

ROYAL BANK OF CANADA  
Form 424B2  
October 30, 2017

RBC Capital Markets® Filed Pursuant to Rule 424(b)(2)  
Registration Statement No. 333-208507

## Pricing Supplement

Dated October 27, 2017

To the Product \$120,000  
Prospectus Supplement Step Down Auto-Callable Barrier Notes  
No. ERN-EI-1, Dated Linked to the Lesser Performing of Two  
January 12, 2016, the Equity Indices, Due October 30, 2020  
Prospectus Supplement Royal Bank of Canada  
Dated January 8, 2016,  
and the Prospectus Dated  
January 8, 2016

Royal Bank of Canada is offering Step Down Auto-Callable Barrier Notes (the “Notes”) linked to the lesser performing of two equity indices (each, a “Reference Index” and collectively, the “Reference Indices”). The Notes offered are senior unsecured obligations of Royal Bank of Canada and under the circumstances specified below, and will have the terms described in the documents described above, as supplemented or modified by this pricing supplement. We will not make any payments on the Notes until the maturity date or a prior automatic call, and the Notes will not be listed on any securities exchange.

The Notes will be automatically called at the applicable Call Amount if the closing level of each Reference Index is greater than or equal to its applicable Call Level on any annual Observation Date on or after October 31, 2018. The Call Level for each Reference Index will be 100.00% of its Initial Level on the first Observation Date, 95.00% of its Initial Level on the second Observation Date and 90.00% of its Initial Level on the final Observation Date. The Call Amounts are based on a rate of return of 9.23% per annum, and will increase on each annual Observation Date to reflect that rate of return. If the Notes are not called, you may lose all or a substantial portion of your principal amount.

Reference Indices	Initial Levels*	Barrier Levels**
Russell 2000® Index (“RTY”)	1,508.316	1,055.821 (70.00% of its Initial Level)
EURO STOXX 50® Index (“SX5E”)	3,652.23	2,556.56 (70.00% of its Initial Level)

\* For each Reference Index, the Initial Level was its closing level on the pricing date.

\*\* Rounded to three decimal places in the case of the RTY and two decimal places in the case of the SX5E.

The Notes do not guarantee any return of principal at maturity. Any payments on the Notes are subject to our credit risk.

Investing in the Notes involves a number of risks. See “Additional Risk Factors Specific to the Notes” beginning on page PS-4 of the product prospectus supplement dated January 12, 2016, “Risk Factors” beginning on page S-1 of the prospectus supplement dated January 8, 2016, and “Selected Risk Considerations” beginning on page P-7 of this terms supplement.

The Notes will not constitute deposits insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. government agency or instrumentality.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the Notes or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

Issuer: Royal Bank of Canada Listing: None

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Pricing Date:	October 27, 2017	Principal Amount: \$1,000 per Note
Issue Date:	October 31, 2017	Maturity Date: October 30, 2020
Valuation Date:	October 27, 2020 (which is the final Observation Date)	
Initial Level:	For each Reference Index, its closing level on the pricing date, as specified above.	
Final Level:	For each Reference Index, its closing level on the Valuation Date.	
Call Feature:	If the closing level of each Reference Index is greater than or equal to its applicable Call Level starting on October 31, 2018 or on any Observation Date thereafter, the Notes will be called and we will pay the applicable Call Amount on the corresponding Call Settlement Date.	
Call Level:	For each Reference Index, 100.00% of its Initial Level on the first Observation Date, 95.00% of its Initial Level on the second Observation Date and 90.00% of its Initial Level on the final Observation Date.	
Observation Dates and Call Settlement Dates:	Annually, as set forth below.	
Payment at Maturity (if held to maturity):	If the Notes are not called on any Observation Date (including the Valuation Date), we will pay you at maturity an amount based on the Final Level of the Lesser Performing Reference Index: For each \$1,000 in principal amount, \$1,000, unless the Final Level of the Lesser Performing Reference Index is less than its Barrier Level. If the Final Level of the Lesser Performing Reference Index is less than its Barrier Level, then the investor will receive at maturity, for each \$1,000 in principal amount, a cash payment equal to: \$1,000 + (\$1,000 x Percentage Change of the Lesser Performing Reference Index) Investors could lose some or all of the value of their initial investment if there has been a decline in the level of Lesser Performing Reference Index.	
Lesser Performing Reference Index:	The Reference Index with the lowest Percentage Change.	
CUSIP:	78013GFB6	

	Per Note	Total
Price to public <sup>(1)</sup>	100.00%	\$120,000
Underwriting discounts and commissions <sup>(1)</sup>	2.25%	\$2,700
Proceeds to Royal Bank of Canada	97.75%	\$117,300

<sup>(1)</sup>Certain dealers who purchase the Notes for sale to certain fee-based advisory accounts may have foregone some or all of their underwriting discount or selling concessions. The public offering price for investors purchasing the Notes in these accounts may be between \$977.50 and \$1,000 per \$1,000 in principal amount.

The initial estimated value of the Notes as of the date of this pricing supplement is \$941.88 per \$1,000 in principal amount, which is less than the price to public. The actual value of the Notes at any time will reflect many factors, cannot be predicted with accuracy, and may be less than this amount. We describe our determination of the initial estimated value in more detail below.

RBC Capital Markets, LLC, which we refer to as RBCCM, acting as agent for Royal Bank of Canada, received a commission of \$22.50 per \$1,000 in principal amount of the Notes and used a portion of that commission to allow selling concessions to other dealers of up to \$22.50 per \$1,000 in principal amount of the Notes. The other dealers may have forgone, in their sole discretion, some or all of their selling concessions. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

RBC Capital Markets, LLC

Step Down Auto-Callable Barrier Notes  
 Linked to the Lesser Performing of Two  
 Equity Indices, Due October 30, 2020  
 Royal Bank of Canada

**SUMMARY**

The information in this “Summary” section is qualified by the more detailed information set forth in this pricing supplement, the product prospectus supplement, the prospectus supplement, and the prospectus.

**General:** This pricing supplement relates to an offering of Step Down Auto-Callable Barrier Notes (the “Notes”) linked to the lesser performing of two equity indices (the “Reference Indices”).

