

ROYAL BANK OF CANADA  
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Product Prospectus Supplement ERN-ES-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  
Enhanced Return Notes Linked to One or More Equity Securities

#### GENERAL TERMS

Royal Bank of Canada may offer and sell enhanced return 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 unsecured non-principal-protected notes linked to the performance of one or more equity securities (each, a “Reference Asset”) specified in the relevant pricing supplement. If the Reference Asset of your notes consists of more than one equity security, we may refer to the Reference Asset as a “Basket” and each applicable component of the Reference Asset as a “Basket Component.” The payment at maturity on your notes will be based on the performance of the Reference Asset during the term of your notes. The notes are designed for investors who are seeking exposure to the Reference Asset and who anticipate that the level of the Reference Asset will increase (or, in the case of bearish notes, decrease) from its Initial Level to the Final Level on the applicable valuation date or dates. 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. YOU ARE SUBJECT TO A RISK TO ALL OR A PORTION OF YOUR INVESTMENT IN THE NOTES, AS DESCRIBED IN MORE DETAIL BELOW.**

The notes will not be listed on any securities exchange.

Your investment in the notes involves certain risks. See “Risk Factors” beginning on page PS-4 to read about investment risks relating to the notes. Unless otherwise specified in the relevant pricing supplement, the principal of the notes is not protected and you could lose some or all of your investment.

The price at which you purchase the notes includes hedging costs and profits that Royal Bank of Canada or its affiliates expect to incur or realize. These costs and profits will reduce the secondary market price, if any secondary market develops, for the notes. As a result, you will experience an immediate and substantial decline in the value of your notes on the issue date.

None of the Securities and Exchange Commission (the “SEC”), any state securities commission or any other regulatory body has approved or disapproved of the notes or passed upon the accuracy of this product prospectus supplement or the accompanying prospectus and prospectus supplement. Any representation to the contrary is a criminal offense.

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.

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. governmental agency or instrumentality.

RBC Capital Markets, LLC

Product Prospectus Supplement dated October 18, 2018.

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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.

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.

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

Underwriter: RBC Capital Markets, LLC.

Issue: Senior Global Medium-Term Notes, Series H.

Reference Asset: As specified in the relevant pricing supplement.

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.

The payment at maturity will be based on the performance of the Reference Asset, and will be calculated as follows:

Payment at Maturity in Excess of Principal

If the Final Level is greater than or equal to (or, in the case of bearish notes, less than or equal to) the Initial Level, then, at maturity, you will receive an amount equal to:

Principal Amount + (Principal Amount × Percentage Change)

(a) If the relevant pricing supplement specifies that a “Leverage Factor” is applicable to your notes, then the payment at maturity will be calculated as follows:

Principal Amount + (Principal Amount × Percentage Change × Leverage Factor)

(b) If the relevant pricing supplement specifies that a “Booster Coupon” is applicable to your notes:

Payment at Maturity:

1. If the Percentage Change is greater than the Booster Percentage, then the payment at maturity will equal:

Principal Amount + (Principal Amount × Percentage Change)

2. If the Percentage Change is greater than or equal to 0% but less than or equal to the Booster Percentage, then the payment at maturity will equal:

Principal Amount + (Principal Amount × Booster Percentage)

(c) If the relevant pricing supplement specifies that a cap is applicable to your notes, then the payment at maturity will not exceed the Maximum Redemption Amount set forth in the relevant pricing supplement.

(d) If the relevant pricing supplement specifies that a “Digital Coupon” is applicable to your notes, then the payment at maturity will equal:

Principal Amount + (Principal Amount x Digital Coupon)

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Payment at Maturity Less Than or Equal to Principal

If the Final Level is less than (or, in the case of bearish notes, greater than) the Initial Level, then, at maturity, you will receive less than the principal amount of your notes. In such a case, the payment at maturity will equal:

Principal Amount + (Principal Amount × Percentage Change)

(a) If the relevant pricing supplement specifies that a “Downside Multiplier” is applicable to your notes, then the payment at maturity will be calculated as follows:

Principal Amount + (Principal Amount × Percentage Change × Downside Multiplier)

(b) If the relevant pricing supplement specifies that a “Buffer” is applicable to your notes:

1. If the Final Level is greater than or equal to (or, in the case of bearish notes, less than or equal to) the Buffer Level, then the payment at maturity will equal the principal amount of your notes.

2. If the Final Level is less than (or, in the case of bearish notes, greater than) the Buffer Level, then the payment at maturity will equal:

Principal Amount + [Principal Amount × (Percentage Change + Buffer Percentage)]

(c) If the relevant pricing supplement specifies that a “Barrier” is applicable to your notes:

1. If no Barrier Event has occurred, then the payment at maturity will equal the principal amount of your notes.

2. If a Barrier Event has occurred, then the payment at maturity will equal:

Principal Amount + (Principal Amount × Percentage Change)

The Percentage Change, expressed as a percentage, is calculated as follows:

$\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$

Initial Level

Percentage Change:

If your notes are bearish notes, the Percentage Change will be calculated as follows:

$\frac{\text{Initial Level} - \text{Final Level}}{\text{Initial Level}}$

Initial Level

Maximum

Redemption Amount: As specified in the relevant pricing supplement, if applicable.

Amount:

Leverage Factor: As specified in the relevant pricing supplement, if applicable.

Downside

Multiplier: As specified in the relevant pricing supplement, if applicable.

Booster Percentage: A specified percentage increase (or, in the case of bearish notes, decrease) in the level of the Reference Asset. The Booster Percentage will be set forth in the relevant pricing supplement, if applicable.

Digital Coupon: A percentage that will be specified in the applicable pricing supplement.

Buffer Level: A specified level of the Reference Asset that is less than (or, in the case of bearish notes, greater than) the Initial Level. The Buffer Level will be a percentage of the Initial Level and set forth in the relevant pricing supplement, if applicable.

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Buffer Percentage:	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 Level, the Buffer Percentage will be 10%.
Barrier Level:	A specified level of the Reference Asset that is less than (or, in the case of bearish notes, greater than) the Initial Level. The Barrier Level will be a percentage of the Initial Level and set forth in the relevant pricing supplement, if applicable.
Barrier Event:	Depending upon the terms set forth in the relevant pricing supplement, a Barrier Event will occur if: (i) the Final Level is less than (or, in the case of bearish notes, greater than) the Initial Level, and (ii) (a) for notes subject to Intra-Day Monitoring, at any time during the Monitoring Period, the level of the Reference Asset is less than (or, in the case of bearish notes, greater than) the Barrier Level, or (b) for notes subject to Close of Trading Day Monitoring, on any trading day during the Monitoring Period, the closing level of the Reference Asset is less than (or, in the case of bearish notes, greater than) the Barrier Level, or (c) for notes subject to Final Valuation Date Monitoring, the Final Level is less than (or, in the case of bearish notes, greater than) the Barrier Level.
Monitoring Period:	As specified in the relevant pricing supplement, if applicable.
Initial Level:	As specified in the relevant pricing supplement.
Final Level:	The closing level of the Reference Asset on the valuation date (if there is one valuation date applicable to the notes) or the arithmetic average of the closing levels of the Reference Asset on each of the valuation dates (if there is more than one valuation date applicable to the notes), or any other dates specified in the relevant pricing supplement.
Issue Date:	As specified in the relevant pricing supplement.
Valuation Date(s):	Unless otherwise specified in the relevant pricing supplement, the valuation date, or if there is more than one valuation date, the final valuation date, will be the third trading day prior to the maturity date, subject to extension for up to ten trading days for market disruption events.
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.

