the investor receives a single payment on the first Call Settlement Date of \$1,025.00 per \$1,000 in principal amount of the Notes, reflecting the principal amount plus the Contingent Coupon for the first Observation Date, for a return of 2.50% on the Notes. No further amount will be owed to you under the Notes.

Example 2: The closing price of the Reference Stock decreases from the Initial Stock Price of \$100.00 to \$65.00 on the first Observation Date (below the Coupon Barrier), \$60.00 on the second Observation Date (below the Coupon Barrier), and increases to \$120.00 on the third Observation Date.

The closing price of the Reference Stock on the first and second Observation Dates was below the Initial Stock Price, so the notes were not automatically called; in addition, the first two Contingent Coupons were not payable. Since the closing price of the Reference Stock on the third Observation Date is above the Initial Stock Price, the Notes are automatically called, and the investor receives a payment on the third Call Settlement Date of \$1,025.00 per \$1,000 in principal amount of the Notes, reflecting the principal amount (\$1,000) and the Contingent Coupon for the third Observation Date (\$25.00), plus the Contingent Coupons that were not payable on the first two Coupon Payment Dates (\$50.00). An investor's return would be 7.50% on the Notes. No further amount will be owed to you under the Notes.

Example 3: The closing price of the Reference Stock decreases from the Initial Stock Price of \$100.00 to \$60.00 on the first Observation Date (below the Coupon Barrier), \$65.00 on the second Observation Date (below the Coupon Barrier), \$60.00 on the third Observation Date (below the Coupon Barrier) and the Final Stock Price of \$95.00 (above the Coupon Barrier and Buffer Price).

The closing price of the Reference Stock on the first, second and third Observation Dates were below the Initial Stock Price, so the notes were not automatically called; in addition, the first three Contingent Coupons were not payable. Since the Final Stock Price is above the Buffer Price, at maturity, the investor receives a payment of \$1,100.00 per \$1,000 in principal amount of the Notes, reflecting the principal amount (\$1,000) plus the Contingent Coupon for the final Observation Date (\$25.00), plus the three previously unpaid Contingent Coupon payments (\$75). The investor's return would be 10% on the Notes. No further amount will be owed to you under the Notes.

Example 4: The closing price of the Reference Stock decreases from the Initial Stock Price of \$100.00 to \$65.00 on the first Observation Date (below the Coupon Barrier), \$60.00 on the second Observation Date (below the Coupon Barrier), \$65.00 on the third Observation Date (below the Coupon Barrier) and the Final Stock Price is \$60.00 (below the Coupon Barrier and Buffer Price).

In this example, no Contingent Coupons were payable prior to maturity. At maturity, since the Final Stock Price is below the Coupon Barrier and Buffer Price, the investor receives a payment per \$1,000 in principal amount equal to:

$$\begin{aligned} & \$1,000 \times [1 + ((-40 + 32.92\%) \times (100/67.08))] = \\ & \$1,000 \times [1 + (-7.08\% \times (100/67.08))] = \\ & = \$894.45 \end{aligned}$$

The investor would incur a loss of approximately 10.55% on the Notes. No further amount will be owed to you under the Notes.

### Selected Purchase Considerations

**Capped Appreciation Potential** — The return potential of the Notes is limited to the Contingent Coupons and you will not participate in any appreciation in the price of the Reference Stock, which may be significant.

**Potential Early Redemption as a Result of Automatic Call Feature** — While the original term of the Notes is just over one year, the Notes will be called before maturity if the closing price of the Reference Stock is at or above the Initial Stock Price on the applicable Observation Date (other than the final Observation Date). In such a case, you will receive the principal amount plus the applicable Contingent Coupon corresponding to that Observation Date, plus any previously unpaid Contingent Coupons with respect to prior Observation Dates.

**Contingent Protection Against Loss** — If the Notes are not automatically called and the Final Stock Price is at or above the Buffer Price, you will be entitled to receive the full principal amount of your Notes at maturity (plus the applicable Contingent Coupon and any previously unpaid Contingent Coupons with respect to prior Observation Dates). If the Notes are not automatically called and the Final Stock Price is less than the Buffer Price, you will lose approximately 1.490757% of the principal amount of your Notes for every 1% that the Final Stock Price is less than the Buffer Price. Under these circumstances, you may lose up to your entire principal amount.

### Selected Risk Considerations

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Reference Stock. These risks are explained in more detail in the section “Risk Factors” beginning on page PS-5 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 could lose all or a substantial portion of their principal amount if there is a decline in the Reference Stock below the Buffer Price and the Notes are not automatically called. You will lose approximately 1.490757% of the principal amount of your Notes for each 1% that the Final Stock Price is less than the Buffer Price.