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

**Issue:** Senior Global Medium-Term Notes, Series G

**Pricing Date:** October 27, 2017

**Issue Date:** October 31, 2017

**Term:** Approximately three (3) years, if not previously called

**Denominations:** Minimum denomination of \$1,000, and integral multiples of \$1,000 thereafter.

**Designated Currency:** U.S. Dollars

**Call Feature:** If, starting on October 31, 2018 or any Observation Date thereafter, the closing level of each Reference Index is greater than or equal to its applicable Call Level, then the Notes will be automatically called and the applicable Call Amount will be paid on the corresponding Call Settlement Date.

**Call Level:** For each Reference Index, 100.00% of its Initial Level on the first Observation Date, 95.00% of its Initial Level on the second Observation Date and 90.00% of its Initial Level on the final Observation Date.

	Observation Date	Call Settlement Date	Call Level*	Call Amount (per Note)**
Observation Dates/Call Settlement Dates/Call Amounts:	October 31, 2018	November 5, 2018	100.00%	\$1,092.30
	October 28, 2019	October 31, 2019	95.00%	\$1,184.60
	October 27, 2020 (the “Valuation Date”)	October 30, 2020 (the “Maturity Date”)	90.00%	\$1,276.90

\*As a percentage of the Initial Level of the relevant Reference Index.

\*\*The Call Amounts correspond to a return of 9.23% per annum on the Notes, if they are called.

Accordingly, you will not receive any return on the Notes that exceeds the applicable amount set forth above, even if the level of one or both of the Reference Indices increases substantially.

**Valuation Date:** October 27, 2020

**Maturity Date:** October 30, 2020

**Initial Level:** For each Reference Index, its closing level on the pricing date, as specified on the cover page of this pricing supplement.

**Final Level:** For each Reference Index, its closing level on the Valuation Date.

**Barrier Level:** For each Reference Index, 70.00% of its Initial Level, as specified on the cover page of this pricing supplement.

**Payment at Maturity (if** If the Notes are not called on any Observation Date (including the Valuation Date), we will pay you at maturity an amount based on the Final Level of the Lesser Performing Reference Index:

not previously · If the Final Level of the Lesser Performing Reference Index is greater than or equal to its Barrier  
called and Level, we will pay you a cash payment equal to the principal amount.  
held to · If the Final Level of the Lesser Performing Reference Index is below its Barrier Level, you will  
maturity): receive at maturity, for each \$1,000 in principal amount, a cash payment equal to:  
\$1,000 + (\$1,000 x Percentage Change of the Lesser Performing Reference Index)  
The amount of cash that you receive will be less than your principal amount, if anything, resulting in a  
loss that is proportionate to the decline of the Lesser Performing Reference Index from the pricing date  
to the Valuation Date. Investors in the Notes could lose some or all of their investment if there has been  
a decline in the level of the Lesser Performing Reference Index below its Barrier Level.  
With respect to each Reference Index:  
Percentage Final Level – Initial Level  
Change: Initial Level

P-2 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

Lesser Performing Reference Index:	The Reference Index with the lowest Percentage Change.
Market Disruption Events: Calculation Agent:	The occurrence of a market disruption event (or a non-trading day) as to either of the Reference Indices will result in the postponement of an Observation Date or the Valuation Date as to that Reference Index, as described in the product prospectus supplement, but not to any non-affected Reference Index. RBC Capital Markets, LLC (“RBCCM”) By purchasing a Note, each holder agrees (in the absence of a change in law, an administrative determination or a judicial ruling to the contrary) to treat the Note as a callable pre-paid cash-settled derivative contract linked to the Reference Indices for U.S. federal income tax purposes. However, the U.S. federal income tax consequences of your investment in the Notes are uncertain and the Internal Revenue Service could assert that the Notes should be taxed in a manner that is different from that described in the preceding sentence. Please see the section below, “Supplemental Discussion of U.S. Federal Income Tax Consequences,” and the discussion (including the opinion of our counsel Morrison & Foerster LLP) in the product prospectus supplement dated January 12, 2016 under “Supplemental Discussion of U.S. Federal Income Tax Consequences,” which apply to the Notes.
U.S. Tax Treatment:	RBCCM (or one of its affiliates), though not obligated to do so, may maintain a secondary market in the Notes after the Issue Date. The amount that you may receive upon sale of your Notes prior to maturity may be less than the principal amount.
Secondary Market:	The Notes will not be listed on any securities exchange.
Listing:	DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under “Description of Debt Securities—Ownership and Book-Entry Issuance” in the prospectus dated January 8, 2016).
Settlement:	
Terms Incorporated in the Master Note:	All of the terms appearing above the item captioned “Secondary Market” on the cover page and pages P-2 and P-3 of this pricing supplement and the terms appearing under the caption “General Terms of the Notes” in the product prospectus supplement dated January 12, 2016, as modified by this pricing supplement.

P-3 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### ADDITIONAL TERMS OF YOUR NOTES

You should read this pricing supplement together with the prospectus dated January 8, 2016, as supplemented by the prospectus supplement dated January 8, 2016 and the product prospectus supplement dated January 12, 2016, relating to our Senior Global Medium-Term Notes, Series G, of which these Notes are a part. Capitalized terms used but not defined in this pricing supplement will have the meanings given to them in the product prospectus supplement. In the event of any conflict, this pricing supplement will control. The Notes vary from the terms described in the product prospectus supplement in several important ways. You should read this pricing supplement carefully.

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in “Risk Factors” in the prospectus supplement dated January 8, 2016 and “Additional Risk Factors Specific to the Notes” in the product prospectus supplement dated January 12, 2016, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the “SEC”) website at [www.sec.gov](http://www.sec.gov) as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated January 8, 2016:

<http://www.sec.gov/Archives/edgar/data/1000275/000121465916008810/j18160424b3.htm>

Prospectus Supplement dated January 8, 2016:

<http://www.sec.gov/Archives/edgar/data/1000275/000121465916008811/p14150424b3.htm>

Product Prospectus Supplement dated January 12, 2016:

<https://www.sec.gov/Archives/edgar/data/1000275/000114036116047560/form424b5.htm>

Our Central Index Key, or CIK, on the SEC website is 1000275. As used in this pricing supplement, “we,” “us,” or “our” refers to Royal Bank of Canada.