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## RISK FACTORS

An investment in your notes is subject to the risks described below, as well as the risks described under “Risk Factors” in the prospectus and the prospectus supplement. Your notes are not secured debt and are riskier than ordinary unsecured debt securities. Also, investing in your notes is not equivalent to investing directly in the applicable Reference Asset. You should carefully consider whether the notes are suited to your particular circumstances. This product prospectus supplement should be read together with the prospectus, the prospectus supplement and the relevant pricing supplement. The information in the prospectus and prospectus supplement is supplemented by, and to the extent inconsistent therewith replaced and superseded by, the information in this product prospectus supplement and the relevant pricing supplement. This section describes the most significant risks relating to the terms of the notes. We urge you to read the following information about these risks, together with the other information in this product prospectus supplement and the prospectus, the prospectus supplement and the relevant pricing supplement, before investing in the notes.

### General Risks Relating to the Notes

#### Your Investment in the Notes May Result in a Loss.

The notes do not guarantee any return of principal unless otherwise specified in the relevant pricing supplement. We will not repay you a fixed amount of principal on the maturity date. The amount payable on the notes at maturity will depend primarily on the Percentage Change in the level of the Reference Asset from the Initial Level to the Final Level. Because the level of the Reference Asset will be subject to market fluctuations, the return on your notes at maturity may be less, and possibly significantly less, than the principal amount per note. If the Final Level is less than (or, in the case of bearish notes, greater than) the Initial Level (and, in the case of notes with a buffer, less than (or, in the case of bearish notes with a buffer, greater than) the Buffer Level) or a Barrier Event has occurred (as applicable), the return on your notes will be less than the principal amount per note. This will be the case even if the level of the Reference Asset is greater than (or, in the case of bearish notes, less than) the Initial Level at certain periods during the term of the notes. In the case of notes with a Downside Multiplier greater than 100%, your notes will participate in the downside performance (or, in the case of bearish notes, upside performance) of the Reference Asset on a leveraged basis. Depending on the Downside Multiplier, you may lose all or a substantial portion of the amount that you invested to purchase the notes.

#### The Buffer Level and Barrier Level Provide Only Limited Principal Protection.

You will receive the principal amount of your notes at maturity only if (i) in the case of notes with a buffer, the Final Level is greater than or equal to (or, in the case of bearish notes with a buffer, less than or equal to) the Buffer Level and (ii) in the case of notes with a barrier, a Barrier Event has not occurred. If the Final Level is less than (or, in the case of bearish notes, greater than) the Buffer Level or a Barrier Event has occurred, as applicable, you will lose some or all of your principal amount.

#### The Notes Do Not Pay Interest and Your Return May Be Lower than the Return on a Conventional Debt Security of Comparable Maturity.

There will be no periodic interest payments on the notes as there would be on a conventional fixed-rate or floating-rate debt security having the same maturity. The return that you will receive on your notes, which could be negative, may be less than the return you could earn on other investments. Even if your return is positive, your return may be less than the return you would earn if you bought a conventional senior interest bearing debt security of Royal Bank with the same maturity date or if you invested directly in the Reference Asset. Your investment may not reflect the full opportunity cost to you when you take into account factors that affect the time value of money.

#### Your Potential Payment at Maturity May Be Limited.

If your notes are subject to a cap or a Digital Coupon, they will provide less opportunity to participate in the appreciation (or, in the case of bearish notes, depreciation) of the Reference Asset than an investment in a

security linked to the Reference Asset providing full participation in the appreciation (or, in the case of bearish notes, depreciation), because the payment at maturity will not exceed the Maximum Redemption Amount or the Digital Coupon, as applicable. Accordingly, your return on the notes may be less than your return would be if you made an investment in a security directly linked to the positive (or, in the case of bearish notes, negative) performance of the Reference Asset.

Owning the Notes Is Not the Same as Owning the Reference Asset or its Components or a Security Directly Linked to the Performance of the Reference Asset or its Components.

The return on your notes will not reflect the return you would realize if you actually owned the Reference Asset or its components or a security directly linked to the performance of the Reference Asset or its underlying components and held that investment for a similar period because:

- your notes may be subject to a cap or Digital Coupon, in which case the payment at maturity will not exceed the maximum return set forth in the relevant pricing supplement; and
- the value of the Reference Asset may be calculated in part by reference only to the prices of the applicable component stocks, without taking into consideration the value of any dividends paid on those stocks.

Your notes may trade quite differently from the Reference Asset. Changes in the level of the Reference Asset may not result in comparable changes in the market value of your notes. Even if the level of the Reference Asset increases (or, in the case of bearish notes, decreases) from the Initial Level during the term of the notes, the market value of the notes prior to maturity may not increase to the same extent. It is also possible for the market value of the notes prior to maturity to decrease while the level of the Reference Asset increases (or, in the case of bearish notes, decreases).

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. RBC Capital Markets, LLC and other affiliates of Royal Bank may make a market for the notes; however, they are not required to do so. RBC Capital Markets, LLC or any other affiliate of Royal Bank may stop any market-making activities at any time. Even if a secondary market for the notes develops, it may not provide significant liquidity or trade at prices advantageous to you. We expect that transaction costs in any secondary market would be high. As a result, the difference between bid and asked prices for your notes in any secondary market could be substantial. If you sell your notes before maturity, you may have to do so at a substantial discount from the issue price, and as a result, you may suffer substantial losses.

The Market Value of Your Notes May Be Influenced by Many Unpredictable Factors.

The following factors, which are beyond our control, may influence the market value of your notes:

- the level of the Reference Asset, including, in the case of notes that have a buffer, whether the level of the Reference Asset trades or closes at a level below the Buffer Level or, in the case of notes that have a Barrier, whether a Barrier Event has occurred;
- if your notes are subject to a cap or a Digital Coupon, your potential return on the notes will be limited;
- the volatility (i.e., the frequency and magnitude of changes) of the price or level of the Reference Asset;
- the dividend rate on the applicable equity securities;



economic, financial, political, military, regulatory, legal and other events that affect the applicable securities markets generally and the U.S. markets in particular, and which may affect the level of the Reference Asset;

- interest and yield rates in the market; and
- the time remaining to maturity of the notes.

These factors may influence the market value of your notes if you sell your notes before maturity. Our creditworthiness, as represented by our credit ratings or as otherwise perceived in the market will also affect the market value of your notes. If you sell your notes prior to maturity, you may receive less than the principal amount of your notes.

**Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes.**

The notes are Royal Bank's senior unsecured debt securities. As a result, your receipt of the amount due on the maturity date is dependent upon Royal Bank's ability to repay its obligations at that time. This will be the case even if the level of the Reference Asset increases (or, in the case of bearish notes, decreases) after the pricing date. No assurance can be given as to what our financial condition will be at the maturity of the notes.

**If Your Notes Are Linked to a Basket, Changes in the Level of One or More Basket Components May Be Offset by Changes in the Level of One or More Other Basket Components.**

Your notes may be linked to a Basket. In such a case, a change in the levels of one or more Basket Components may not correlate with changes in the levels of one or more other Basket Components. The level of one or more Basket Components may increase, while the level of one or more other Basket Components may not increase as much, or may even decrease. The opposite changes may occur in the case of bearish notes. Therefore, in determining the level of the Basket as of any time, increases (or, in the case of bearish notes, decreases) in the level of one Basket Component may be moderated, or wholly offset, by lesser increases or decreases (or, in the case of bearish notes, lesser decreases and increases) in the level of one or more other Basket Components. If the weightings of the applicable Basket Components are not equal, changes in the level of the Basket Components which are more heavily weighted could have a disproportionately adverse impact upon your notes.

