

ROYAL BANK OF CANADA  
Form 424B5  
September 20, 2018

---

Filed Pursuant to Rule 424(b)(5)  
Registration Statement No. 333-227001  
Product Prospectus Supplement PB-1 to the Prospectus dated September 7, 2018 and  
the Prospectus Supplement dated September 7, 2018  
Royal Bank of Canada  
Senior Global Medium-Term Notes, Series H  
Notes Linked to One or More Equity Indices or Exchange Traded Funds

#### GENERAL TERMS

Royal Bank of Canada may offer and sell notes (the “notes”) from time to time of any maturity. The prospectus dated September 7, 2018, the prospectus supplement dated September 7, 2018 and this product prospectus supplement describe terms that will apply generally to the notes, including any notes you purchase. A separate pricing supplement will describe the terms that apply specifically to your notes, including any changes to the terms specified below. If the terms described in the relevant pricing supplement are inconsistent with those described in this document or in the accompanying prospectus supplement or prospectus, the terms described in the relevant pricing supplement will control.

The notes are senior unsecured debt securities, and are linked to the performance of one or more equity indices or exchange traded funds (each, an “underlier”) specified in the relevant pricing supplement. If your notes are linked to more than one equity index or exchange traded fund, we may refer to the underlier as a “basket” and each applicable component of the underlier as a “basket underlier.” The cash settlement amount on your notes will be based on the performance of the underlier during the term of your notes. Any payments on the notes are subject to our credit risk. The notes are designed for investors who are seeking exposure to the underlier and who anticipate that the level of the underlier will increase (or, in the case of notes inversely linked to the performance of an underlier, decrease) from its initial underlier level to the final underlier level. Investors must be willing to forego interest payments on the notes and be willing to accept a return that may be negative, in which case you will receive at maturity less, and possibly significantly less, than your principal.

**THE NOTES DO NOT GUARANTEE ANY RETURN OF PRINCIPAL AT MATURITY. YOUR INVESTMENT IN THE NOTES HAS RISKS, AS DESCRIBED IN MORE DETAIL BELOW.**

The notes will not be listed on any securities exchange.

Your investment in the notes involves certain risks, including, among other things, our credit risk. See “Risk Factors” on page PS-3 of this product prospectus supplement PB-1, page S-1 of the prospectus supplement, and page 1 of the prospectus to read about investment risks relating to the notes.

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

We may use this product prospectus supplement in the initial sale of a note. In addition, RBC Capital Markets, LLC or one of our other affiliates may use this product prospectus supplement in a market-making transaction in a note after its initial sale. Unless we or our agent informs the purchaser otherwise in the confirmation of sale, this product prospectus supplement is being used in a market-making transaction.

RBC Capital Markets, LLC

Product Prospectus Supplement PB-1 dated September 20, 2018

---

SUMMARY

The information in this “Summary” section is qualified by the more detailed information set forth in this product prospectus supplement, the prospectus supplement and the prospectus, as well as the relevant pricing supplement. In this product prospectus supplement, references to the “accompanying prospectus” mean the accompanying prospectus, dated September 7, 2018, as supplemented by the accompanying prospectus supplement, dated September 7, 2018, of Royal Bank of Canada. References to the “relevant pricing supplement” mean the pricing supplement that describes the specific terms of your notes.

Issuer:	Royal Bank of Canada (“Royal Bank”).
Dealer:	RBC Capital Markets, LLC.
Issue:	Senior Global Medium-Term Notes, Series H.
Underlier:	As specified in the relevant pricing supplement.
Underlier stocks:	In the case of an underlier that is an index, the underlier stocks are the stocks included in the underlier. In the case of an underlier that is an exchange traded fund, the underlier stocks are the stocks held by the underlier.
Minimum investment:	As specified in the relevant pricing supplement.
Denominations:	Unless otherwise specified in the relevant pricing supplement, the notes will be issued in denominations of \$1,000 and integral multiples in excess of \$1,000.
Interest payable:	None, unless otherwise specified in the relevant pricing supplement.
Cash settlement amount:	The cash settlement amount will be based on the performance of the underlier, and will be calculated as set forth in the relevant pricing supplement. The underlier return, expressed as a percentage, is calculated as follows: $\frac{\text{final underlier level} - \text{initial underlier level}}{\text{initial underlier level}}$
Underlier return:	If the return on your notes is inversely related to the performance of the underlier, the underlier return will be calculated as follows: $\frac{\text{initial underlier level} - \text{final underlier level}}{\text{initial underlier level}}$
Maximum settlement amount:	As specified in the relevant pricing supplement, if applicable.
Upside participation rate:	As specified in the relevant pricing supplement, if applicable.
Digital percentage:	A percentage that will be specified in the relevant pricing supplement, if applicable.
Cap level:	As specified in the relevant pricing supplement, if applicable.
Buffer level:	A specified level of the underlier that is less than (or, in the case of notes inversely linked to the performance of an underlier, greater than) the initial underlier level. The buffer level will be a percentage of the initial underlier level and set forth in the relevant pricing supplement, if applicable.
Buffer amount:	A specified percentage that will be set forth in the relevant pricing supplement, if applicable. For example, if the buffer level is 90% of the initial underlier level, the buffer amount will be 10%.
Buffer rate:	A specified quotient of the initial underlier level divided by the buffer level, if applicable.

PS-1

---

Initial underlier level:	As specified in the relevant pricing supplement.
Final underlier level:	The closing level of the underlier on the determination date (if there is one determination date applicable to the notes) or the arithmetic average of the closing levels of the underlier on each of the averaging dates (if there are averaging dates applicable to the notes), or any other dates specified in the relevant pricing supplement.
Original issue date:	As specified in the relevant pricing supplement.
Determination date:	The determination date will be specified in the relevant pricing supplement, subject to extension as described below for market disruption events.
Averaging dates:	The averaging dates, if any, will be specified in the relevant pricing supplement, subject to extension as described below for market disruption events.
Stated maturity date:	As specified in the relevant pricing supplement.
CUSIP:	As specified in the relevant pricing supplement.
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 accompanying prospectus).
Listing:	The notes will not be listed on any securities exchange or quotation system.
Calculation agent:	RBC Capital Markets, LLC.