P-4 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
 Linked to the Lesser Performing of Two  
 Equity Indices, Due October 30, 2020  
 Royal Bank of Canada

#### HYPOTHETICAL EXAMPLES

The table set out below is included for illustration purposes only. The table illustrates payment upon an automatic call and the Payment at Maturity of the Notes for a hypothetical range of performance for the Lesser Performing Reference Index, assuming the following terms:

Hypothetical Initial Level (for each Reference Index):	1,000.00*
Hypothetical Barrier Level (for each Reference Index):	700.00, which is 70.00% of the hypothetical Initial Level
Principal Amount:	\$1,000 per Note
Call Amounts:	\$1,092.30 on the first Observation Date, \$1,184.60 on the second Observation Date and \$1,276.90 on the final Observation Date
Call Level (for each Reference Index):	First Observation Date: 1,000.00 (100% of the hypothetical Initial Level) Second Observation Date: 950.00 (95% of the hypothetical Initial Level) Final Observation Date: 900.00 (90% of the hypothetical Initial Level)

\* The hypothetical Initial Level of 1,000.00 used in the examples below has been chosen for illustrative purposes only and does not represent the actual Initial Level of any Reference Index. The actual Initial Levels for each Reference Index are set forth on the cover page of this pricing supplement. We make no representation or warranty as to which of the Reference Indices will be the Lesser Performing Reference Index. It is possible that the Final Level of each Reference Index will be less than its Initial Level.

#### Summary of the Hypothetical Examples

	Notes Are Called on an Observation Date						Notes Are Not Called on Any Observation Date			
	Example 1		Example 2		Example 3		Example 4		Example 5	
	RTY	SX5E	RTY	SX5E	RTY	SX5E	RTY	SX5E	RTY	SX5E
Initial Level	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Closing Level on the First Observation Date	1,300.00	1,250.00	1,100.00	900.00	900.00	1,050.00	880.00	805.00	980.00	805.00
	N/A	N/A	1,100.00	1,170.00	850.00	1,200.00	780.00	900.00	780.00	1,100.00

Closing Level on the Second Observation Date											
Closing Level on the Final Observation Date	N/A	N/A	N/A	N/A	930.00	1,500.00	850.00	1,200.00	500.00	1,120.00	
Percentage Change of the Reference Indices	N/A	N/A	N/A	N/A	N/A	N/A	-15.00%	20.00%	-50.00%	12.00%	
Percentage Change of the Lesser Performing Reference Index			N/A	N/A	N/A		-15.00%	-50.00%			
Call Amount			\$1,092.30	\$1,184.60	\$1,276.90 (paid on the maturity date)		N/A	N/A			
Payment at Maturity (if not previously called)			N/A	N/A	N/A		\$1,000	\$500			

P-5 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
 Linked to the Lesser Performing of Two  
 Equity Indices, Due October 30, 2020  
 Royal Bank of Canada

#### Hypothetical Examples of Amounts Payable Upon an Automatic Call

The following hypothetical examples illustrate payments of the Call Amounts set forth above.

Example 1: The level of the Lesser Performing Reference Index increases by 25% from the Initial Level of 1,000.00 to a closing level of 1,250.00 on the first Observation Date. Because the closing level of the Lesser Performing Reference Index on the first Observation Date is greater than the applicable Call Level of 1,000.00, the investor receives on the applicable Call Settlement Date a cash payment of \$1,092.30, representing the corresponding Call Amount. After the Notes are called, they will no longer remain outstanding and there will be no further payments on the Notes.

Example 2: The level of the Lesser Performing Reference Index decreases by 10% from the Initial Level of 1,000.00 to its closing level on the first Observation Date of 900 but the level of the Lesser Performing Reference Index increases by 10% from the Initial Level of 1,000.00 to a closing level of 1,100.00 on the second Observation Date. Because the Notes are not called on the first Observation Date and the closing level of the Lesser Performing Reference Index on the second Observation Date is greater than the applicable Call Level of 950.00, the investor receives on the applicable Call Settlement Date a cash payment of \$1,184.60, representing the corresponding Call Amount. After the Notes are called, they will no longer remain outstanding and there will be no further payments on the Notes.

Example 3: The Notes are not called on any of the first two Observation Dates and the closing level of the Lesser Performing Reference Index on the final Observation Date is 930.00, which is greater than the applicable Call Level of 900.00. Because the Notes are not called on any of the first two Observation Dates and the closing level of the Lesser Performing Reference Index on the final Observation Date is greater than the applicable Call Level of 900.00, the investor receives on the Maturity Date a cash payment of \$1,276.90, representing the corresponding Call Amount.

#### Hypothetical Examples of Amounts Payable at Maturity

The following hypothetical examples illustrate how the payments at maturity set forth in the table above are calculated, assuming the Notes have not been called.

Example 4: The level of the Lesser Performing Reference Index decreases by 15% from the Initial Level of 1,000.00 to its Final Level of 850.00. The Notes are not called on any Observation Date because the closing level of at least one Reference Index is below its applicable Call Level on each Observation Date (including the Valuation Date). Because the Final Level of the Lesser Performing Reference Index is less than its Call Level of 900.00 but greater than its Barrier Level of 700.00, the investor receives at maturity, a cash payment of \$1,000 per Note, despite the 15% decline in the level of the Lesser Performing Reference Index.

Example 5: The level of the Lesser Performing Reference Index is 500.00 on the Valuation Date, which is less than its Barrier Level of 700.00. The Notes are not called on any Observation Date because the closing level of at least one Reference Index is below its applicable Call Level on each Observation Date (including the Valuation Date). Because the Final Level of the Lesser Performing Reference Index is less than its Barrier Level of 700.00, we will pay only \$500.00 for each \$1,000 in the principal amount of the Notes, calculated as follows:

Principal Amount + (Principal Amount x Reference Index Return of the Lesser Performing Reference Index)  
 = \$1,000 + (\$1,000 x -50.00%) = \$1,000 - \$500.00 = \$500.00

\* \* \*

The payments at maturity shown above are entirely hypothetical; they are based on levels of the Reference Indices that may not be achieved and on assumptions that may prove to be erroneous. The actual market value of your Notes on the Maturity Date or at any other time, including any time you may wish to sell your Notes, may bear little relation to the hypothetical payments at maturity shown above, and those amounts should not be viewed as an indication of the

financial return on an investment in the Notes or on an investment in the securities included in any Reference Index.