**The Amount to Be Paid at Maturity Will Not Be Affected by All Developments Relating to the Reference Asset.** Changes in the level of the Reference Asset during the term of the notes before the relevant valuation date or valuation dates will not be reflected in the calculation of the payment at maturity, unless the level of the Reference Asset trades or closes below (or, in the case of bearish notes, above) the Barrier Level, as applicable. The calculation agent will calculate this amount by comparing only the Final Level to the Initial Level (or the Buffer Level, as applicable) and, in the case of notes that have a barrier, by comparing the trading level or closing level of the Reference Asset during the Monitoring Period or on the valuation date(s), as applicable, to the Barrier Level. No other levels of the Reference Asset will be taken into account. As a result, you may receive less than the principal amount of your notes, even if the level of the Reference Asset has increased (or, in the case of bear notes, decreased) at certain times during the term of the notes before decreasing to a level below (or, in the case of bearish notes, increasing to a level above) the Initial Level (or Buffer Level, as applicable) and, if applicable, below (or, in the case of bearish notes, above) the Barrier Level as of the relevant dates.

**We Will Not Hold Any Asset Comprising the Reference Asset for Your Benefit.**

The indenture and the terms governing your notes do not contain any restriction on our ability or the ability of any of our affiliates to sell, pledge or otherwise convey all or any portion of the securities that may comprise the Reference Asset that we or they may acquire. Neither we nor our affiliates will pledge or otherwise hold any assets for your benefit, including any Reference Asset or its components. Consequently, in the event of our bankruptcy,

insolvency or liquidation, any of those assets that we own will be subject to the claims of our creditors generally and will not be available for your benefit specifically.

**The Market Value of Your Notes Will Likely Decline at an Accelerated Rate as the Level of the Reference Asset Approaches and Drops Below (or, in the Case of Bearish Notes, Rises Above) the Barrier Level.**

If your notes have a barrier, when the trading level or closing level, as applicable, of the Reference Asset on any trading day declines (or, in the case of bearish notes, rises) from the Initial Level to a level near the Barrier Level for the first time, the market value of the notes will likely decline at a greater rate than the decrease (or, in the case of bearish notes, increase) in the level of the Reference Asset. If the level of the Reference Asset is near or below (or, in the case of bearish notes, above) the Barrier Level, we expect the market value of the notes to decline to reflect the fact that investors may receive less than their principal amount at maturity.

**You Must Rely on Your Own Evaluation of the Merits of an Investment Linked to the Reference Asset.**

In the ordinary course of their business, our affiliates may have expressed views on expected movements in any Reference Asset or its components, and may do so in the future. These views or reports may be communicated to our clients and clients of our affiliates. However, these views are subject to change from time to time. Moreover, other professionals who transact business in markets relating to any Reference Asset or its components may at any time have significantly different views from those of our affiliates. For these reasons, you are encouraged to derive information concerning the applicable Reference Asset or its components from multiple sources, and you should not rely solely on views expressed by our affiliates.

**Trading and Other Transactions by Royal Bank or its Affiliates in the Reference Asset or Its Components, Futures, Options, Exchange-Traded Funds or Other Derivative Products May Adversely Affect the Market Value of the Notes.** As described below under "Use of Proceeds and Hedging," we or one or more affiliates may hedge our obligations under the notes by purchasing or selling the Reference Asset or its components, futures or options on the Reference Asset or its components, or exchange-traded funds or other derivative instruments with returns linked or related to changes in the performance of the Reference Asset or its components. We or our affiliates may adjust these hedges by, among other things, purchasing or selling those assets at any time. Although they are not expected to, any of these hedging activities may adversely affect the level of the Reference Asset or its components, and, therefore, the market value of the notes. It is possible that we or one or more of our affiliates could receive substantial returns from these hedging activities while the market value of the notes decreases.

We or one or more of our affiliates may also engage in trading in the Reference Asset or its components and other investments relating to those assets on a regular basis as part of our general broker-dealer and other businesses, for proprietary accounts, for other accounts under management or to facilitate transactions for customers, including block transactions. Any of these activities could adversely affect the level of the Reference Asset or its components and, therefore, the market value of the notes. We or one or more of our affiliates may also issue or underwrite other securities or financial or derivative instruments with returns linked or related to changes in the performance of the Reference Asset or its components. By introducing competing products into the marketplace in this manner, we or one or more of our affiliates could adversely affect the market value of the notes.

**The Inclusion in the Purchase Price of the Notes of a Selling Concession and of Our Cost of Hedging Our Market Risk under the Notes is Likely to Adversely Affect the Market Value of the Notes.**

The price at which you purchase the notes includes a selling concession (including a broker's commission), as well as the costs that we (or one of our affiliates) expect to incur in the hedging of our market risk under the notes. The hedging costs include the expected cost of undertaking this hedge, as well as the profit that we (or our affiliates) expect to realize in consideration for assuming the risks inherent in providing the hedge. As a result, 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 will likely be less than your original purchase price. We expect that this effect will be greater if it occurs earlier in the term of the notes than if it occurs later in the term of the notes.

**The Business Activities of Royal Bank or its Affiliates May Create Conflicts of Interest.**

As noted above, we and our affiliates expect to engage in trading activities related to the Reference Asset or its components 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 level of the Reference Asset or its components, 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 issuers of the equity securities included in a Reference Asset, including making loans to or providing advisory services to those companies. 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 Asset or its components. 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 by us or one or more of our affiliates may affect the level of the Reference Asset or its components and, therefore, the market value of the notes.

**The Calculation Agent Can Postpone the Determination of the Final Level if a Market Disruption Event Occurs.**

The determination of the Final Level may be postponed if the calculation agent determines that a market disruption event has occurred or is continuing on any valuation date with respect to the Reference Asset. If such a postponement occurs, the calculation agent will use the closing level of the Reference Asset on the first subsequent business day on which no market disruption event occurs or is continuing. In no event, however, will any valuation date be postponed by more than ten trading days. As a result, if a market disruption event occurs or is continuing on a valuation date, the maturity date for the notes could also be postponed, although not by more than ten trading days.

If the determination of the level of the Reference Asset for any valuation date is postponed to the last possible day, but a market disruption event occurs or is continuing on that day, that day will nevertheless be the date on which the level of the Reference Asset will be determined by the calculation agent. In such an event, the calculation agent will make a good faith estimate in its sole discretion of the level that would have prevailed in the absence of the market disruption event. See "General Terms of the Notes—Market Disruption Events."

**There Are Potential Conflicts of Interest Between You and the Calculation Agent.**

The calculation agent will, among other things, determine the amount of your payment at maturity on the notes. Our wholly-owned subsidiary, RBC Capital Markets, LLC, will serve as the calculation agent. We may change the calculation agent after the original issue date without notice to you. The calculation agent will exercise its judgment when performing its functions. For example, the calculation agent may have to determine whether a market disruption event affecting the Reference Asset has occurred, and make certain adjustments with respect to the Reference Asset if certain corporate events occur. This determination may, in turn, depend on the calculation agent's judgment whether the event has materially interfered with our ability or the ability of one of our affiliates to unwind our hedge positions. Since this determination by the calculation agent will affect the payment at maturity on the notes, the calculation agent may have a conflict of interest if it needs to make a determination of this kind.

**The Historical Performance of the Reference Asset or its Components Should Not Be Taken as an Indication of Their Future Performance.**

The level of the Reference Asset will determine the amount to be paid on the notes at maturity. The historical performance of the Reference Asset or its components does not necessarily give an indication of their future performance. As a result, it is impossible to predict whether the level of the Reference Asset will rise or fall during the term of the notes. The level of the Reference Asset and its components will be influenced by complex and interrelated political, economic, financial and other factors.

**Significant Aspects of the Tax Treatment of an Investment in the Notes Are Uncertain.**

The tax treatment of an investment in the notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or from the Canada Revenue Agency regarding the tax treatment of an investment in the notes, and the Internal Revenue Service, the Canada Revenue Agency or a court may not agree with the tax treatment described in this product prospectus supplement.

