

ROYAL BANK OF CANADA  
Form FWP  
April 02, 2019

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RBC Capital Markets® Filed Pursuant to Rule 433  
Registration Statement No. 333-227001

The information in this preliminary terms supplement is not complete and may be changed.

Preliminary Pricing  
Supplement

Dated: April 2, 2019 \$ \_\_\_\_\_  
Subject to Completion: Rules Based Investment Securities Linked  
Pricing Supplement to the RBC Global Tactical Equity Total  
Dated June \_\_, 2019 to Return Index, due December 31, 2039  
the Prospectus Royal Bank of Canada  
Supplement and  
Prospectus Each Dated  
September 7, 2018

Royal Bank of Canada is offering the Rules Based Investment Securities (the “Notes”) linked to the performance of the RBC Global Tactical Equity Total Return Index (the “Index”).

The CUSIP number for the Notes is 78013X7H5. The Notes do not pay interest.

The Notes provide a return based upon the performance of Index, as reflected in the Indicative Note Value (as defined below). The Index is a proprietary index based on four sub-indices, each of which is allocated on a monthly basis to either (a) a futures contract on a specific equity index and the federal funds (effective) rate or (b) only the federal funds (effective) rate, as described in more detail below.

The Indicative Note Value, which will initially be \$997.50 for each \$1,000 in principal amount of the Notes, will be reduced on a daily basis based upon an Index Adjustment Factor based on a rate of 0.65% per annum. As a result, in order for you to receive a payment on the maturity date or upon an earlier redemption that is greater than or equal to the principal amount, the level of the Index must increase from the Trade Date to the Valuation Date (or Early Redemption Notice Date, as applicable) by an amount that is sufficient to offset the impact of the initial Indicative Note Value being less than the principal amount and the Index Adjustment Factor. You may lose all or a substantial portion of the principal amount.

During the term of the Notes, Noteholders will have the right to require us to repurchase the Notes at a price per \$1,000 in principal amount equal to the Indicative Note Value on the trading day on which a valid notice of exercise is delivered. We describe the terms of this right in more detail below.

Any payments on the Notes are subject to our credit risk.

Issue Date: June 6, 2019 Maturity Date: December 31, 2039

The Notes will not be listed on any securities exchange.

Investing in the Notes involves a number of risks. Please see “Risk Factors” on page P-11 of this pricing supplement and on page S-1 of the prospectus supplement.

The Notes will not constitute deposits insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation or any other Canadian or U.S. government agency or instrumentality. The Notes are not subject to conversion into our common shares under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act. Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined that this pricing supplement is truthful or complete. Any representation to the contrary is a criminal offense.

On the Trade Date, we will sell most, but not all, of the aggregate principal amount of the Notes that will be set forth on the cover page of the final pricing supplement for the Notes. For those sales, RBCCM will receive a commission

equal to 0.25% of the principal amount. We will offer the remaining Notes that are not sold on the Trade Date after that date from time to time, until December 31, 2019. We may make those additional sales through RBCCM and/or one or more other dealers. We will sell those remaining Notes at a price that is higher or lower than the \$1,000 principal amount per Note, with an offering price that is related to the Indicative Note Value at the time of sale. We will receive proceeds equal to 100% of the price that the Notes are sold to the public, less any commissions paid to RBCCM or any other dealer. We do not expect such commissions to exceed 0.25% of the principal amount. In addition to the commissions received at the time of each sale, RBCCM will receive from us the amounts generated from the deduction of the Index Adjustment Factor from the Indicative Note Value (as defined below) to cover ongoing payments as a structuring fee for developing the Notes. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

The initial estimated value of the Notes as of the Trade Date is expected to be between \$997.50 and \$999.50 per \$1,000 in principal amount, and will be less than the price to public. The final pricing supplement relating to the Notes will set forth our estimate of the initial value of the Notes as of the Trade Date. 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

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Rules Based Investment  
Securities Linked to the RBC  
Global Tactical Equity Total  
Return Index

SUMMARY

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

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

Underwriter: RBC Capital Markets, LLC (“RBCCM”)

RBC Global Tactical Equity Total Return Index

The Index is a proprietary index based on four sub-indices (each, a “Sub-Index”). Each Sub-Index is allocated on a monthly basis to either (a) a futures contract (each, a “Relevant Futures Contract”) on a specific equity index and the Federal Funds (Effective) Rate or (b) only the Federal Funds (Effective) Rate, as described in more detail below.

The Relevant Futures Contracts are linked to:

- the S&P 500<sup>®</sup> Index (the “SPX”);
- the Russell 2000<sup>®</sup> Index (the “RTY”);
- the MSCI EAFE Index (the “MXEA”); and
- the MSCI Emerging Markets Index (the “MXEF”).