**Contingent Repayment of Principal Applies Only at Maturity** — You should be willing to hold your Notes to maturity. If you sell your Notes prior to maturity in the secondary market, if any, you may have to sell your Notes at a loss relative to your initial investment even if the price of the Reference Stock is above the Buffer Price.

**You May Not Receive Any Contingent Coupons** — Investors in the Notes will not necessarily receive Contingent Coupons on the Notes. If (i) the closing price of the Reference Stock on an Observation Date (other than the final Observation Date) or (ii) with respect to the final Observation Date, the Final Stock Price, is less than the Coupon Barrier, investors will not receive the Contingent Coupon applicable to that Observation Date. If the closing price of the Reference Stock is less than the Coupon Barrier on each of the Observation Dates (other than the final Observation Date) and the Final Stock Price is less than the Coupon Barrier, investors will not receive any Contingent Coupons during the term of the Notes, and will not receive a positive return on the Notes. Contingent Coupon payments should not be viewed as periodic interest payments. Generally, this non-payment of the Contingent Coupon coincides with a period of greater risk of principal loss on the Notes. Notwithstanding the memory feature described above, there can be no assurance that any unpaid Contingent Coupon will become payable during the term of the notes.

**Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity** — The return that you will receive on the Notes, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you would earn if you bought one of our conventional senior interest bearing debt securities.

**Reinvestment Risk** — If your Notes are automatically called, the term of the Notes may be as short as approximately three months. There is no guarantee that you would be able to reinvest the proceeds from an investment in the Notes at a comparable return for a similar level of risk if the Notes are automatically called prior to the Maturity Date. In addition, for the avoidance of doubt, the underwriting commission set forth above will not be rebated if the Notes are called prior to maturity.

**Credit of Issuer** — The Notes are our senior unsecured debt securities. As a result, all payments on the Notes are dependent upon our ability to repay our obligations at that time. This will be the case even if the Reference Stock increases after the trade date. No assurance can be given as to what our financial condition will be on any payment date.



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

**Owning the Notes Is Not the Same as Owning the Reference Stock** — The return on your Notes may not reflect the return you would realize if you actually owned the Reference Stock. For instance, as a holder of the Notes, you will not have voting rights, rights to receive cash dividends or other distributions, or any other rights that holders of the Reference Stock would have. Further, you will not participate in any appreciation of the Reference Stock, which could be significant.

**There Is No Affiliation Between Us and the Issuer of the Reference Stock, and We Are Not Responsible for any Disclosure by that Company** — We are not affiliated with the issuer of the Reference Stock. However, we and our affiliates may currently, or from time to time in the future engage in business with the issuer of the Reference Stock. Nevertheless, neither we nor our affiliates assume any responsibilities for the accuracy or the completeness of any information about the Reference Stock that the issuer of the Reference Stock prepares. You, as an investor in the Notes, should make your own investigation into the Reference Stock and the issuer of the Reference Stock. The issuer of the Reference Stock is not involved in this offering and has no obligation of any sort with respect to your Notes. The issuer of the Reference Stock has no obligation to take your interests into consideration for any reason, including when taking any corporate actions that might affect the value of your Notes.

**Single Stock Risk** — The price of the Reference Stock can rise or fall sharply due to factors specific to the Reference Stock and its issuer, such as stock price volatility, earnings, financial conditions, corporate, industry and regulatory developments, management changes and decisions and other events, as well as general market factors, such as general stock market volatility and levels, interest rates and economic and political conditions. We urge you to review financial and other information filed periodically with the SEC by the issuer of the Reference Stock.

**Many Economic and Market Factors Will Impact the Value of the Notes** — In addition to the price of the Reference Stock 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 Reference Stock;

- the time to maturity of the Notes;

  - the dividend rate on the Reference Stock;

- interest and yield rates in the market generally;

- 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 price of the Reference Stock, 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.

Market Disruption Events and Adjustments — Whether the Notes will be called prior to maturity, the payment upon an automatic call or at maturity, the Observation Dates, the Valuation Dates and the Reference Stock are subject to adjustment as described in the product prospectus supplement and this free writing prospectus. 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 price of the Reference Stock on an Observation Date or Valuation Date, see “Market Disruption Events on a Valuation Date” below, and “General Terms of the Notes—Payment at Maturity” and “—Market Disruption Events” in the product prospectus supplement.

Antidilution Adjustments — For certain corporate events affecting the Reference Stock, the calculation agent may make adjustments to the terms of the Notes. However, the calculation agent will not make such adjustments in response to all events that could affect the Reference Stock. If an event occurs that does not require the calculation agent to make such adjustments, the value of the Notes may be materially and adversely affected. In addition, all determinations and calculations concerning any such adjustments will be made in the sole discretion of the calculation agent, which will be binding on you absent manifest error. You should be aware that the calculation agent may make any such adjustment, determination or calculation in a manner that differs from that discussed in this document or the product prospectus supplement as necessary to achieve an equitable result.