The Internal Revenue Service has issued a notice indicating that it and the U.S. Treasury Department are actively considering whether, among other issues, a holder should be required to accrue interest over the term of an instrument such as the notes even though that holder will not receive any payments with respect to the notes until maturity and whether all or part of the gain a holder may recognize upon sale or maturity of an instrument such as the notes should be treated as ordinary income. The outcome of this process is uncertain and could apply on a retroactive basis.

Please read carefully the sections entitled “Supplemental Discussion of U.S. Federal Income Tax Consequences” in this product prospectus supplement, the section “Tax Consequences” in the accompanying prospectus and the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement. You should consult your tax advisor about your own tax situation.

For a more complete discussion of the Canadian federal income tax consequences of investing in the notes, please see “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 advisor as to the consequences of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

**Non-U.S. Investors May Be Subject to Certain Additional Risks.**

The notes will be denominated in U.S. dollars. If you are a non-U.S. investor who purchases the notes with a currency other than U.S. dollars, changes in rates of exchange may have an adverse effect on the value, price or returns of your investment.

This product prospectus supplement contains a general description of certain U.S. and Canadian tax considerations relating to the notes. If you are a non-U.S. investor, you should consult your tax advisor as to the consequences, under the tax laws of the country where you are resident for tax purposes, of acquiring, holding and disposing of the notes and receiving the payments that might be due under the notes.

**Certain Considerations for Insurance Companies and Employee Benefit Plans.**

Any insurance company or fiduciary of a pension plan or other employee benefit plan that is subject to the prohibited transaction rules of the Employee Retirement Income Security Act of 1974, as amended, which we call “ERISA,” or the Internal Revenue Code of 1986, as amended, including an IRA or a Keogh plan (or a governmental plan to which similar prohibitions apply), and that is considering purchasing the notes with the assets of the insurance company or the assets of such a plan, should consult with its counsel regarding whether the purchase or holding of the notes could become a “prohibited transaction” under ERISA, the Internal Revenue Code or any substantially similar prohibition in light of the representations a purchaser or holder in any of the above categories is deemed to make by purchasing and holding the notes. For additional information, please see the discussion under “Employee Retirement Income Security Act” below.

**Risks Relating to the Applicable Reference Asset**

**You Will Not Have Any Shareholder Rights and Will Have No Right to Receive any Shares of the Reference Asset at Maturity.**

Investing in your notes will not make you a holder of any of the constituent stocks of the Reference Asset. Neither you nor any other holder or owner of the notes will have any voting rights, any right to receive dividends or other distributions or any other rights with respect to any of these securities.

**An Investment in the Notes May Be Subject to Risks Associated with Non-U.S. Securities Markets.**

The Reference Asset may include one or more equity securities that have been issued by non-U.S. companies. An investment in securities linked to the value of non-U.S. equity securities involves particular risks. Non-U.S. securities may be more volatile than U.S. securities, and market developments may affect non-U.S. securities differently from the U.S. securities. Direct or indirect government intervention to stabilize these non-U.S. securities, as well as cross shareholdings among non-U.S. companies, may affect trading prices and volumes in those securities.

Securities prices of non-U.S. companies are subject to political, economic, financial and social factors that may be unique to the particular country. These factors, which could negatively affect the non-U.S. securities, include the possibility of recent or future changes in the economic and fiscal policies of non-U.S. governments, the possible imposition of, or changes in, currency exchange laws or other non-U.S. laws or restrictions applicable to non-U.S. companies or investments in non-U.S. equity securities, the possibility of fluctuations in the rate of exchange between currencies, the possibility of outbreaks of hostility and political instability and the possibility of natural disaster or adverse public health developments in the region. Moreover, the economies of certain foreign countries may differ favorably or unfavorably from the U.S. economy in important respects, such as growth of gross national product, rate of inflation, trade surpluses or deficits, capital reinvestment, resources and self-sufficiency.

**We Do Not Control Any Company Included in a Reference Asset and Are Not Responsible for Any Disclosure Made by Any Other Company.**

Neither we nor any of our affiliates have the ability to control the actions of any of the companies included in a Reference Asset, nor do we assume any responsibility for the adequacy or accuracy of any publicly available information about any of these companies, unless (and only to the extent that) our securities or the securities of our affiliates are represented by that Reference Asset. You should make your own investigation into the companies represented by the applicable Reference Asset.

**You Will Have Limited Anti-Dilution Protection.**

If your notes are linked to one or more equity securities, the calculation agent will make certain adjustments for stock splits, reverse stock splits, stock dividends, extraordinary dividends and other events that affect the applicable issuer's capital structure, but only in the situations we describe in "General Terms of the Notes—Anti-Dilution Adjustments Relating to Equity Securities" below. The calculation agent will not be required to make an adjustment for every corporate event that may affect the relevant security. For example, the calculation agent will not make any adjustments for events such as an offering by the relevant issuer of equity securities, a tender or exchange offer for the issuer's shares at a premium to its then-current market price by that issuer or a tender or exchange offer for less than all outstanding shares of that issuer by a third party. Those events or other actions by the applicable issuer or a third party may nevertheless adversely affect the level of the Reference Asset, and adversely affect the value of your notes.

**Risks Relating to the Reference Asset that Is or Includes an American Depositary Receipt (“ADR”)**

**The Value of an ADR May Not Accurately Track the Value of the Common Shares of the Applicable Company.**

If the Reference Asset is or includes an ADR, each ADR will represent shares of the relevant company (an “Underlying Company”). The trading patterns of the ADRs will generally reflect the characteristics and valuations of the underlying common shares; however, the value of the ADRs may not completely track the value of those shares.

Trading volume and pricing on the applicable non-U.S. exchange may, but will not necessarily, have similar characteristics as the ADRs. For example, certain factors may increase or decrease the public float of the ADRs and, as a result, the ADRs may have less liquidity or lower market value than the underlying common shares.

**Adverse Trading Conditions in the Applicable Non-U.S. Market May Negatively Affect the Value of the Reference Asset that Is or Includes an ADR.**

Holder of the Underlying Company’s ADRs may usually surrender the ADRs in order to receive and trade the underlying common shares. This provision permits investors in the ADRs to take advantage of price differentials between markets. However, this provision may also cause the market prices of the applicable ADRs to more closely correspond with the values of the common shares in the applicable non-U.S. markets. As a result, a market outside of the United States for the underlying common shares that is not liquid may also result in an illiquid market for the ADRs.

**Other Risk Factors Relating to the Applicable Reference Asset**

The relevant pricing supplement may set forth additional risk factors as to the Reference Asset that you should review prior to purchasing the notes.

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## 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, the following general terms will apply to the notes, including your notes:

### Specified Currency

Unless otherwise specified in the relevant pricing supplement, all payments, if any, 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, issue date, issue price discounts or commissions and net proceeds to Royal Bank 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.