P-6 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### SELECTED RISK CONSIDERATIONS

An investment in the Notes involves significant risks. Investing in the Notes is not equivalent to investing directly in the Reference Indices. These risks are explained in more detail in the section “Risk Factors” in the product prospectus supplement. In addition to the risks described in the prospectus supplement and the product prospectus supplement, you should consider the following:

**Principal at Risk** — Investors in the Notes could lose all or a substantial portion of their principal amount if there is a decline in the level of the Lesser Performing Reference Index between the pricing date and the Valuation Date. If the Notes are not automatically called and the Final Level of the Lesser Performing Reference Index on the Valuation Date is less than its Barrier Level, the amount of cash that you receive at maturity will represent a loss of your principal that is proportionate to the decline in the closing level of the Lesser Performing Reference Index from the pricing date to the Valuation Date.

**The Notes Are Subject to an Automatic Call** — If, starting on October 31, 2018 and on any Observation Date thereafter, the closing level of each Reference Index is greater than or equal to its applicable Call Level, then the Notes will be automatically called. If the Notes are automatically called, then, on the applicable Call Settlement Date, for each \$1,000 in principal amount, you will receive the applicable Call Amount on the corresponding Call Settlement Date.

You will not receive any payments after the Call Settlement Date and you will not receive any return on the Notes that exceeds the applicable Call Amount provided on page P-2, even if the level of one or both of the Reference Indices increases substantially. You may be unable to reinvest your proceeds from the automatic call in an investment with a return that is as high as the return on the Notes. Because the Call Level will decline over the term of the Notes, the Notes are more likely to be called than a similar instrument without this feature.

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

**The Notes Are Linked to the Lesser Performing Reference Index, Even if the Other Reference Index Performs Better** — If either of the Reference Indices has a Final Level that is less than its Barrier Level, your return will be linked to the lesser performing of the two Reference Indices. Even if the Final Level of the other Reference Index has increased compared to its Initial Level, or has experienced a decrease that is less than that of the Lesser Performing Reference Index, your return will only be determined by reference to the performance of the Lesser Performing Reference Index, regardless of the performance of the other Reference Index.

**Your Payment on the Notes Will Be Determined by Reference to Each Reference Index Individually, Not to a Basket, and the Payment at Maturity Will Be Based on the Performance of the Lesser Performing Reference Index** — The Payment at Maturity will be determined only by reference to the performance of the Lesser Performing Reference Index, regardless of the performance of the other Reference Index. The Notes are not linked to a weighted basket, in which the risk may be mitigated and diversified among each of the basket components. For example, in the case of notes linked to a weighted basket, the return would depend on the weighted aggregate performance of the basket components reflected as the basket return. As a result, the depreciation of one basket component could be mitigated by the appreciation of the other basket component, as scaled by the weighting of that basket component. However, in the case of the Notes, the individual performance of each of the Reference Indices would not be combined, and the depreciation of one Reference Index would not be mitigated by any appreciation of the other Reference Index. Instead, your return will depend solely on the Final Level of the Lesser Performing Reference

Index.

Payments on the Notes Are Subject to Our Credit Risk, and Changes in Our Credit Ratings Are Expected to Affect the Market Value of the Notes — The Notes are Royal Bank's senior unsecured debt securities. As a result, your receipt of any Call Amounts, if payable, and the amount due on the maturity date is dependent upon Royal Bank's ability to repay its obligations on the applicable payment date. This will be the case even if the levels of the Reference Indices increase after the pricing date. No assurance can be given as to what our financial condition will be at any time during the term of the Notes.

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

Owning the Notes Is Not the Same as Owning the Securities Represented by the Reference Indices — The return on your Notes is unlikely to reflect the return you would realize if you actually owned the securities represented by the Reference

P-7 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

Indices. For instance, you will not receive or be entitled to receive any dividend payments or other distributions on those securities during the term of your Notes. As an owner of the Notes, you will not have voting rights or any other rights that holders of the Reference Indices may have. Furthermore, the Reference Indices may appreciate substantially during the term of the Notes, while your potential return will be limited to the applicable Call Amounts.

**The Initial Estimated Value of the Notes Is Less than the Price to the Public** — The initial estimated value set forth on the cover page of this pricing supplement does not represent a minimum price at which we, RBCCM or any of our affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the levels of the Reference Indices, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of the underwriting discount and the estimated costs relating to our hedging of the Notes. These factors, together with various credit, market and economic factors over the term of the Notes, are expected to reduce the price at which you may be able to sell the Notes in any secondary market and will affect the value of the Notes in complex and unpredictable ways. Assuming no change in market conditions or any other relevant factors, the price, if any, at which you may be able to sell your Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the underwriting discount and the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined by RBCCM for any secondary market price is expected to be based on the secondary rate rather than the internal funding rate used to price the Notes and determine the initial estimated value. As a result, the secondary price will be less than if the internal funding rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your Notes to maturity.

**The Initial Estimated Value of the Notes Is an Estimate Only, Calculated as of the Time the Terms of the Notes Were Set** — The initial estimated value of the Notes will be based on the value of our obligation to make the payments on the Notes, together with the mid-market value of the derivative embedded in the terms of the Notes. See “Structuring the Notes” below. Our estimate is based on a variety of assumptions, including our credit spreads, expectations as to dividends, interest rates and volatility, and the expected term of the Notes. These assumptions are based on certain forecasts about future events, which may prove to be incorrect. Other entities may value the Notes or similar securities at a price that is significantly different than we do.

The value of the Notes at any time after the pricing date will vary based on many factors, including changes in market conditions, and cannot be predicted with accuracy. As a result, the actual value you would receive if you sold the Notes in any secondary market, if any, should be expected to differ materially from the initial estimated value of your Notes.