PS-2

---

**RISK FACTORS**

Prior to investing in any of the notes, you should carefully review any risk factors set forth in the relevant pricing supplement. In addition, you should review the sections entitled “Risk Factors” in the prospectus supplement and the prospectus.

PS-3

---

## GENERAL TERMS OF THE NOTES

Please note that in this section entitled “General Terms of the Notes,” references to “holders” mean those who own notes registered in their own names, on the books that we or the trustee maintain for this purpose, and not those who own beneficial interests in notes registered in street name or in notes issued in book-entry form through The Depository Trust Company (“DTC”) or another depository. Owners of beneficial interests in the notes should read the section entitled “Description of the Notes We May Offer—Legal Ownership” in the prospectus supplement and “Description of Debt Securities—Ownership and Book-Entry Issuance” in the prospectus.

In addition to the terms described in the “Summary” section above and in the relevant pricing supplement, the following general terms will apply to the notes, including your notes:

### Specified Currency

Unless otherwise specified in the relevant pricing supplement, any payments on the notes will be made in U.S. dollars (“\$”).

### Form and Denomination

The notes will be issued only in global form through DTC. Unless otherwise specified in the relevant pricing supplement, the notes will be issued in minimum denominations of \$1,000 and integral multiples of \$1,000.

### No Listing

Your notes will not be listed or displayed on any securities exchange or included in any interdealer market quotation system.

### Defeasance, Default Amount, Other Terms

Neither full defeasance nor covenant defeasance will apply to your notes. The following will apply to your notes:

the default amount will be payable on any acceleration of the maturity of your notes as described under “—Default Amount on Acceleration” below;

a business day for your notes will have the meaning described under “—Special Calculation Provisions—Business Day” below; and

a trading day for your notes will have the meaning described under “—Special Calculation Provisions—Trading Day” below.

Please note that the information about the issuance, original issue date, issue price discounts or commissions and net proceeds to us in the relevant pricing supplement relates only to the initial issuance and sale of your notes. If you have purchased your notes in a market-making transaction after the initial issuance and sale, any such relevant information about the sale to you will be provided in a separate confirmation of sale.

### Cash Settlement Amount

At maturity, subject to our credit risk as issuer of the notes, you will receive a cash payment that is based on the performance of the underlier. The cash settlement amount will be calculated as set forth in the relevant pricing supplement.

#### Determining the Level of the Underlier

**Initial Underlier Level.** The relevant pricing supplement will set forth the initial underlier level of the underlier. Unless otherwise specified in the relevant pricing supplement, the initial underlier level will be its closing level on the trade date.

**Final Underlier Level.** Unless otherwise specified in the relevant pricing supplement, (a) the level of the underlier on any determination date will be its closing level on that date or (b) the average of the closing levels of the underlier on multiple averaging dates.

#### Determination Dates and Averaging Dates

**Notes with One Determination Date.** The determination date for your notes will be the date specified in the relevant pricing supplement, unless the calculation agent determines that a market disruption event occurs or is continuing on that day or that day is not a trading day. In that event, the determination date will be the first following trading day on which the calculation agent determines that a market disruption event does not occur and is not continuing. If the originally scheduled stated maturity date for your notes is five or less scheduled business days following the originally scheduled determination date, however, the determination date will not be postponed to a date later than the originally scheduled stated maturity date or, if the originally scheduled stated maturity date is not a business day, later than the first business day after the originally scheduled stated maturity date. However, if the originally scheduled stated maturity date for your notes is six or more scheduled business days following the originally scheduled determination date for your notes, the determination date will not be postponed by more than five scheduled trading days. If a market disruption event occurs or is continuing on the day that is the last possible determination date or that last possible day is not a trading day, that day will nevertheless be the determination date, and the calculation agent will nevertheless determine the closing level of the underlier or the applicable exchange rate (if the underlier is adjusted to reflect its U.S. dollar value) based on its assessment, made in its sole discretion, of the level of the underlier on that day.

**Notes with Averaging Dates.** If the calculation agent determines that a market disruption event occurs or is continuing on an averaging date, or if that day is not a trading day, then that averaging date and any other remaining averaging dates will be postponed to the first following trading day(s) on which the calculation agent determines that a market disruption event does not occur and is not continuing. If the originally scheduled stated maturity date for your notes is five or less scheduled business days following the originally scheduled final averaging date, however, the final averaging date will not be postponed to a date later than the originally scheduled stated maturity date or, if the originally scheduled stated maturity date is not a business day, later than the first business day after the originally scheduled stated maturity date. However, if the originally scheduled stated maturity date for your notes is six or more scheduled business days following the originally scheduled final averaging date for your notes, the final averaging date will not be postponed by more than five scheduled trading days. If a market disruption event occurs or is continuing on the day that is the last possible final averaging date or that last possible day is not a trading day, that day will nevertheless be the final averaging date, and the calculation agent will nevertheless determine the closing level of the underlier based on its assessment, made in its sole discretion, of the level of the underlier on that day. In such cases, more than one averaging date may occur simultaneously on such last possible day.

#### Stated Maturity Date

The stated maturity date for your notes will be the date specified in the relevant pricing supplement, unless that date is not a business day, in which case the stated maturity date will be postponed to the next following business day.

The stated maturity date will also be postponed if the originally scheduled stated maturity date for your notes as specified in the relevant pricing supplement is five or less scheduled business days following the originally scheduled determination date or final averaging date (as applicable) for your notes and that date is postponed as described under “—Determination Dates and Averaging Dates” above. In such a case, the stated maturity date will be postponed by the same number of business days as the originally scheduled determination date or final averaging date (as applicable). If, however, the originally scheduled stated maturity date for your notes is six or more

scheduled business days following the original determination date or final averaging date (as applicable) for your notes, any such postponement will not postpone the stated maturity date.

#### Unavailability of the Level of the Underlier

If, with respect to an underlier that is an index, an underlier sponsor discontinues publication of the underlier or, with respect to an underlier that is an exchange traded fund, the underlier is delisted from the exchange on which the underlier has its primary listing, and that underlier sponsor, if applicable, or anyone else publishes a substitute underlier that the calculation agent determines is comparable to the applicable underlier or if the calculation agent designates a substitute underlier, then the calculation agent will determine the amount payable on the stated maturity date by reference to the substitute underlier. We refer to any substitute underlier approved by the calculation agent as a successor underlier.