#### Payment at Maturity

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 Reference Asset. The payment at maturity will be calculated as follows:

#### Payment at Maturity in Excess of Principal

If the Final Level is greater than or equal to (or, in the case of bearish notes, less than or equal to) the Initial Level, then, at maturity, you will receive an amount equal to:

$\text{Principal Amount} + (\text{Principal Amount} \times \text{Percentage Change})$

The Percentage Change is the difference between the Final Level and the Initial Level and is expressed as a percentage of the Initial Level. The Percentage Change may be positive or negative and will be calculated as follows:

$\frac{\text{Final Level} - \text{Initial Level}}{\text{Initial Level}}$

Initial Level

If your notes are bearish notes, the Percentage Change will be calculated as follows:

$\frac{\text{Initial Level} - \text{Final Level}}{\text{Initial Level}}$

Initial Level

(a) Leverage Factor. If the relevant pricing supplement specifies that a Leverage Factor is applicable to your notes, then the payment at maturity will be calculated as follows:

$\text{Principal Amount} + (\text{Principal Amount} \times \text{Percentage Change} \times \text{Leverage Factor})$

The Leverage Factor represents the extent to your notes will participate in the upside performance (or, in the case of bearish notes, downside performance) of the Reference Asset. The Leverage Factor may be less than, equal to, or greater than 100%. If the Leverage Factor is less than 100%, your notes will participate in less than the full upside performance (or, in the case of bearish notes, downside performance) of the Reference Asset. If the Leverage Factor is greater than 100%, your notes will participate in the upside performance (or, in the case of bearish notes, downside performance) on a leveraged basis. The Leverage Factor will be specified in the relevant pricing supplement, if applicable.

(b) Booster Coupon. If the relevant pricing supplement specifies that a Booster Coupon is applicable to your notes:

1. If the Percentage Change is greater than the Booster Percentage, then the payment at maturity will equal:

$\text{Principal Amount} + (\text{Principal Amount} \times \text{Percentage Change})$

2. If the Percentage Change is greater than or equal to 0% but than or equal to the Booster Percentage, then the payment at maturity will equal:

$\text{Principal Amount} + (\text{Principal Amount} \times \text{Booster Percentage})$

The Booster Percentage is a specified increase (or, in the case of bearish notes, decrease) in the level of the Reference Asset, and will be set forth in the relevant pricing supplement, if applicable.

(c) Cap. If the relevant pricing supplement specifies that a cap is applicable to your notes, then the payment at maturity will not exceed the Maximum Redemption Amount set forth in the relevant pricing supplement.

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(d) Digital Coupon. If the relevant pricing supplement specifies that a Digital Coupon is applicable to your notes, then the payment at maturity will equal:

Principal Amount + (Principal Amount × Digital Coupon)

The Digital Coupon will be a percentage specified in the applicable pricing supplement.

Payment at Maturity Less than or Equal to Principal

If the Final Level is less than (or, in the case of bearish notes, greater than) the Initial Level, then, at maturity, you will receive less than the principal amount of your notes. In such a case, the payment at maturity will equal:

Principal Amount + (Principal Amount × Percentage Change)

(a) Downside Multiplier. If the relevant pricing supplement specifies that a Downside Multiplier is applicable to your notes, then the payment at maturity will be calculated as follows:

Principal Amount + (Principal Amount × Percentage Change × Downside Multiplier)

The Downside Multiplier represents the extent to which your notes will participate in the downside performance (or, in the case of bearish notes, upside performance) of the Reference Asset. The Downside Multiplier may be less than, equal to, or greater than 100%. If the Downside Multiplier is less than 100%, your notes will participate in less than the full downside performance (or, in the case of bearish notes, upside performance) of the Reference Asset. If the Downside Multiplier is greater than 100%, your notes will participate in the downside performance (or, in the case of bearish notes, upside performance) on a leveraged basis. The Downside Multiplier will be specified in the relevant pricing supplement, if applicable. Depending on the Downside Multiplier, you may lose all or a substantial portion of the amount that you invested to purchase the notes; however, in no event will you lose more than your initial investment.

(b) Buffer. If the relevant pricing supplement specifies that a Buffer is applicable to your notes:

1. If the Final Level is greater than or equal to (or, in the case of bearish notes, less than or equal to) the Buffer Level, then the payment at maturity will equal the principal amount of your notes.

2. If the Final Level is less than (or in the case of bearish notes, greater than) the Buffer Level, then the payment at maturity will equal:

Principal Amount + [(Principal Amount × (Percentage Change + Buffer Percentage))]

The Buffer Level is a specified level of the Reference Asset that is less than (or, in the case of bearish notes, greater than) the Initial Level. The Buffer Level will be a percentage of the Initial Level and set forth in the relevant pricing supplement, if applicable. The Buffer Percentage is 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 Level, the Buffer Percentage will be 10%.

(c) Barrier. If the relevant pricing supplement specifies that a Barrier is applicable to your notes:

1. If no Barrier Event has occurred, then the payment at maturity will equal the principal amount of your notes.

2. If a Barrier Event has occurred, then the payment at maturity will equal:

Principal Amount + (Principal Amount × Percentage Change)

Unless otherwise specified in the relevant pricing supplement, a Barrier Event will occur if:

- (i) the Final Level is less than (or, in the case of bearish notes, greater than) the Initial Level; and
- (ii) (a) for notes subject to Intra-Day Monitoring, at any time during the Monitoring Period, the level of the Reference Asset is less than (or, in the case of bearish notes, greater than) the Barrier Level, or
- (b) for notes subject to Close of Trading Day Monitoring, on any trading day during the Monitoring Period, the closing level of the Reference Asset is less than (or, in the case of bearish notes, greater than) the Barrier Level, or
- (c) for notes subject to Final Valuation Date Monitoring, the Final Level is less than (or, in the case of bearish notes, greater than) the Barrier Level.

The relevant pricing supplement will specify which of these three Monitoring Methods is applicable to your notes as well as the applicable Monitoring Period. If your notes are monitored by a different method, that method will be specified in the relevant pricing supplement, as well as any other provisions relating to the determination of the amount payable on your notes at maturity.

The Barrier Level is a specified level of the Reference Asset that is less than (or, in the case of bearish notes, greater than) the Initial Level. The Barrier Level will be a percentage of the Initial Level and set forth in the relevant pricing supplement, if applicable.

**Determining the Level of the Reference Asset**

**Initial Level.** The relevant pricing supplement will set forth the Initial Level of the Reference Asset. Unless otherwise specified in the relevant pricing supplement, the Initial Level of an equity security will be its closing price on the pricing date.

**Final Level.** Unless otherwise specified in the relevant pricing supplement, the level of an equity security on any valuation date will be its closing price on that date. The closing price for any equity security on any day will equal the closing sale price or last reported sale price, regular way, for that security, on a per-share basis:

- on the principal national securities exchange on which that security is listed for trading on that day, or
- if that security is not quoted on any national securities exchange on that day, on any other market system or quotation system that is the primary market for the trading of that security.

If the security is not listed or traded as described above, then its closing price on any day will be the average, as determined by the calculation agent, of the bid prices for that security obtained from as many dealers in that security selected by the calculation agent as will make those bid prices available to the calculation agent. The number of dealers need not exceed three and may include the calculation agent or any of its or our affiliates.

**Valuation Date**

Unless otherwise specified in the relevant pricing supplement, the valuation date (if there is only one valuation date applicable to the notes) or the final valuation date (if there is more than one valuation date applicable to the notes) will be the third trading day before the maturity date specified in the relevant pricing supplement. If the calculation agent determines that a market disruption event occurs or is continuing on any valuation date applicable to the notes, the Final Level will be determined according to the calculation in “—Market Disruption Events” below.

#### Maturity Date

Unless otherwise specified in the relevant pricing supplement, the maturity date will be the third scheduled business day following the valuation date or the final valuation date, as applicable, unless that date is not a business day, in which case the maturity date will be the next following business day. The maturity date will be postponed by the same number of trading days as the valuation date or the final valuation date, as applicable, if a market disruption event occurs or is continuing as described above. No interest will accrue past the maturity date specified in the relevant pricing supplement.