The Business Activities of Royal Bank and Our Affiliates May Create Conflicts of Interest — We and our affiliates expect to engage in trading activities related to the Reference Stock that are not for the account of holders of the Notes or on their behalf. These trading activities may present a conflict between the holders’ interests in the Notes and the interests we and our affiliates will have in their proprietary accounts, in facilitating transactions, including options and other derivatives transactions, for their customers and in accounts under their management. These trading activities, if they influence the price of the Reference Stock, could be adverse to the interests of the holders of the Notes. We and one or more of our affiliates may, at present or in the future, engage in business with the issuer of the Reference Stock, including making loans to or providing advisory services. These services could include investment banking and merger and acquisition advisory services. These activities may present a conflict between our or one or more of our affiliates’ obligations, and your interests as a holder of the Notes. Moreover, we and our affiliates may have published, and in the future expect to publish, research reports with respect to the Reference Stock. This research is modified from time to time without notice and may express opinions or provide recommendations that are inconsistent with purchasing or holding the Notes. Any of these activities may affect the price of the Reference Stock and, therefore, the market value of the Notes.

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 price of the Reference Stock. 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.

Information Regarding the Issuer of the Reference Stock

The Reference Stock is registered under the Securities Exchange Act of 1934 (the "Exchange Act"). Companies with securities registered under that Act are required to file periodically certain financial and other information specified by the Securities and Exchange Commission (the "SEC"). Information provided to or filed with the SEC can be inspected and copied at the public reference facilities maintained by the SEC or through the SEC's website at [www.sec.gov](http://www.sec.gov). In addition, information regarding the Reference Stock may be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents.

The following information regarding the issuer of the Reference Stock is derived from publicly available information. We have not independently verified the accuracy or completeness of reports filed by the issuer of the Reference Stock with the SEC, information published by it on its website or in any other format, information about it obtained from any other source or the information provided below.

According to publicly available information, Pioneer Natural Resources Company is an independent oil and gas exploration and production company that explores for, develops and produces oil, natural gas liquids ("NGLs") and gas within the United States, with operations primarily in Texas and Colorado.

Information filed by the company with the SEC under the Exchange Act can be located by reference to its SEC CIK number: 1038357. The company's common stock is listed on the New York Stock Exchange under the ticker symbol "PXD."

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The graph below illustrates the performance of the Reference Stock from January 1, 2013 to December 10, 2018. The red line represents a hypothetical Coupon Barrier and Buffer Price of \$94.29, which is equal to 67.08% of \$140.56, its closing price on December 10, 2018, rounded to two decimal places. The actual Coupon Barrier and Buffer Price will be based on the closing price of the Reference Stock on the trade date.

**PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS**

We obtained the information regarding the historical performance of the Reference Stock in the chart above 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 Stock should not be taken as an indication of future performance, and no assurance can be given as to the market prices of the Reference Stock on any Observation Date or Valuation Date. We cannot give you assurance that the performance of the Reference Stock will not result in the loss of all or part of your principal amount.

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Market Disruption Events on a Valuation Date

If a market disruption event occurs or is continuing on any scheduled Valuation Date other than the final Valuation Date, the price of the Reference Stock for that Valuation Date will equal the closing price of the Reference Stock on the next scheduled Valuation Date. For example, if a market disruption event occurs or is continuing on the first and second scheduled Valuation Dates, but not on the third scheduled Valuation Date, then the closing price of the Reference Stock on the third scheduled Valuation Date will also be deemed to be the closing price of the Reference Stock on the first and second scheduled Valuation Dates. If no further scheduled valuation dates occur after a valuation date on which a market disruption event occurs or is continuing or if a market disruption event occurs or is continuing on the final Valuation Date, then the closing price of the Reference Stock for that Valuation Date will be determined (or, if not determinable, estimated by the calculation agent in a manner which is considered to be commercially reasonable under the circumstances) by the calculation agent on that final Valuation Date, regardless of the occurrence or continuation of a market disruption event on that day. In such an event, the calculation agent will make a good faith estimate in its sole discretion of the closing price of the Reference Stock that would have prevailed in the absence of the market disruption event.

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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 December 19, 2018, which is the third business day following the trade date (this settlement cycle being referred to as “T+3”). 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, by virtue of the fact that the Notes will settle in three business days (T+3), 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 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 Reference Stock. 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 Reference Stock, 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 dated September 10, 2018 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 callable pre-paid cash-settled contingent income-bearing derivative contract linked to the Reference Stock 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 Internal Revenue Service (“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 Reference Stock or the Notes, 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 Stock 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.