If the calculation agent determines that, with respect to an underlier that is an index, the publication of the index is discontinued, or with respect to an underlier that is an exchange traded fund, the underlier is delisted from the exchange on which the underlier has its primary listing, and there is no successor underlier, the calculation agent will determine the amount payable on the stated maturity date by a computation methodology that the calculation agent determines will as closely as reasonably possible replicate the applicable underlier.

If the calculation agent determines that an underlier or any constituent index (as defined below) of an underlier or the method of calculating an underlier is changed at any time in any respect—including any split or reverse split of the applicable underlier as described under “—Anti-dilution Adjustments for Exchange Traded Funds” below, any addition, deletion or substitution, and any reweighting or rebalancing of the constituent indices, if applicable, or the applicable underlier stocks, and whether the change is made by the applicable underlier sponsor under its existing policies or following a modification of those policies, is due to the publication of a successor underlier, is due to events affecting one or more of the applicable underlier stocks or their issuers, or is due to any other reason—and is not otherwise reflected in the level of the applicable underlier by the applicable underlier sponsor pursuant to the applicable methodology described in the relevant pricing supplement, then the calculation agent will be permitted (but not required) to make such adjustments in the applicable underlier or the method of its calculation as it believes are appropriate to ensure that the final underlier level used to determine the amount payable on the stated maturity date is equitable. Accordingly, if the method of calculating an index is modified so that the value of that index is a fraction of what it would have been if it had not been modified (e.g., due to a split in the index), then the calculation agent will adjust the index in order to arrive at a value of that underlier as if it had not been modified (e.g., as if such split had not occurred).

All determinations and adjustments to be made by the calculation agent with respect to an index may be made by the calculation agent in its sole discretion. The calculation agent is not obligated to make any such adjustments.

If the calculation agent substitutes or otherwise affects or modifies a basket underlier, then the calculation agent will make those calculations and adjustments as, in judgment of the calculation agent, may be necessary in order to arrive at a basket comparable to the original basket (including without limitation changing the percentage weights of the basket underliers), as if those changes or modifications had not been made, and will calculate the cash settlement amount with reference to that basket or the successor basket (as described below), as adjusted.

In this event, the calculation agent will provide written notice to the trustee of these calculations and adjustments, and the trustee will furnish written notice thereof, to the extent the trustee is required to under the senior debt indenture, to each noteholder, or in the case of global notes, the depositary, as holder of the global notes.

In the event of the adjustment described above, the newly composed basket is referred to in this section as the “successor basket” and will be used as a substitute for the original basket for all purposes.

Notwithstanding these alternative arrangements, any changes to an applicable index may adversely affect the market value of the notes.

### Market Disruption Events

Indices. With respect to any given trading day, any of the following will be a market disruption event with respect to an underlier that is an index:

a suspension, absence or material limitation of trading in underlier stocks constituting 20% or more, by weight, of the applicable underlier or any constituent index of that underlier on their respective primary markets, in each case for more than two consecutive hours of trading or during the one-half hour before the close of trading in that market, as determined by the calculation agent in its sole discretion;

a suspension, absence or material limitation of trading in option or futures contracts, if available, relating to the applicable underlier or any constituent index of that underlier or to underlier stocks constituting 20% or more, by weight, of the applicable underlier or any constituent index of that underlier in the respective primary markets for those contracts, in each case for more than two consecutive hours of trading or during the one-half hour before the close of trading in that market, as determined by the calculation agent in its sole discretion; or

underlier stocks constituting 20% or more, by weight, of the applicable underlier or any constituent index of that underlier, or option or futures contracts, if available, relating to the applicable underlier or any constituent index of such underlier, or to underlier stocks constituting 20% or more, by weight, of the applicable underlier or any constituent index of that underlier do not trade on what were the respective primary markets for those underlier stocks or contracts, as determined by the calculation agent in its sole discretion,

and, in the case of any of these events, the calculation agent determines in its sole discretion that the event could materially interfere with the ability of Royal Bank of Canada or any of its affiliates or a similarly situated party to unwind all or a material portion of a hedge that could be effected with respect to the notes. For more information about hedging by Royal Bank of Canada and/or any of its affiliates, see “Use of Proceeds and Hedging” below.

The following events will not be market disruption events with respect to an underlier that is an index:

a limitation on the hours or numbers of days of trading, but only if the limitation results from an announced change in the regular business hours of the relevant market, and

a decision to permanently discontinue trading in the option or futures contracts relating to the applicable underlier or any constituent index of that underlier or to any underlier stock.

For this purpose, an “absence of trading” in the primary securities market on which an underlier stock, or on which option or futures contracts, if available, relating to any underlier or any constituent index of that underlier or to any underlier stock are traded will not include any time when that market is itself closed for trading under ordinary circumstances. In contrast, a suspension or limitation of trading in an underlier stock or in option or futures contracts, if available, relating to any underlier or any constituent index of that underlier or to any underlier stock in the primary market for that stock or those contracts, by reason of:

a price change exceeding limits set by that market;

an imbalance of orders relating to that underlier stock or those contracts; or

a disparity in bid and ask quotes relating to that underlier stock or those contracts,

will constitute a suspension or material limitation of trading in that underlier or those contracts in that market.

For purposes of this subsection, a “constituent index” of an underlier with respect to the MSCI EAFE Index or MSCI Emerging Markets Index refers to the component country indices that comprise the MSCI EAFE Index or MSCI Emerging Markets Index. For any other underlier, the relevant pricing supplement will specify the constituent



indices of the underlier, if any, that comprise or underlie the applicable underlier or basket underliers to which your note may be linked.

The following will also be a market disruption event with respect to underliers that are denominated in currencies other than U.S. dollars or the underlying stocks of which trade in currencies other than U.S. dollars if those underliers are adjusted to reflect their U.S. dollar value:

with respect to the exchange rate applicable to that underlier or underlying stocks, a market disruption event will occur when the exchange rate is not available as specified in the relevant pricing supplement if the calculation agent determines in its sole discretion that the event could materially interfere with the ability of Royal Bank of Canada or any of its affiliates or a similarly situated party to unwind all or a material portion of a hedge that could be effected with respect to the notes. For more information about hedging by Royal Bank of Canada and/or any of its affiliates, see "Use of Proceeds and Hedging" below.