#### Market Disruption Events

If the Final Level will be determined on a single valuation date and a market disruption event occurs or is continuing on that date, the Final Level will equal the closing price or closing level, as applicable, of the Reference Asset on the first trading day following the valuation date on which the calculation agent determines that a market disruption event is not continuing. If a market disruption event occurs or is continuing on each trading day to and including the tenth trading day following the valuation date, the Final Level will be determined (or, if not determinable, estimated by the calculation agent in a manner which is considered commercially reasonable under the circumstances) by the calculation agent on that tenth trading day, 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 Final Level that would have prevailed in the absence of the market disruption event.

If the Final Level will be determined over more than one valuation date and a market disruption event occurs or is continuing on any scheduled valuation date other than the final valuation date, the level of the Reference Asset for that valuation date will equal the closing price or closing level, as applicable, of the Reference Asset 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 or closing level, as applicable, of the Reference Asset on the third scheduled valuation date will also be deemed to be the closing price or closing level, as applicable, of the Reference Asset 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 or closing level, as applicable, of the Reference Asset 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 or closing level, as applicable, of the Reference Asset that would have prevailed in the absence of the market disruption event.

A market disruption event means any event, circumstance or cause which Royal Bank determines, and the calculation agent confirms, has or will have a material adverse effect on the ability of Royal Bank to perform its obligations under the notes or to hedge its position in respect of its obligations to make payment of amounts owing thereunder and more specifically includes the following events to the extent that they have such effect with respect to any equity securities:

- a suspension, absence or limitation of trading in (i) that security in its primary market, as determined by the calculation agent, or (ii) futures or options contracts relating to that security in the primary market for those contracts, as determined by the calculation agent;
- any event that disrupts or impairs, as determined by the calculation agent, the ability of market participants to (i) effect transactions in, or obtain market values for, the security in its primary market, or (ii) effect transactions in, or obtain market values for, futures or options contracts relating the security in its primary market;
- the closure on any day of the primary market for that security on a scheduled trading day prior to the scheduled weekday closing time of that market (without regard to after hours or any other trading outside of the regular trading session hours) unless such earlier closing time is announced by the

primary market at least one hour prior to the earlier of (i) the actual closing time for the regular trading session on such primary market on such scheduled trading day for such primary market and (ii) the submission deadline for orders to be entered into the relevant exchange system for execution at the close of trading on such scheduled trading day for such primary market;

any scheduled trading day on which (i) the primary market for that security or (ii) the exchanges or quotation systems, if any, on which futures or options contracts on that security are traded, fails to open for trading during its regular trading session; or

any other event, if the calculation agent determines that the event interferes with our ability or the ability of any of our affiliates to unwind all or a portion of a hedge with respect to the notes that we or our affiliates have effected or may effect as described below under “Use of Proceeds and Hedging” in this product prospectus supplement.

#### Anti-Dilution Adjustments Relating to Equity Securities

The Initial Level, Buffer Level and Barrier Level will be specified in the relevant pricing supplement. For notes linked to a Reference Asset that is an equity security, the calculation agent will adjust the Initial Level, Buffer Level and Barrier Level if any of the dilution events described below occurs with respect to the Reference Asset. If your notes are linked to a Basket of equity securities, the terms of your notes will be adjusted as deemed necessary by the calculation agent to equitably reflect the provisions set forth in this section; for example, depending upon the terms of your notes, only the Initial Level of the relevant equity security may require adjustment, and only the relevant security would be replaced in the applicable Basket if so provided under “—Valuation of Distribution Property” and “—Substitution,” below.

The calculation agent will adjust the Initial Level, Buffer Level and Barrier Level as described below, but only if an event below under this section occurs with respect to the Reference Asset and only if the relevant event occurs during the period described under the applicable subsection. The Initial Level, Buffer Level and Barrier Level will be subject to the adjustments described below, independently and separately, with respect to the dilution events that affect the Reference Asset.

If more than one anti-dilution event requiring adjustment occurs with respect to the Initial Level, Buffer Level and Barrier Level, the calculation agent will adjust that Initial Level, Buffer Level and Barrier Level for each event, sequentially, in the order in which the events occur, and on a cumulative basis. Therefore, having adjusted the Initial Level, Buffer Level and Barrier Level for the first event, the calculation agent will adjust the Initial Level, Buffer Level and Barrier Level for the second event, applying the required adjustment to the Initial Level, Buffer Level and Barrier Level as already adjusted for the first event, and so on for each event. If an event requiring an anti-dilution adjustment occurs, the calculation agent will make the adjustment with a view to offsetting, to the extent practical, any change in the economic position of the holder and us, relative to your note, that results solely from that event. The calculation agent may, in its sole discretion, modify the anti-dilution adjustments as necessary to ensure an equitable result.

#### Stock Splits and Stock Dividends

A stock split is an increase in the number of a corporation’s outstanding shares of stock without any change in its stockholders’ equity. When a corporation pays a stock dividend, it issues additional shares of its stock to all holders of its outstanding stock in proportion to the shares they own. Each outstanding share will be worth less as a result of a stock split or stock dividend.

If the Reference Asset is subject to a stock split or receives a stock dividend, then the calculation agent will adjust the Initial Level, Buffer Level and Barrier Level by dividing the prior Initial Level, Buffer Level and Barrier Level—that is, the Initial Level, Buffer Level and Barrier Level before the stock split or stock dividend—by the number equal to: (1) the number of shares of the Reference Asset outstanding immediately after the stock split or stock dividend becomes effective; divided by (2) the number of shares of the Reference Asset outstanding

immediately before the stock split or stock dividend becomes effective. The Initial Level, Buffer Level and Barrier Level will not be adjusted, however, unless:

- in the case of a stock split, the first day on which the Reference Asset trades without the right to receive the stock split occurs after the pricing date and on or before the applicable valuation date; or
- in the case of a stock dividend, the ex-dividend date occurs after the pricing date and on or before the applicable valuation date.

The ex-dividend date for any dividend or other distribution with respect to the Reference Asset is the first day on which the Reference Asset trades without the right to receive that dividend or other distribution.

#### Reverse Stock Splits

A reverse stock split is a decrease in the number of a corporation's outstanding shares of stock without any change in its stockholders' equity. Each outstanding share will be worth more as a result of a reverse stock split.

If the Reference Asset is subject to a reverse stock split, then the calculation agent will adjust the Initial Level, Buffer Level and Barrier Level by multiplying the prior Initial Level, Buffer Level and Barrier Level by a number equal to:

- (1) the number of shares of the Reference Asset outstanding immediately before the reverse stock split becomes effective; divided by (2) the number of shares of the Reference Asset outstanding immediately after the reverse stock split becomes effective. The Initial Level, Buffer Level and Barrier Level will not be adjusted, however, unless the reverse stock split becomes effective after the pricing date and on or before the applicable valuation date.

#### Extraordinary Dividends

Any distribution or dividend on the Reference Asset determined by the calculation agent to be a distribution or dividend that is not in the ordinary course of the issuer's historical dividend practices will be deemed to be an extraordinary dividend. The calculation agent will determine if the dividend is an extraordinary dividend and, if so, the amount of the extraordinary dividend. Each outstanding share will be worth less as a result of an extraordinary dividend.

If any extraordinary dividend occurs with respect to the Reference Asset, the calculation agent will adjust the Initial Level, Buffer Level and Barrier Level to equal the product of: (1) the prior Initial Level, Buffer Level and Barrier Level, times (2) a fraction, the numerator of which is the amount by which the closing price of the Reference Asset on the business day before the ex-dividend date exceeds the extraordinary dividend amount and the denominator of which is the closing price of the Reference Asset on the business day before the ex-dividend date. The Initial Level, Buffer Level and Barrier Level will not be adjusted, however, unless the ex-dividend date occurs after the pricing date and on or before the applicable valuation date.