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

**An Investment in the Notes is Subject to Risks Associated in Investing in Stocks With a Small Market Capitalization** — The Russell 2000<sup>®</sup> Index consists of stocks issued by companies with relatively small market capitalizations. These companies often have greater stock price volatility, lower trading volume and less liquidity than large-capitalization companies. As a result, the level of the Russell 2000<sup>®</sup> Index may be more volatile than that of a market measure that does not track solely small-capitalization stocks. Stock prices of small-capitalization companies are also generally more vulnerable than those of large-capitalization companies to adverse business and economic developments, and

the stocks of small-capitalization companies may be thinly traded, and be less attractive to many investors if they do not pay dividends. In addition, small capitalization companies are typically less well-established and less stable financially than large-capitalization companies and may depend on a small number of key personnel, making them more vulnerable to loss of those individuals. Small capitalization companies tend to have lower revenues, less diverse product lines, smaller shares of their target markets, fewer financial resources and fewer competitive strengths than large-capitalization companies. These companies may also be more susceptible to adverse developments related to their products or services.

An Investment in the Notes Is Subject to Risks Relating to Non-U.S. Securities Markets - Because foreign companies or foreign equity securities included in the SX5E are publicly traded in the applicable foreign countries and are denominated in currencies other than U.S. dollars, an investment in the securities involves particular risks. For example, the non-U.S. securities markets may be more volatile than the U.S. securities markets, and market developments may affect these markets differently from the U.S. or other securities markets. Direct or indirect government intervention to stabilize the securities markets outside the U.S., as well as cross-shareholdings in certain companies, may affect trading prices and trading volumes in those markets. Also, the public availability of information concerning the foreign issuers may vary depending on their home jurisdiction and the reporting requirements imposed by their respective regulators. In addition, the foreign issuers may be subject to accounting, auditing and financial reporting standards and requirements that differ from those applicable to U.S. reporting companies.

P-8 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

The securities included in the SX5E are issued by companies located within the Eurozone, which is and has been undergoing severe financial stress, and the political, legal and regulatory ramifications are impossible to predict. Changes within the Eurozone could have a material adverse effect on the performance of the SX5E and, consequently, on the value of the Notes.

Market Disruption Events and Adjustments — The payment at maturity, each Observation Date and the Valuation Date are subject to adjustment as described in the product prospectus supplement. For a description of what constitutes a market disruption event as well as the consequences of that market disruption event, see “General Terms of the Notes—Market Disruption Events” in the product prospectus supplement.

P-9 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### INFORMATION REGARDING THE REFERENCE INDICES

All disclosures contained in this pricing supplement regarding the Reference Indices, including, without limitation, their make-up, method of calculation, and changes in their components, have been derived from publicly available sources. The information reflects the policies of, and is subject to change by, the applicable index sponsor. Each of these sponsors has no obligation to continue to publish, and may discontinue publication of, the applicable Reference Index. The consequences of an index sponsor discontinuing publication of a Reference Index are discussed in the section of the product prospectus supplement entitled “General Terms of the Notes—Unavailability of the Level of the Reference Asset.” Neither we nor RBCCM accepts any responsibility for the calculation, maintenance or publication of any Reference Index or any successor index.

We obtained the information regarding the historical performance of each Reference Index set forth below from Bloomberg Financial Markets.

Russell 2000<sup>®</sup> Index (“RTY”)

The RTY

The RTY was developed by Russell Investments (“Russell”) before FTSE International Limited and Russell combined in 2015 to create FTSE Russell, which is wholly owned by London Stock Exchange Group. Russell began dissemination of the RTY (Bloomberg L.P. index symbol “RTY”) on January 1, 1984. FTSE Russell calculates and publishes the RTY. The RTY was set to 135 as of the close of business on December 31, 1986. The RTY is designed to track the performance of the small capitalization segment of the U.S. equity market. As a subset of the Russell 3000<sup>®</sup> Index, the RTY consists of the smallest 2,000 companies included in the Russell 3000<sup>®</sup> Index. The Russell 3000<sup>®</sup> Index measures the performance of the largest 3,000 U.S. companies, representing approximately 98% of the investable U.S. equity market. The RTY is determined, comprised, and calculated by FTSE Russell without regard to the Notes.

Selection of Stocks Underlying the RTY

All companies eligible for inclusion in the RTY must be classified as a U.S. company under FTSE Russell’s country-assignment methodology. If a company is incorporated, has a stated headquarters location, and trades in the same country (American Depositary Receipts and American Depositary Shares are not eligible), then the company is assigned to its country of incorporation. If any of the three factors are not the same, FTSE Russell defines three Home Country Indicators (“HCIs”): country of incorporation, country of headquarters, and country of the most liquid exchange (as defined by a two-year average daily dollar trading volume) (“ADDTV”) from all exchanges within a country. Using the HCIs, FTSE Russell compares the primary location of the company’s assets with the three HCIs. If the primary location of its assets matches any of the HCIs, then the company is assigned to the primary location of its assets. If there is insufficient information to determine the country in which the company’s assets are primarily located, FTSE Russell will use the primary country from which the company’s revenues are primarily derived for the comparison with the three HCIs in a similar manner. FTSE Russell uses the average of two years of assets or revenues data to reduce potential turnover. If conclusive country details cannot be derived from assets or revenues data, FTSE Russell will assign the company to the country of its headquarters, which is defined as the address of the company’s principal executive offices, unless that country is a Benefit Driven Incorporation “BDI” country, in which case the company will be assigned to the country of its most liquid stock exchange. BDI countries include: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bonaire, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Curacao, Faroe Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Liberia, Marshall Islands, Panama, Saba, Sint Eustatius, Sint Maarten, and Turks and Caicos Islands. For any companies incorporated or headquartered in a U.S. territory, including countries such as Puerto Rico, Guam, and U.S. Virgin Islands, a U.S. HCI is assigned.



All securities eligible for inclusion in the RTY must trade on a major U.S. exchange. Stocks must have a closing price at or above \$1.00 on their primary exchange on the last trading day in May to be eligible for inclusion during annual reconstitution. However, in order to reduce unnecessary turnover, if an existing member's closing price is less than \$1.00 on the last day of May, it will be considered eligible if the average of the daily closing prices (from its primary exchange) during the month of May is equal to or greater than \$1.00. Initial public offerings are added each quarter and must have a closing price at or above \$1.00 on the last day of their eligibility period in order to qualify for index inclusion. If an existing stock does not trade on the "rank day" (typically the last trading day in May but a confirmed timetable is announced each spring), but does have a closing price at or above \$1.00 on another eligible U.S. exchange, that stock will be eligible for inclusion.