Exchange Traded Funds. The following events will be market disruption events with respect to an underlier that is an exchange traded fund:

a suspension, absence or material limitation of trading in the underlier on its primary market for more than two consecutive hours of trading or during the one half-hour before the close of trading in that market, as determined by the calculation agent in its sole discretion;

a suspension, absence or material limitation of trading in option or futures contracts relating to the underlier in the primary market for those contracts for more than two consecutive hours of trading or during the one-half hour before the close of trading in that market, as determined by the calculation agent in its sole discretion; or

the underlier does not trade on what was the primary market for the underlier, as determined by the calculation agent in its sole discretion,

and, in the case of any of these events, the calculation agent determines in its sole discretion that the event could materially interfere with the ability of Royal Bank of Canada or any of its affiliates or a similarly situated party to unwind all or a material portion of a hedge that could be effected with respect to the notes.

The following events will not be market disruption events with respect to an underlier that is an exchange traded fund:

a limitation on the hours or numbers of days of trading, but only if the limitation results from an announced change in the regular business hours of the relevant market, and

a decision to permanently discontinue trading in option or futures contracts relating to the underlier.

For this purpose, an "absence of trading" in the primary securities market on which shares of the underlier are traded, or on which option or futures contracts, if available, relating to the underlier are traded, will not include any time when that market is itself closed for trading under ordinary circumstances. In contrast, a suspension or limitation of trading in shares of the underlier or in option or futures contracts, if available, relating to the underlier in the primary market for that underlier or those contracts, by reason of:

a price change exceeding limits set by that market,

an imbalance of orders relating to the shares of the underlier or those contracts, or

a disparity in bid and ask quotes relating to the shares of the underlier or those contracts,

will constitute a suspension or material limitation of trading in shares of the underlier or those contracts in that market.

\* \* \*

A market disruption event with respect to one or more basket underliers will not, by itself, constitute a market disruption event for the remaining unaffected basket underlier or underliers.

As is the case throughout this product prospectus supplement, references to an underlier in this description of market disruption events includes the applicable underlier or basket underliers and any successor underlier as it may be modified, replaced or adjusted from time to time.

#### Anti-dilution Adjustments for Exchange Traded Funds

For notes linked to exchange traded funds, the calculation agent will have discretion to adjust the closing level of the underlier, or any basket underlier, as applicable, if certain events occur. Exchange traded funds are registered investment companies that are eligible for trading on the exchanges on which they are listed. Generally, exchange traded funds (other than commodities-based exchange traded funds) are subject to regulation under the Investment Company Act of 1940 and are restricted in their activities and have dividend requirements. In the event that any event other than a delisting or withdrawal from the relevant exchange occurs with respect to an exchange traded fund that is an underlier, the calculation agent shall determine whether and to what extent an adjustment should be made to the level of the underlier or any other term. The calculation agent shall have no obligation to make an adjustment for any such event.

#### Payment of Additional Amounts

We will pay any amounts to be paid by us on the notes without deduction or withholding for, or on account of, any and all present or future income, stamp and other taxes, levies, imposts, duties, charges, fees, deductions or withholdings (“taxes”) now or hereafter imposed, levied, collected, withheld or assessed by or on behalf of Canada or any Canadian political subdivision or authority that has the power to tax, unless the deduction or withholding is required by law or by the interpretation or administration thereof by the relevant governmental authority. At any time a Canadian taxing jurisdiction requires us to deduct or withhold for or on account of taxes from any payment made under or in respect of the notes, we will pay such additional amounts (“additional amounts”) as may be necessary so that the net amounts received by each holder (including additional amounts), after such deduction or withholding, shall not be less than the amount the holder would have received had no such deduction or withholding been required.

However, no additional amounts will be payable with respect to a payment made to a holder of a note, which we refer to as an “excluded holder,” in respect of a beneficial owner:

- (i) with which we do not deal at arm’s length (within the meaning of the Income Tax Act (Canada) (“ITA”)) at the time of making such payment;  
which is subject to such taxes by reason of its being connected presently or formerly with Canada or any province
- (ii) or territory thereof otherwise than by reason of the holder’s activity in connection with purchasing the notes, the holding of notes or the receipt of payments thereunder;  
which is, or which does not deal at arm’s length with a person who is, a “specified shareholder” (within the meaning of subsection 18(5) of the ITA) of Royal Bank of Canada (generally a person will be a “specified shareholder” for
- (iii) this purpose if that person, either alone or together with persons with whom the person does not deal at arm’s length, owns 25% or more of (a) our voting shares, or (b) the fair market value of all of our issued and outstanding shares);
- (iv) which presents such note for payment (where presentation is required) more than 30 days after the relevant date (except to the extent that the holder thereof would have been entitled to such

additional amounts on presenting a note for payment on the last day of such 30 day period); for this purpose, the “relevant date” in relation to any payments on any note means:

(a) the due date for payment thereof, or

if the full amount of the monies payable on such date has not been received by the trustee on or prior to such due date, the date on which the full amount of such monies has been received and notice to that effect is given to holders of the notes in accordance with the indenture;

(v) who could lawfully avoid (but has not so avoided) such withholding or deduction by complying, or procuring that any third party comply with, any statutory requirements necessary to establish qualification for an exemption from withholding or by making, or procuring that any third party make, a declaration of non-residence or other similar claim for exemption to any relevant tax authority; or

(vi) who is subject to deduction or withholding on account of any tax, assessment, or other governmental charge that is imposed or withheld by reason of the application of Section 1471 through 1474 of the United States Internal Revenue Code of 1986, as amended (the “Code”) (or any successor provisions), any regulation, pronouncement, or agreement thereunder, official interpretations thereof, or any law implementing an intergovernmental approach thereto, whether currently in effect or as published and amended from time to time.