The extraordinary dividend amount with respect to an extraordinary dividend for the Reference Asset equals:

- for an extraordinary dividend that is paid in lieu of a regular quarterly dividend, the amount of the extraordinary dividend per share of the Reference Asset minus the amount per share of the immediately preceding dividend, if any, that was not an extraordinary dividend for the Reference Asset; or
- for an extraordinary dividend that is not paid in lieu of a regular quarterly dividend, the amount per share of the extraordinary dividend.

To the extent an extraordinary dividend is not paid in cash, the value of the non-cash component will be determined by the calculation agent. A distribution on the Reference Asset that is a stock dividend, an issuance of transferable rights or warrants or a spin-off event and also an extraordinary dividend will result in an adjustment to

the Initial Level, Buffer Level and Barrier Level only as described under “—Stock Splits and Stock Dividends” above, “—Transferable Rights and Warrants” below or “—Reorganization Events” below, as the case may be, and not as described here.

#### Transferable Rights and Warrants

If the issuer of the Reference Asset issues transferable rights or warrants to all holders of the Reference Asset to subscribe for or purchase the Reference Asset at an exercise price per share that is less than the closing price of the Reference Asset on the business day before the ex-dividend date for the issuance, then the Initial Level, Buffer Level and Barrier Level will be adjusted by multiplying the prior Initial Level, Buffer Level and Barrier Level by the following fraction:

the numerator will be the number of shares of the Reference Asset outstanding at the close of business on the day before that ex-dividend date plus the number of additional shares of the Reference Asset that the aggregate offering price of the total number of shares of the Reference Asset so offered for subscription or purchase pursuant to the transferable rights or warrants could purchase at the closing price on the business day before the ex-dividend date, with that number of additional shares being determined by multiplying the total number of shares so offered by the exercise price of those transferable rights or warrants and dividing the resulting product by the closing price on the business day before that ex-dividend date.

the denominator will be the number of shares of the Reference Asset outstanding at the close of business on the day before that ex-dividend date plus the number of additional shares of the Reference Asset offered for subscription or purchase under those transferable rights or warrants.

The Initial Level, Buffer Level and Barrier Level will not be adjusted, however, unless the ex-dividend date described above occurs after the pricing date and on or before the applicable valuation date.

#### Reorganization Events

If the issuer of the Reference Asset undergoes a reorganization event in which property other than the Reference Asset—e.g., cash and securities of another issuer—is distributed in respect of the Reference Asset, then, for purposes of calculating the level of the Reference Asset, the calculation agent will determine the closing price of the Reference Asset on the applicable valuation date to equal the value of the cash, securities and other property distributed in respect of one share of the Reference Asset.

If the calculation agent determines that, by valuing such cash, securities and other property, a commercially reasonable result is not achieved, then the calculation agent will, in its sole discretion, substitute another stock for that Reference Asset.

Each of the following is a reorganization event with respect to the Reference Asset:

- the Reference Asset is reclassified or changed;
- the issuer of the Reference Asset has been subject to a merger, consolidation or other combination and either is not the surviving entity or is the surviving entity but all the outstanding stock is exchanged for or converted into other property;
- a statutory share exchange involving the outstanding stock and the securities of another entity occurs, other than as part of an event described in the two bullet points above;
- the issuer of the Reference Asset sells or otherwise transfers its property and assets as an entirety or substantially as an entirety to another entity;

the issuer of the Reference Asset effects a spin-off—that is, issues to all holders of the Reference Asset equity securities of another issuer, other than as part of an event described in the four bullet points above;

the issuer of the Reference Asset is liquidated, dissolved or wound up or is subject to a proceeding under any applicable bankruptcy, insolvency or other similar law; or

another entity completes a tender or exchange offer for all of the outstanding stock of the issuer of the Reference Asset.

#### Valuation of Distribution Property

If a reorganization event occurs with respect to the Reference Asset, and the calculation agent does not substitute another stock for the Reference Asset as described in “—Substitution” below, then the calculation agent will determine the applicable closing price on each valuation date so as to equal the value of the property—whether it be cash, securities or other property—distributed in the reorganization event in respect of one share of the Reference Asset, as the Reference Asset existed before the date of the reorganization. We refer to the property distributed in a reorganization event as distribution property, a term we describe in more detail below. The calculation agent will not make any determination for a reorganization event, however, unless the event becomes effective (or, if the event is a spin-off, unless the ex-dividend date for the spin-off occurs) after the pricing date and on or before the applicable valuation date.

For the purpose of making a determination required by a reorganization event, the calculation agent will determine the value of each type of distribution property, in its sole discretion. For any distribution property consisting of a security, the calculation agent will use the closing price for the security on the relevant date. The calculation agent may value other types of property in any manner it determines, in its sole discretion, to be appropriate. If a holder of the Reference Asset may elect to receive different types or combinations of types of distribution property in the reorganization event, the distribution property will consist of the types and amounts of each type distributed to a holder that makes no election, as determined by the calculation agent in its sole discretion.

If a reorganization event occurs and the calculation agent adjusts the closing price of the Reference Asset on a valuation date to equal the value of the distribution property distributed in the event, as described above, the calculation agent will make further determinations for later events that affect the distribution property considered in determining the closing price. The calculation agent will do so to the same extent that it would make determinations if the Reference Asset were outstanding and were affected by the same kinds of events.

For example, if the issuer of the Reference Asset merges into another company and each share of the Reference Asset is converted into the right to receive two common shares of the surviving company and a specified amount of cash, then on each valuation date the closing price of a share of the Reference Asset will be determined to equal the value of the two common shares of the surviving company plus the specified amount of cash. The calculation agent will further determine the common share component of such closing price to reflect any later stock split or other event, including any later reorganization event, that affects the common shares of the surviving company, to the extent described in “—Anti-Dilution Adjustments Relating to Equity Securities” or as described above in this “—Reorganization Events” section as if the common shares were the Reference Asset. In that event, the cash component will not be redetermined but will continue to be a component of the closing price.

When we refer to distribution property, we mean the cash, securities and other property distributed in a reorganization event in respect of the Reference Asset or in respect of whatever securities whose value determines the closing price on a valuation date if any adjustment resulting from a reorganization event has been made in respect of a prior event. In the case of a spin-off, the distribution property also includes the Reference Asset in respect of which the distribution is made.

If a reorganization event occurs, the distribution property distributed in the event will be substituted for the Reference Asset as described above. Consequently, in this product prospectus supplement, when we refer to the Reference Asset, we mean any distribution property that is distributed in a reorganization event in respect of the

Reference Asset. Similarly, when we refer to the issuer of the Reference Asset, we mean any successor entity in a reorganization event.

#### Substitution

If the calculation agent determines that a commercially reasonable result is not achieved by valuing distribution property with respect to the Reference Asset upon becoming subject to a reorganization event, then the calculation agent will, in its sole discretion, substitute another stock for the Reference Asset. In such case, the adjustments described above in “—Valuation of Distribution Property” will not apply.

If the calculation agent so determines, it may choose, in its sole discretion, the stock of a different company listed on a national securities exchange or quotation system as a substitute for the Reference Asset. For all purposes, the substitute stock will be deemed to be a stock for purposes hereof.

The calculation agent will determine, in its sole discretion, the Initial Level, Buffer Level, Barrier Level and/or the manner of valuation of the substitute stock. The calculation agent will have the right to make such adjustments to the calculation of the individual stock performance as it determines in its sole discretion are necessary to preserve as nearly as possible our and your relative economic position prior to the reorganization event.

#### Adjustments Relating to ADRs

The Reference Asset may be or include an ADR of an Underlying Company. As a result, for purposes of this section, the calculation agent will consider the effect of any of the relevant events on the holders of the ADRs. For example, if a holder of the ADRs receives an extraordinary dividend, the provisions described above would apply to the ADRs.