An important criterion used to determine the list of securities eligible for the RTY is total market capitalization, which is defined as the market price as of the rank day in May for those securities being considered at annual reconstitution times the total number of shares outstanding. Where applicable, common stock, non-restricted exchangeable shares and partnership units/membership interests are used to determine market capitalization. Any other form of shares such as preferred stock, convertible preferred stock, redeemable shares, participating preferred stock, warrants, rights, installment receipts or trust receipts, are excluded from the calculation. If multiple share classes of common stock exist, they are combined to determine total shares outstanding. In cases where the common stock share classes act independently of each other (e.g., tracking stocks), each class is considered for inclusion separately. If multiple share classes exist, the pricing vehicle will be designated as the share class with the highest two-year trading volume as of the rank day in May.

P-10 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

Companies with a total market capitalization of less than \$30 million are not eligible for the RTY. Similarly, companies with only 5% or less of their shares available in the marketplace are not eligible for the RTY. Royalty trusts, limited liability companies, closed-end investment companies (companies that are required to report Acquired Fund Fees and Expenses, as defined by the SEC, including business development companies), blank check companies, special purpose acquisition companies, and limited partnerships are also ineligible for inclusion. Exchange traded funds and mutual funds are also excluded. Bulletin board, pink sheets, and over-the-counter (“OTC”) traded securities are not eligible for inclusion.

Annual reconstitution is a process by which the RTY is completely rebuilt. Based on closing levels of the company’s common stock on its primary exchange on the rank day of May of each year, FTSE Russell reconstitutes the composition of the RTY using the then existing market capitalizations of eligible companies. Reconstitution of the RTY occurs on the last Friday in June or, when the last Friday in June is the 29th or 30th, reconstitution occurs on the prior Friday. In addition, FTSE Russell adds initial public offerings to the RTY on a quarterly basis based on total market capitalization ranking within the market-adjusted capitalization breaks established during the most recent reconstitution.

After membership is determined, a security’s shares are adjusted to include only those shares available to the public. This is often referred to as “free float.” The purpose of the adjustment is to exclude from market calculations the capitalization that is not available for purchase and is not part of the investable opportunity set.

#### License Agreement

FTSE Russell and Royal Bank have entered into a non-exclusive license agreement providing for the license to Royal Bank, and certain of its affiliates, in exchange for a fee, of the right to use indices owned and published by FTSE Russell in connection with some securities, including the Notes.

FTSE Russell does not guarantee the accuracy and/or the completeness of the RTY or any data included in the RTY and has no liability for any errors, omissions, or interruptions in the RTY. FTSE Russell makes no warranty, express or implied, as to results to be obtained by the calculation agent, holders of the Notes, or any other person or entity from the use of the RTY or any data included in the RTY in connection with the rights licensed under the license agreement described in this terms supplement or for any other use. FTSE Russell makes no express or implied warranties, and hereby expressly disclaims all warranties of merchantability or fitness for a particular purpose with respect to the RTY or any data included in the RTY. Without limiting any of the above information, in no event will FTSE Russell have any liability for any special, punitive, indirect or consequential damages, including lost profits, even if notified of the possibility of these damages.

The Notes are not sponsored, endorsed, sold or promoted by FTSE Russell. FTSE Russell makes no representation or warranty, express or implied, to the owners of the Notes or any member of the public regarding the advisability of investing in securities generally or in the Notes particularly or the ability of the RTY to track general stock market performance or a segment of the same. FTSE Russell’s publication of the RTY in no way suggests or implies an opinion by FTSE Russell as to the advisability of investment in any or all of the stocks upon which the RTY is based. FTSE Russell’s only relationship to Royal Bank is the licensing of certain trademarks and trade names of FTSE Russell and of the RTY, which is determined, composed and calculated by FTSE Russell without regard to Royal Bank or the Notes. FTSE Russell is not responsible for and has not reviewed the Notes nor any associated literature or publications and FTSE Russell makes no representation or warranty express or implied as to their accuracy or completeness, or otherwise. FTSE Russell reserves the right, at any time and without notice, to alter, amend, terminate or in any way change the RTY. FTSE Russell has no obligation or liability in connection with the administration, marketing or trading of the Notes.

“Russell 2000” and “Russell 3000” are registered trademarks of FTSE Russell in the U.S. and other countries.

P-11 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
 Linked to the Lesser Performing of Two  
 Equity Indices, Due October 30, 2020  
 Royal Bank of Canada

Historical Information

Below is a table setting forth the intra-day high, intra-day low and period-end closing levels of this Reference Index. The information provided in the table is for the period from January 1, 2013 through October 27, 2017.

Period-Start Date	Period-End Date	High Intra-Day Level of this Reference Index	Low Intra-Day Level of this Reference Index	Period-End Closing Level of this Reference Index
1/1/2013	3/31/2013	954.000	849.330	951.542
4/1/2013	6/30/2013	1,008.230	898.400	977.475
7/1/2013	9/30/2013	1,082.000	981.300	1,073.786
10/1/2013	12/31/2013	1,167.960	1,037.860	1,163.637
1/1/2014	3/31/2014	1,212.823	1,082.717	1,173.038
4/1/2014	6/30/2014	1,193.964	1,082.531	1,192.964
7/1/2014	9/30/2014	1,213.550	1,101.675	1,101.676
10/1/2014	12/31/2014	1,221.442	1,040.472	1,204.696
1/1/2015	3/31/2015	1,268.162	1,151.295	1,252.772
4/1/2015	6/30/2015	1,295.996	1,211.126	1,253.947
7/1/2015	9/30/2015	1,275.899	1,078.633	1,100.688
10/1/2015	12/31/2015	1,205.079	1,080.606	1,135.889
1/1/2016	3/31/2016	1,134.078	943.097	1,114.028
4/1/2016	6/30/2016	1,190.172	1,085.883	1,151.923
7/1/2016	9/30/2016	1,263.460	1,131.713	1,251.646
10/1/2016	12/31/2016	1,392.714	1,156.085	1,357.130
1/1/2017	3/31/2017	1,414.824	1,335.038	1,385.920
4/1/2017	6/30/2017	1,433.790	1,345.244	1,415.359
7/1/2017	9/30/2017	1,493.555	1,349.354	1,490.861
10/1/2017	10/27/2017	1,514.943	1,482.528	1,508.316

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

The graph below illustrates the performance of this Reference Index from January 1, 2013 to October 27, 2017, reflecting its Initial Level of 1,508.316, represented by the green line. The red line represents the Barrier Level of 1,055.821, which is equal to 70.00% of the closing level on October 27, 2017, rounded to three decimal places.