For the avoidance of doubt, we will not have any obligation to pay any holders additional amounts on any tax which is payable otherwise than by deduction or withholding from payments made under or in respect of the notes at maturity. We will also make such withholding or deduction and remit the full amount deducted or withheld to the relevant authority in accordance with applicable law. We will furnish to the trustee, within 30 days after the date the payment of any taxes is due pursuant to applicable law, certified copies of tax receipts evidencing that such payment has been made or other evidence of such payment satisfactory to the trustee. We will indemnify and hold harmless each holder of notes (other than an excluded holder) and upon written request reimburse each such holder for the amount of (x) any taxes so levied or imposed and paid by such holder as a result of payments made under or with respect to the notes, and (y) any taxes levied or imposed and paid by such holder with respect to any reimbursement under (x) above, but excluding any such taxes on such holder’s net income or capital.

For additional information, see the section entitled “Supplemental Discussion of Canadian Tax Consequences.”

#### Default Amount on Acceleration

Unless otherwise specified in the relevant pricing supplement, in case an event of default with respect to the notes shall have occurred and be continuing, the amount declared due and payable on the notes upon any acceleration of the notes will be determined by the calculation agent and will be an amount in cash equal to the amount payable on the stated maturity date as described in the relevant pricing supplement, calculated as if the date of acceleration were the determination date.

If the maturity of the notes is accelerated because of an event of default, we will, or will cause the calculation agent to, provide written notice to the trustee at its New York office, on which notice the trustee may conclusively rely, and to the depository, of the cash amount due with respect to the notes as promptly as possible and in no event later than two business days after the date of acceleration.

PS-10

---

#### Manner of Payment and Delivery

Any payment on the notes at maturity will be made to accounts designated by you and approved by us, or at the office of the trustee in New York City. The cash settlement amount will only be made when the notes are surrendered to the trustee at that office. We also may make any payment or delivery in accordance with the applicable procedures of the depositary.

#### Modified Business Day

As described in the accompanying prospectus, any payment on your note that would otherwise be due on a day that is not a business day may instead be paid on the next day that is a business day, with the same effect as if paid on the original due date. For your note, however, the term business day may have a different meaning than it does for other Series H medium-term notes. We discuss this term under “—Special Calculation Provisions” below.

#### Role of Calculation Agent

The calculation agent will make all determinations regarding the level of the underlier, business days, market disruption events, the default amount, and the amount payable on your notes. Absent manifest error, all determinations of the calculation agent will be final and binding on you and us, without any liability on the part of the calculation agent. You will not be entitled to any compensation from us for any loss suffered as a result of any of the above determinations or confirmations by the calculation agent.

Our subsidiary, RBC Capital Markets, LLC, is currently serving as the calculation agent for the notes. We may change the calculation agent for your notes at any time without notice and the calculation agent may resign as calculation agent at any time upon 60 days’ written notice to Royal Bank.

#### Special Calculation Provisions

##### Business Day

When we refer to a business day with respect to your notes, we mean a day that is a New York business day of the kind described in the accompanying prospectus supplement, unless otherwise specified in the relevant pricing supplement.

##### Trading Day

Indices. Unless otherwise set forth in the relevant pricing supplement, when we refer to a trading day with respect to any underlier other than the MSCI EAFE Index, MSCI Emerging Markets Index or the EURO STOXX 50<sup>®</sup> Index, we mean a day on which (i) the respective principal securities markets for all of the underlier stocks that comprise that underlier are open for trading, (ii) the underlier sponsor for that underlier is open for business and (iii) that underlier is calculated and published by the applicable underlier sponsor. Although an underlier sponsor may publish an underlier level with respect to the applicable underlier on a day when one or more of the principal securities markets for the underlier stocks for the applicable underlier are closed, that day would not be a trading day for purposes of the applicable underlier.

When we refer to a trading day with respect to the MSCI EAFE Index, MSCI Emerging Markets Index or the EURO STOXX 50<sup>®</sup> Index, we mean a day on which the MSCI EAFE Index, MSCI Emerging Markets Index or the EURO STOXX 50<sup>®</sup> Index, as the case may be, is calculated and published by the underlier sponsor, unless otherwise specified in the relevant pricing supplement. Therefore, in the case of the MSCI EAFE Index or MSCI Emerging Markets Index, a day would be a trading day regardless of whether one or more of the principal securities markets for the underlier stocks for that index are closed on that day, if the underlier sponsor publishes that underlier level on that day. Similarly, in the case of the EURO STOXX 50<sup>®</sup> Index, a day would be a trading day regardless of whether one or more of the principal securities markets for the underlier stocks for the EURO STOXX 50<sup>®</sup> Index are closed on that day, if the underlier sponsor publishes the EURO STOXX 50<sup>®</sup> Index level on that day.

Exchange Traded Funds. When we refer to a trading day with respect to any underlier that is an exchange traded fund, we mean a day on which (i) the exchange on which such underlier has its primary listing is open for trading and (ii) the price of one share of the underlier is quoted by the exchange on which that underlier has its primary listing.

#### **HYPOTHETICAL RETURNS ON YOUR NOTES**

The relevant pricing supplement may include a table or chart showing hypothetical amounts that could be delivered for your notes at maturity, based on a range of hypothetical levels of the underlier and on various key assumptions shown in the relevant pricing supplement.

Any table or chart showing hypothetical amounts will be provided for purposes of illustration only. It should not be viewed as an indication or prediction of future investment results. Rather, it is intended merely to illustrate the impact that various hypothetical levels of the underlier on the determination date or averaging dates (as applicable), as calculated in the manner described in the relevant pricing supplement and assuming all other variables remained constant. The hypothetical amounts listed in the relevant pricing supplement will be entirely hypothetical. They will be based on levels of the underlier that may not be achieved on the relevant dates and on assumptions that may prove to be erroneous.

As calculated in the relevant pricing supplement, the hypothetical amounts payable on your notes at maturity may bear little or no relationship to the actual market value of your notes on that date or at any other time, including any time you might wish to sell your notes. In addition, you should not view the hypothetical amounts as an indication of the possible financial return on an investment in your notes, since the financial return will be affected by various factors, including taxes, that the hypothetical information does not take into account. Moreover, whatever the financial return on your notes might be, it may bear little relation to—and may be much less than—the financial return that you might achieve were you to invest directly in the underlier.