On the other hand, if a spin-off occurs, and the ADRs represent both the spun-off security as well as the existing ADRs, the calculation agent may determine not to effect the anti-dilution adjustments set forth in this section. More particularly, the calculation agent may not make an adjustment (1) if holders of the ADRs are not eligible to participate in any of the events that would otherwise require anti-dilution adjustments as set forth in this section or (2) to the extent that the calculation agent determines that the Underlying Company or the depository for the ADRs has adjusted the number of common shares of the Underlying Company represented by each ADR so that the market price of the ADRs would not be affected by the corporate event in question.

If the Underlying Company or the depository for the ADRs, in the absence of any of the events described in this section, elects to adjust the number of common shares of the Underlying Company represented by each ADR, then the calculation agent may make the appropriate anti-dilution adjustments to reflect such change. The depository for the ADRs may also make adjustments in respect of the ADRs for share distributions, rights distributions, cash distributions and distributions other than shares, rights, and cash. Upon any such adjustment by the depository, the calculation agent may adjust such terms and conditions of the notes as the calculation agent determines appropriate to account for that event.

#### Other Events and Adjustments

The calculation agent may make such adjustments to the terms of the notes with respect to any of the events not described above, as it deems in its sole discretion is necessary to ensure an equitable result.

#### Delisting of an ADR or Termination of an ADR Facility.

If an ADR is no longer listed or admitted to trading on a U.S. securities exchange registered under the Exchange Act or included in the OTC Bulletin Board Service operated by FINRA, or if the ADR facility between the Underlying Company and the ADR depository is terminated for any reason, then, on and after the date that the ADRs are no longer so listed or admitted to trading or the date of such termination, as applicable (the “termination date”), the notes will be deemed to be linked to the common shares of the Underlying Company, and the calculation agent will determine the payment at maturity by reference to such common shares. Under such circumstances, the calculation agent may modify any terms of the notes as it deems necessary, in its sole discretion, to ensure an equitable result. On and after the termination date, for all purposes, including the determination of the Final Level,



the closing price of the Underlying Company's common shares on their primary exchange will be converted to U.S. dollars using such exchange rate as the calculation agent, in its sole discretion, determines to be commercially reasonable.

#### 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 or of a right to receive payments in respect thereto (a "Payment Recipient"), which we refer to as an "Excluded Holder," in respect of a beneficial owner or Payment Recipient:

- (i) with whom we do not deal at arm's length (within the meaning of the Income Tax Act (Canada)) at the time of making such payment;
  - who is subject to such taxes by reason of its being connected presently or formerly with Canada or any province 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;
- (ii) who is, or who does not deal at arm's length with a person who is, a "specified shareholder" (within the meaning of subsection 18(5) of the Income Tax Act (Canada)) of Royal Bank of Canada (generally a person will be a "specified shareholder" for 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);
  - who 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
    - b. 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;
- (iii) 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
- (iv) 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
- (v)
- (vi)

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 as described under the caption “—Payment at Maturity,” calculated as if the date of acceleration were the final valuation 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.

#### 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 payment at maturity 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 depository.

#### 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 Reference Asset, modified 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 business day of the kind described in the accompanying prospectus supplement, unless otherwise specified in the relevant pricing supplement. If the relevant pricing supplement specifies a different meaning for the term business day, we will use that modified definition in determining each applicable payment date as well as the maturity date for your notes, all as described in this product prospectus supplement.

Trading Day

When we refer to a trading day with respect to your notes, we mean a day on which the principal trading market for the Reference Asset is open for trading, unless otherwise specified in the relevant pricing supplement.

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#### 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 Reference Asset 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 Reference Asset on any valuation date, 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 Reference Asset that may not be achieved on the relevant valuation date 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 Reference Asset.

We describe various risk factors that may affect the market value of your notes, and the unpredictable nature of that market value, under “Risk Factors” above.

We cannot predict the levels of the Reference Asset or, therefore, the payment at maturity. 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 Reference Asset.

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#### 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 the securities included in or linked to the Reference Asset and/or listed and/or over-the-counter derivative instruments linked to the Reference Asset prior to or on the pricing 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 Reference Asset 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 Reference Asset 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 final valuation date. That step may involve sales or purchases of the Reference Asset or its components or over-the-counter derivative instruments linked to those assets.

The hedging activity discussed above may adversely affect the market value of the notes from time to time. See “Risk Factors—Trading and Other Transactions by Royal Bank or its Affiliates in the Reference Asset or Its Components, Futures, Options, Exchange-Traded Funds or Other Derivative Products May Adversely Affect the Market Value of the Notes” and “—The Business Activities of Royal Bank or its Affiliates May Create Conflicts of Interest” in this product prospectus supplement for a discussion of these adverse effects.

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#### UNDERLYING STOCK ISSUERS

In the relevant pricing supplement, we will provide summary information on the business of the issuers of the equity securities (the “Underlying Stocks”) constituting the Reference Asset based on their publicly available documents. The Underlying Stocks will be registered under the United States Securities Exchange Act of 1934, as amended (“Exchange Act”). Companies with securities registered under the Exchange Act are required to periodically file financial and other information specified by the SEC. This information is filed with the SEC and can be inspected and copied by you at the SEC’s Public Reference Room located at 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, information filed by the Underlying Stock issuers with the SEC electronically is available to the public over the Internet at the SEC’s website at <http://www.sec.gov>. Information filed with the SEC by the Underlying Stock issuers under the Exchange Act can be located by referencing their SEC file numbers. In addition, information about the Underlying Stock issuers may be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated information. We make no representation or warranty as to the accuracy or completeness of any such information.

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**HISTORICAL REFERENCE ASSET LEVEL INFORMATION**

We may provide historical level information on the Reference Asset or applicable Basket Components 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 Reference Asset or Basket Components will not decrease (or, in the case of bearish notes, increase), thus causing you to receive an amount that is less than the principal amount of your notes at maturity.

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**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.

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## 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 U.S. Internal Revenue Code of 1986, as amended (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 any Reference Asset would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Code or a “U.S. real property holding corporation” within the meaning of Section 897 of the Code. If any such Reference Asset 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 issuers of the Reference Assets 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 Reference Asset 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 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 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 the Reference Asset is 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 applicable 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 or maturity 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 all of the Reference Asset(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 from us prior to maturity. In addition, any gain a holder might recognize upon the sale or maturity of the notes

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would be ordinary income and any loss recognized by a holder at such time would generally 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.

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 other 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 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. Accordingly, if the securities are not delta-one instruments and are issued before January 1, 2021, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the securities. However, it is possible that the securities could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the underlying or the securities, and following such occurrence the securities 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 securities 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 FATCA. In addition, the notes may constitute a “financial account” for these purposes and thus, be subject to information reporting requirements pursuant to FATCA. FATCA also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes.

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

#### 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 will agree to sell to RBC Capital Markets, LLC, and RBC Capital Markets, LLC will agree to purchase from Royal Bank, 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.

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No dealer, salesman or other person has been authorized to give any information or to make any representation not contained in this product prospectus supplement or the accompanying prospectus or prospectus supplement and, if given or made, such information or representation must not be relied upon as having been authorized by Royal Bank of Canada or RBC Capital Markets, LLC. This product prospectus supplement, the accompanying prospectus and prospectus supplement do not constitute an offer to sell or a solicitation of an offer to buy any securities other than the securities described in this product prospectus supplement nor do they constitute an offer to sell or a solicitation of an offer to buy the securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. The delivery of this product prospectus supplement, the accompanying prospectus and prospectus supplement at any time does not imply that the information they contain is correct as of any time subsequent to their respective dates.

Royal Bank of Canada  
Senior Global Medium-Term Notes, Series H  
Enhanced Return Notes  
October 18, 2018

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