P-12 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### EURO STOXX 50<sup>®</sup> Index (“SX5E”)

The SX5E was created by STOXX Limited, a subsidiary of Deutsche Börse AG. Publication of the SX5E began in February 1998, based on an initial index level of 1,000 at December 31, 1991.

#### Composition and Maintenance

The SX5E is composed of 50 component stocks of market sector leaders from within the 19 EURO STOXX<sup>®</sup> Supersector indices, which represent the Eurozone portion of the STOXX Europe 600<sup>®</sup> Supersector indices. The composition of the SX5E is reviewed annually, based on the closing stock data on the last trading day in August. The component stocks are announced on the first trading day in September. Changes to the component stocks are implemented on the third Friday in September and are effective the following trading day. Changes in the composition of the SX5E are made to ensure that the SX5E includes the 50 market sector leaders from within the SX5E. The free float factors for each component stock used to calculate the SX5E, as described below, are reviewed, calculated, and implemented on a quarterly basis and are fixed until the next quarterly review. The SX5E is also reviewed on an ongoing monthly basis. Corporate actions (including initial public offerings, mergers and takeovers, spin-offs, delistings, and bankruptcy) that affect the SX5E composition are announced immediately, implemented two trading days later and become effective on the next trading day after implementation.

#### Calculation of the SX5E

The SX5E is calculated with the “Laspeyres formula,” which measures the aggregate price changes in the component stocks against a fixed base quantity weight. The formula for calculating the SX5E value can be expressed as follows:

$$\text{SX5E} = \frac{\text{Free float market capitalization of the SX5E}}{\text{Divisor}} \times 1,000$$

The “free float market capitalization of the SX5E” is equal to the sum of the products of the closing price, market capitalization, the number of shares, the free float factor and the weighting cap factor for each component stock as of the time the SX5E is being calculated.

The SX5E is also subject to a divisor, which is adjusted to maintain the continuity of the SX5E values across changes due to corporate actions, such as the deletion and addition of stocks, the substitution of stocks, stock dividends, and stock splits.

P-13 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### License Agreement

We have entered into a non-exclusive license agreement with STOXX providing for the license to us and certain of our affiliated or subsidiary companies, in exchange for a fee, of the right to use indices owned and published by STOXX (including the SX5E) in connection with certain securities, including the Notes offered hereby.

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

STOXX has no relationship to us, other than the licensing of the SX5E and the related trademarks for use in connection with the Notes. STOXX does not:

- sponsor, endorse, sell, or promote the Notes;
- recommend that any person invest in the Notes offered hereby or any other securities;
- have any responsibility or liability for or make any decisions about the timing, amount, or pricing of the Notes;
- have any responsibility or liability for the administration, management, or marketing of the Notes; or
- consider the needs of the Notes or the holders of the Notes in determining, composing, or calculating the SX5E, or have any obligation to do so.

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

- STOXX does not make any warranty, express or implied, and disclaims any and all warranty concerning:
    - the results to be obtained by the Notes, the holders of the Notes or any other person in connection with the use of the SX5E and the data included in the SX5E;
    - the accuracy or completeness of the SX5E and its data;
    - the merchantability and the fitness for a particular purpose or use of the SX5E and its data;
  - STOXX will have no liability for any errors, omissions, or interruptions in the SX5E or its data; and
- Under no circumstances will STOXX be liable for any lost profits or indirect, punitive, special, or consequential damages or losses, even if STOXX knows that they might occur.

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

P-14 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
 Linked to the Lesser Performing of Two  
 Equity Indices, Due October 30, 2020  
 Royal Bank of Canada

Historical Information

Below is a table setting forth the intra-day high, intra-day low and period-end closing levels of this Reference Index. The information provided in the table is for the period from January 1, 2013 through October 27, 2017.

Period-Start Date	Period-End Date	High Intra-Day Level of this Reference Index	Low Intra-Day Level of this Reference Index	Period-End Closing Level of this Reference Index
1/1/2013	3/31/2013	2,754.80	2,563.64	2,624.02
4/1/2013	6/30/2013	2,851.48	2,494.54	2,602.59
7/1/2013	9/30/2013	2,955.47	2,539.15	2,893.15
10/1/2013	12/31/2013	3,116.23	2,891.39	3,109.00
1/1/2014	3/31/2014	3,185.68	2,944.13	3,161.60
4/1/2014	6/30/2014	3,325.50	3,083.43	3,228.24
7/1/2014	9/30/2014	3,301.15	2,977.52	3,225.93
10/1/2014	12/31/2014	3,278.97	2,789.63	3,146.43
1/1/2015	3/31/2015	3,742.42	2,998.53	3,697.38
4/1/2015	6/30/2015	3,836.28	3,374.18	3,424.30
7/1/2015	9/30/2015	3,714.26	2,973.16	3,100.67
10/1/2015	12/31/2015	3,524.04	3,036.17	3,267.52
1/1/2016	3/31/2016	3,266.01	2,672.73	3,004.93
4/1/2016	6/30/2016	3,156.86	2,678.27	2,864.74
7/1/2016	9/30/2016	3,101.75	2,742.66	3,002.24
10/1/2016	12/31/2016	3,290.52	2,937.98	3,290.52
1/1/2017	3/31/2017	3,500.93	3,214.31	3,500.93
4/1/2017	6/30/2017	3,666.80	3,407.33	3,441.88
7/1/2017	9/30/2017	3,594.85	3,363.68	3,594.85
10/1/2017	10/27/2017	3,670.00	3,580.21	3,652.23

PAST PERFORMANCE IS NOT INDICATIVE OF FUTURE RESULTS.

The graph below illustrates the performance of this Reference Index from January 1, 2013 to October 27, 2017, reflecting its Initial Level of 3,652.23, represented by the green line. The red line represents the Barrier Level of 2,556.56, which is equal to 70.00% of the closing level on October 27, 2017, rounded to two decimal places.