We cannot predict the levels of the underlier or, therefore, the cash settlement amount. Moreover, the assumptions we make in connection with any hypothetical information in the relevant pricing supplement may not reflect actual events. Consequently, that information may give little or no indication of the amount that will be paid in respect of your notes at maturity, nor should it be viewed as an indication of the financial return on your notes or of how that return might compare to the financial return on an investment directly in the underlier.

#### USE OF PROCEEDS AND HEDGING

We will use the net proceeds we receive from the sale of the notes for the purposes we describe in the attached prospectus supplement under "Use of Proceeds." We or our affiliates may also use those proceeds in transactions intended to hedge our obligations under the notes as described below.

In anticipation of the sale of the notes, we or our affiliates expect to enter into hedging transactions involving purchases of securities or indices included in or linked to the underlier and/or listed and/or over-the-counter derivative instruments linked to the underlier prior to or on the trade date. From time to time, we or our affiliates may enter into additional hedging transactions or unwind those we have entered into. In this regard, we or our affiliates may:

- acquire or dispose of the underlier or its components;
- acquire or dispose of long or short positions in listed or over-the-counter derivative instruments based on the level of the underlier or its components; or
- any combination of the above two.

We or our affiliates may acquire a long or short position in securities similar to the notes from time to time and may, in our or their sole discretion, hold or resell those similar securities.

We or our affiliates may close out our or their hedge on or before the maturity date. That step may involve sales or purchases of the underlier or its components or over-the-counter derivative instruments linked to those assets.

PS-13

---

**HISTORICAL UNDERLIER INFORMATION**

We may provide historical level information on the underlier or applicable basket underliers in the relevant pricing supplement. You should not take any of those historical levels as an indication of the future performance. We cannot give you any assurance that the level of the underlier or basket underliers will not decrease (or, in the case of notes inversely linked to the performance of an underlier, increase), thus causing you to receive an amount that is less than the principal amount of your notes at maturity.

PS-14

---

**SUPPLEMENTAL DISCUSSION OF CANADIAN TAX CONSEQUENCES**

An investor should read carefully the description of material Canadian federal income tax considerations relevant to a Non-resident Holder owning debt securities under “Tax Consequences—Canadian Taxation” in the accompanying prospectus.

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

PS-15

---



## 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 Canada and 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 product prospectus supplement and is subject to any change in law that may take effect after such date.

### Supplemental U.S. Tax Considerations

The following disclosure—including the opinion of Morrison & Foerster LLP—has been prepared without regard to any particular note that you may purchase in the future and, therefore, is provided solely as a matter of general information. You should not rely upon the following disclosure (including the opinion of Morrison & Foerster LLP), or the disclosure under “Tax Consequences—United States Taxation” in the prospectus or “Certain Income Tax Consequences—United States Taxation” in the prospectus supplement, with regard to an investment in any particular note because this disclosure (including the opinion of Morrison & Foerster LLP) does not take into account the terms of any particular note or the tax consequences of investing in or holding any particular note unless the pricing supplement applicable to your notes expressly indicates that you may rely on the following disclosure and expressly states that you may rely on the opinion of Morrison & Foerster LLP. Any note that you purchase may have terms that would result in a tax treatment that is significantly different from the treatment described below. For example, the discussion below assumes that an investor in the notes will be subject to a significant risk that it will lose a significant amount of its investment in the notes. If an investor in the notes is not subject to a significant risk that it will lose a significant amount of its investment in the notes, the tax treatment of that note may differ substantially from that described in the discussion below. There may be other features or terms of your notes that will cause this tax section to be inapplicable to your notes. Further, this discussion does not address the tax consequences applicable to any holders under Section 451(b) of the Code.

Consequently, any tax disclosure relevant to any note you may purchase will be set forth only in the pricing supplement relating to your note, and, unless the pricing supplement indicates otherwise, you should not rely on the tax disclosure below or in the prospectus supplement or prospectus in deciding whether to invest in any note. Moreover, in all cases, you should consult with your own tax advisor concerning the consequences of investing in and holding any particular note you propose to purchase.

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement. It applies only to those initial holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus.

**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 the underliers or any components of any of the underliers 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 the underliers or any components of one or more of such underliers were so treated, certain adverse U.S. federal income tax consequences could possibly apply. You should refer to any available information filed with the SEC and other authorities by the underliers or the issuers of any of the components of any of the underliers and consult your tax advisor regarding the possible consequences to you in this regard.

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat a note with terms described in this product prospectus supplement as a pre-paid cash-settled derivative contract in respect

of the underlier or basket 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. If the notes are so treated, subject to the discussion below concerning the potential application of the “constructive ownership” rules under Section 1260 of the Code, a U.S. holder should generally recognize capital gain or loss upon the sale or maturity of the notes in an amount equal to the difference between the amount a holder receives at such time and the holder’s tax basis in the notes. In general, a U.S. holder’s tax basis in the notes will be equal to the price the holder paid for the notes. Capital gain recognized by an individual U.S. holder is generally taxed at preferential rates where the property is held for more than one year and is generally taxed at ordinary income rates where the property is held for one year or less. The deductibility of capital losses is subject to limitations. The holding period for notes of a U.S. holder who acquires the notes upon issuance will generally begin on the date after the original issue date (i.e., the settlement date) of the notes. If the notes are held by the same U.S. holder until maturity, that holder’s holding period will generally include the stated maturity date. It is possible that the Internal Revenue Service could assert that a U.S. holder’s holding period in respect of the notes should end on the date on which the amount the holder is entitled to receive upon the maturity of the notes is determined, even though the holder will not receive any amounts from us in respect of the notes prior to the maturity of the notes. In such case, if that date is not in excess of one year from the issue date, a U.S. holder may be treated as having a holding period in respect of the notes that is one year or less even if the holder receives cash upon maturity of the notes at a time that is more than one year after the beginning of its holding period.

**Potential Application of Section 1260 of the Internal Revenue Code.** If one or more of the underliers is or includes the type of financial asset described under Section 1260 of the Code (including, among others, any equity interest in pass-thru entities such as ETFs, regulated investment companies, real estate investment trusts, partnerships, and passive foreign investment companies, each a “Section 1260 Financial Asset”), while the matter is not entirely clear, unless otherwise specified in the relevant pricing supplement, there exists a substantial risk that an investment in a note is, in whole or in part, a “constructive ownership transaction” to which Section 1260 of the Code applies. If Section 1260 of the Code applies, all or a portion of any long-term capital gain recognized by a U.S. holder in respect of a note will be recharacterized as ordinary income (the “excess gain”). In addition, an interest charge will also apply to any deemed underpayment of tax in respect of any excess gain to the extent such gain would have resulted in gross income inclusion for the U.S. holder in taxable years prior to the taxable year of the sale or maturity (assuming such income accrued at a constant rate equal to the applicable federal rate as of the date of sale or maturity).

If an investment in a note is treated as a constructive ownership transaction, it is not clear to what extent any long-term capital gain of a U.S. holder in respect of the note will be recharacterized as ordinary income. It is possible, for example, that the amount of the excess gain (if any) that would be recharacterized as ordinary income in respect of the note will equal the excess of (i) any long-term capital gain recognized by the U.S. holder in respect of the note and attributable to Section 1260 Financial Assets, over (ii) the “net underlying long-term capital gain” (as defined in Section 1260 of the Code) such U.S. holder would have had if such U.S. holder had acquired an amount of the corresponding Section 1260 Financial Assets at fair market value on the original issue date for an amount equal to the portion of the issue price of the note attributable to the corresponding Section 1260 Financial Assets and sold such amount of Section 1260 Financial Assets upon the date of sale, exchange, or settlement of the note at fair market value (and appropriately taking into account any leveraged upside exposure). Alternatively, the Internal Revenue Service may contend that the excess gain should not be limited to amounts attributable to a Section 1260 Financial Asset, but should instead apply to the all of the underlier(s). To the extent any gain is treated as long-term capital gain after application of the recharacterization rules of Section 1260 of the Code, such gain would be subject to U.S. federal income tax at the rates that would have been applicable to the net underlying long-term capital gain. However, unless otherwise established by clear and convincing evidence, the net underlying long-term capital gain is treated as zero. U.S. holders should consult their tax advisors regarding the potential application of Section 1260 of the Code to an investment in the note.

**Alternative Treatments.** Alternative tax treatments of the notes are also possible and the Internal Revenue Service might assert that a treatment other than that described above is more appropriate. For example, it is possible to treat the notes, and the Internal Revenue Service might assert that the notes should be treated, as a single debt instrument. If the notes have a term that exceeds one year, such a debt instrument would be subject to the special tax rules governing contingent payment debt instruments. If the notes are so treated, a holder would generally be required to

accrue interest currently over the term of the notes even though that holder will not receive any payments

PS-17

---

from us prior to maturity. In addition, any gain a holder might recognize upon the sale or maturity of the notes would generally be ordinary income and any loss recognized by a holder at such time would be ordinary loss to the extent of interest that same holder included in income in the current or previous taxable years in respect of the notes, and thereafter, would be capital loss. If the notes are treated as a single debt instrument that has a term of no more than one year, the notes would be treated as a single contingent short-term debt instrument, which would also result in tax consequences that are different from those described above.

If the underlier is, or a basket includes, an index that periodically rebalances, it is possible that the notes could be treated as a series of derivative contracts, each of which matures on the next rebalancing date. If the notes were properly characterized in such a manner, a holder would be treated as disposing of the notes on each rebalancing date in return for new derivative contracts that mature on the next rebalancing date, and a holder would accordingly likely recognize capital gain or loss on each rebalancing date equal to the difference between the holder's basis in the notes (which would be adjusted to take into account any prior recognition of gain or loss) and the fair market value of the notes on such date.

Because of the absence of authority regarding the appropriate tax characterization of the notes, it is also possible that the Internal Revenue Service could seek to characterize the notes in a manner that results in tax consequences that are different from those described above. For example, the Internal Revenue Service could possibly assert that any gain or loss that a holder may recognize upon the sale or maturity of the notes should be treated as ordinary gain or loss. The Internal Revenue Service has released a notice that may affect the taxation of holders of the notes. According to the notice, the Internal Revenue Service and the U.S. Treasury Department are actively considering whether the holder of an instrument similar to the notes should be required to accrue ordinary income on a current basis. It is not possible to determine what guidance they will ultimately issue, if any. It is possible, however, that under such guidance, holders of the notes will ultimately be required to accrue income currently and this could be applied on a retroactive basis. The Internal Revenue Service and the U.S. Treasury Department are also considering other relevant issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital and whether the special "constructive ownership rules" of Section 1260 of the Code, which generally operate to recharacterize certain long-term capital gains as ordinary income and impose an interest charge, might be applied to such instruments. Holders are urged to consult their tax advisors concerning the significance, and the potential impact, of the above considerations. Unless stated otherwise in the relevant pricing supplement, we intend to treat the notes for U.S. federal income tax purposes in accordance with the treatment described in this product prospectus supplement unless and until such time as the U.S. Treasury Department and Internal Revenue Service determine that some other treatment is more appropriate.

**Backup Withholding and Information Reporting.** Payments made with respect to the notes and proceeds from the sale or maturity of the notes may be subject to a backup withholding tax unless, in general, the holder complies with certain procedures or is an exempt recipient. Any amounts so withheld generally will be refunded by the Internal Revenue Service or allowed as a credit against the holder's U.S. federal income tax liability, provided the holder makes a timely filing of an appropriate tax return or refund claim to the Internal Revenue Service.

Reports will be made to the Internal Revenue Service 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. A non-U.S. holder is a beneficial owner of a note that, for U.S. federal income tax purposes, is a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

Except as discussed below, a non-U.S. holder will generally not be subject to U.S. federal income or withholding tax for amounts paid in respect of the notes, provided that (i) the holder complies with any applicable certification requirements, (ii) the payment 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, such 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 would 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.

A “dividend equivalent” payment is treated as a dividend from sources within the United States and 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 Internal Revenue Service has issued guidance that states that the U.S. Treasury Department and the Internal Revenue Service 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, 2019. Accordingly, if the notes are not delta-one instruments and are issued before January 1, 2019, 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 Underlying 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 Underlying or the notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the securities and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable paying agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

As discussed above, alternative characterizations of the notes for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to the notes to become subject to withholding tax, we will withhold tax at the applicable statutory rate. The Internal Revenue Service has also indicated that it is considering whether income in respect of instruments such as the notes should be subject to withholding tax. We will not be required to pay any additional amounts in respect of such withholding. Prospective investors should consult their own tax advisors in this regard.