P-15 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### SUPPLEMENTAL DISCUSSION OF U.S. FEDERAL INCOME TAX CONSEQUENCES

The following disclosure supplements, and to the extent inconsistent supersedes, the discussion in the product prospectus supplement dated January 12, 2016 under “Supplemental Discussion of U.S. Federal Income Tax Consequences.”

Under Section 871(m) of the Code, a “dividend equivalent” payment is treated as a dividend from sources within the United States. Such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-U.S. holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference an interest in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the IRS has issued guidance that states that the U.S. Treasury Department and 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, 2019. Based on our determination that the Notes are not delta-one instruments, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes. However, it is possible that the Notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting a Reference Index or the Notes (for example, upon a Reference Index rebalancing), and following such occurrence the Notes could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Reference Indices or the Notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the Notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable withholding agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

#### SUPPLEMENTAL PLAN OF DISTRIBUTION (CONFLICTS OF INTEREST)

Delivery of the Notes will be made against payment for the Notes on October 31, 2017, which is the second (2nd) business day following the pricing date (this settlement cycle being referred to as “T+2”). See “Plan of Distribution” in the prospectus dated January 8, 2016. For additional information as to the relationship between us and RBCCM, please see the section “Plan of Distribution—Conflicts of Interest” in the prospectus dated January 8, 2016.

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

The value of the Notes shown on your account statement may be based on RBCCM’s estimate of the value of the Notes if RBCCM or another of our affiliates were to make a market in the Notes (which it is not obligated to do). That estimate will be based upon the price that RBCCM may pay for the Notes in light of then prevailing market conditions, our creditworthiness and transaction costs. For a period of approximately 3 months after the issue date of the Notes, the value of the Notes that may be shown on your account statement may be higher than RBCCM’s estimated value of the Notes at that time. This is because the estimated value of the Notes will not include the underwriting discount and our hedging costs and profits; however, the value of the Notes shown on your account statement during that period may be a higher amount, reflecting the addition of RBCCM’s underwriting discount and our estimated costs and profits from hedging the Notes. This excess is expected to decrease over time until the end of this period. After this period, if RBCCM repurchases your Notes, it expects to do so at prices that reflect their estimated value.



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

P-16 RBC Capital Markets, LLC

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Step Down Auto-Callable Barrier Notes  
Linked to the Lesser Performing of Two  
Equity Indices, Due October 30, 2020  
Royal Bank of Canada

#### STRUCTURING THE NOTES

The Notes are our debt securities, the return on which is linked to the performance of the Reference Indices. As is the case for all of our debt securities, including our structured notes, the economic terms of the Notes reflect our actual or perceived creditworthiness at the time of pricing. In addition, because structured notes result in increased operational, funding and liability management costs to us, we typically borrow the funds under these Notes at a rate that is more favorable to us than the rate that we might pay for a conventional fixed or floating rate debt security of comparable maturity. Using this relatively lower implied borrowing rate rather than the secondary market rate, is a factor that reduced the initial estimated value of the Notes at the time their terms were set. Unlike the estimated value included in this pricing supplement, any value of the Notes determined for purposes of a secondary market transaction may be based on a different funding rate, which may result in a lower value for the Notes than if our initial internal funding rate were used.

In order to satisfy our payment obligations under the Notes, we may choose to enter into certain hedging arrangements (which may include call options, put options or other derivatives) on the issue date with RBCCM or one of our other subsidiaries. The terms of these hedging arrangements take into account a number of factors, including our creditworthiness, interest rate movements, the volatility of the Reference Indices, and the tenor of the Notes. The economic terms of the Notes and their initial estimated value depend in part on the terms of these hedging arrangements.

The lower implied borrowing rate is a factor that reduced the economic terms of the Notes to you. The initial offering price of the Notes also reflects the underwriting commission and our estimated hedging costs. These factors resulted in the initial estimated value for the Notes on the pricing date being less than their public offering price. See “Selected Risk Considerations—The Initial Estimated Value of the Notes Is Less than the Price to the Public” above.

#### VALIDITY OF THE NOTES

In the opinion of Norton Rose Fulbright Canada LLP, the issue and sale of the Notes has been duly authorized by all necessary corporate action of the Bank in conformity with the Indenture, and when the Notes have been duly executed, authenticated and issued in accordance with the Indenture and delivered against payment therefor, the Notes will be validly issued and, to the extent validity of the Notes is a matter governed by the laws of the Province of Ontario or Québec, or the laws of Canada applicable therein, and will be valid obligations of the Bank, subject to equitable remedies which may only be granted at the discretion of a court of competent authority, subject to applicable bankruptcy, to rights to indemnity and contribution under the Notes or the Indenture which may be limited by applicable law; to insolvency and other laws of general application affecting creditors’ rights, to limitations under applicable limitations statutes, and to limitations as to the currency in which judgments in Canada may be rendered, as prescribed by the Currency Act (Canada). This opinion is given as of the date hereof and is limited to the laws of the Provinces of Ontario and Québec and the federal laws of Canada applicable thereto. In addition, this opinion is subject to customary assumptions about the Trustee’s authorization, execution and delivery of the Indenture and the genuineness of signatures and certain factual matters, all as stated in the letter of such counsel dated January 8, 2016, which has been filed as Exhibit 5.1 to Royal Bank’s Form 6-K filed with the SEC dated January 8, 2016.

In the opinion of Morrison & Foerster LLP, when the Notes have been duly completed in accordance with the Indenture and issued and sold as contemplated by the prospectus supplement and the prospectus, the Notes will be valid, binding and enforceable obligations of Royal Bank, entitled to the benefits of the Indenture, subject to applicable bankruptcy, insolvency and similar laws affecting creditors’ rights generally, concepts of reasonableness and equitable principles of general applicability (including, without limitation, concepts of good faith, fair dealing and the lack of bad faith). This opinion is given as of the date hereof and is limited to the laws of the State of New York. This opinion is subject to customary assumptions about the Trustee’s authorization, execution and delivery of the

Indenture and the genuineness of signatures and to such counsel's reliance on the Bank and other sources as to certain factual matters, all as stated in the legal opinion dated January 8, 2016, which has been filed as Exhibit 5.2 to the Bank's Form 6-K dated January 8, 2016.

P-17 RBC Capital Markets, LLC

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