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 the legislation. In addition, the notes may constitute a “financial account” for these purposes and thus, be subject to information reporting requirements pursuant to the legislation. The legislation 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 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. If we determine withholding is appropriate with respect to the notes, we will withhold tax at the applicable statutory rate, and we will not pay any additional amounts in respect of such withholding. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of this legislation on their investment in the notes.



#### EMPLOYEE RETIREMENT INCOME SECURITY ACT

This section is only relevant to you if you are an insurance company or the fiduciary of a pension plan or an employee benefit plan (including a governmental plan, an IRA or a Keogh Plan) proposing to invest in the notes.

The Employee Retirement Income Security Act of 1974, as amended (“ERISA”), imposes certain requirements on “employee benefit plans” (as defined in Section 3(3) of ERISA) subject to ERISA, including entities such as collective investment funds and separate accounts whose underlying assets include the assets of such plans (collectively, “ERISA Plans”) and on those persons who are fiduciaries with respect to ERISA Plans. Each fiduciary of an ERISA Plan should consider the fiduciary standards of ERISA in the context of the ERISA Plan’s particular circumstances before authorizing an investment in the covered bonds. Accordingly, among other factors, the fiduciary should consider whether the investment would satisfy the prudence and diversification requirements of ERISA and would be consistent with the documents and instruments governing the ERISA Plan.

In addition, Section 406 of ERISA and Section 4975 of the Internal Revenue Code prohibit certain transactions involving the assets of an ERISA Plan, as well as those plans that are not subject to ERISA but which are subject to Section 4975 of the Internal Revenue Code, such as individual retirement accounts, including entities whose underlying assets include the assets of such plans (together with ERISA Plans, “Plans”) and certain persons (referred to as “parties in interest” or “disqualified persons”) having certain relationships to such Plans, unless a statutory or administrative exemption is applicable to the transaction. Governmental plans may be subject to similar prohibitions. Therefore, a plan fiduciary considering purchasing notes should consider whether the purchase or holding of such instruments might constitute a “prohibited transaction.”

Royal Bank and certain of its affiliates each may be considered a “party in interest” or a “disqualified person” with respect to many employee benefit plans by reason of, for example, Royal Bank (or its affiliate) providing services to such plans. Prohibited transactions within the meaning of ERISA or the Internal Revenue Code may arise, for example, if notes are acquired by or with the assets of a Plan, and with respect to which Royal Bank or any of its affiliates is a “party in interest” or a “disqualified person,” unless those notes are acquired under an exemption for transactions effected on behalf of that Plan by a “qualified professional asset manager” or an “in-house asset manager,” for transactions involving insurance company general accounts, for transactions involving insurance company pooled separate accounts, for transactions involving bank collective investment funds, or under another available exemption. Section 408(b)(17) provides an additional exemption for the purchase and sale of securities and related lending transactions where neither the issuer of the securities nor any of its affiliates have or exercise any discretionary authority or control or render any investment advice with respect to the assets of any Plan involved in the transaction and the Plan pays no more than “adequate consideration” in connection with the transaction. The person making the decision on behalf of a Plan or a governmental plan shall be deemed, on behalf of itself and any such plan, by purchasing and holding the notes, or exercising any rights related thereto, to represent that (a) such purchase, holding and exercise of the notes will not result in a non-exempt prohibited transaction under ERISA or the Internal Revenue Code (or, with respect to a governmental plan, under any similar applicable law or regulation) and (b) neither Royal Bank nor any of its affiliates is a “fiduciary” (within the meaning of Section 3(21) of ERISA) with respect to the purchaser or holder in connection with such person’s acquisition, disposition or holding of the notes, or any exercise related thereto or as a result of any exercise by Royal Bank or any of its affiliates of any rights in connection with the notes, and no advice provided by Royal Bank or any of its affiliates has formed a primary basis for any investment decision by or on behalf of such purchaser or holder in connection with the notes and the transactions contemplated with respect to the notes.

If you are an insurance company or the fiduciary of a pension plan or an employee benefit plan, and propose to invest in notes, you should consult your legal counsel.

#### SUPPLEMENTAL PLAN OF DISTRIBUTION

With respect to each note to be issued, Royal Bank of Canada will agree to sell to RBC Capital Markets, LLC, and RBC Capital Markets, LLC will agree to purchase from Royal Bank of Canada, the principal amount of the note specified, at the price specified under “Net proceeds to the issuer,” in the relevant pricing supplement. RBC Capital Markets, LLC intends to resell each note it purchases at the original issue price specified in the relevant pricing supplement. In the future, RBC Capital Markets, LLC or one of our other affiliates may repurchase and resell the notes in market-making transactions, with resales being made at prices related to prevailing market prices at the time of resale or at negotiated prices. For more information about the plan of distribution, the distribution agreement and possible market-making activities, see “Supplemental Plan of Distribution” in the accompanying prospectus supplement. No Prospectus (as defined in Directive 2003/71/EC (as amended, the “Prospectus Directive”)) will be prepared in connection with these notes. Accordingly, these notes may not be offered to the public in any member state of the European Economic Area (the “EEA”), and any purchaser of these notes who subsequently sells any of these notes in any EEA member state must do so only in accordance with the requirements of the Prospectus Directive, as implemented in that member state.

The notes are not intended to be offered, sold or otherwise made available to, and should not be offered, sold or otherwise made available to, any retail investor in the EEA. For these purposes, the expression “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the notes to be offered so as to enable an investor to decide to purchase or subscribe the notes, and a “retail investor” means a person who is one (or more) of: (a) a retail client, as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, “MiFID II”); or (b) a customer, within the meaning of Insurance Distribution Directive 2016/97/EU, as amended, where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (c) not a qualified investor as defined in the Prospectus Directive. Consequently, no key information document required by Regulation (EU) No 1286/2014 (as amended, the “PRIIPs Regulation”) for offering or selling the notes or otherwise making them available to retail investors in the EEA has been prepared, and therefore, offering or selling the notes or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.