We refer to these indices as the Underlying Indices.

Index: Each Sub-Index will be allocated on a monthly basis, depending upon the “Tactical Trigger” that is included in the index methodology. The Tactical Trigger compares the current closing price of an exchange traded fund (“ETF”) linked to the applicable Underlying Index to the average of the ETF’s closing price over a specified trading period (the “Moving Average,” as described below). If the current closing price is higher than the Moving Average, then the Sub-Index will be allocated to the Relevant Futures Contract and the Federal Funds (Effective) Rate. If the current closing price is lower than the Moving Average, then the Sub-Index will be allocated only to the Federal Funds (Effective) Rate.

The Index was developed by RBC Capital Markets, and Solactive AG is the Index Calculation Agent.

For more detailed information about the Index, please see the section below, “The RBC Global Tactical Equity Total Return Index.”

Bloomberg  
Ticker: RBCEGTUT

Currency: U.S. Dollars

Minimum  
Investment: \$5,000 and minimum denominations of \$1,000 in excess thereof

CUSIP: 78013X7H5

Trade Date: June 3, 2019

Issue Date: June 6, 2019

December 28, 2039

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Valuation  
Date:

Maturity  
Date: December 31, 2039

Interest  
Payments: None.

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	<p>On the maturity date, for each \$1,000 in principal amount of the Notes that you hold, you will receive an amount equal to the Indicative Note Value (as defined below).</p>
Payment at Maturity (if held to maturity):	<p>Due to the Index Adjustment Factor described below, and because the initial Indicative Note Value will be less than the principal amount, as described below, you will only receive a positive return on your investment if the level of the Index increases from the Trade Date to the Valuation Date by a percentage that is sufficient to offset the impact of the Index Adjustment Factor. Particularly if the level of the Index decreases, you may lose all or substantially all of the principal amount of the Notes.</p>
Indicative Note Value:	<p>For each \$1,000 in principal amount of the Notes, the Indicative Note Value will be set on the Trade Date to an amount equal to \$1,000 multiplied by the Participation Rate, which equals \$997.50. Accordingly, the initial Indicative Note Value will be less than the principal amount. On each Index Trading Day (as defined below) thereafter on which a Market Disruption Event (as defined below) does not occur or is not continuing, the Indicative Note Value will equal: Indicative Note Value on Prior Index Trading Day x (1 + Index Factor) x (1 – Index Adjustment Factor)</p>
Participation Rate:	<p>99.75%</p>
Index Factor:	<p>On any Index Trading Day, the Index Factor will be equal to:  <math display="block">\frac{\text{Closing Level of Index} - \text{Closing Level of Index on Prior Index Trading Day}}{\text{Closing Level of Index on Prior Index Trading Day}}</math></p>
Index Adjustment Factor:	<p>On any Index Trading Day after the Trade Date on which a Market Disruption Event does not occur or is not continuing, 0.65% multiplied by (a) the number of calendar days elapsed since the most recent Index Trading Day divided by (b) 365 (366 in a leap year).</p>
Initial Level:	<p>The closing level of the Index on the Trade Date.</p>
Final Level:	<p>The closing level of the Index on the Valuation Date.</p>
Redemption:	<p>Subject to your compliance with the procedures described under “Additional Terms of the Notes — Early Redemption at the Option of the Holders,” upon early redemption, you will receive per \$1,000 in principal amount of the Notes a cash payment on the relevant Early Redemption Notice Date (as defined below) equal to the Indicative Note Value. We refer to this cash payment as the “Early Redemption Amount.”</p> <p>Due to the Index Adjustment Factor described below, and the Participation Rate, you will only receive a positive return on your investment upon an early redemption if the level of the Index increases from the Trade Date to the Early Redemption Notice Date (as defined below) by a percentage that is sufficient to offset the impact of these factors. You should exercise caution in exercising the early redemption right.</p> <p>The Notes will not be redeemable at our option, except under the limited circumstances described below under the caption “Additional Terms of the Notes—Unavailability of the Level of the Index” and “—Hedging Disruption Events.”</p>

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Early Redemption Date:	The third business day after the Calculation Agent receives a valid Notice of Early Redemption, as discussed in more detail below.
Principal at Risk:	The Notes are NOT principal protected. You may lose all or a substantial portion of your principal amount at maturity or upon an early redemption.

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Rules Based Investment  
Securities Linked to the RBC  
Global Tactical Equity Total  
Return Index

**Calculation Agent:** RBCCM is the Calculation Agent for the Notes, and will make all determinations as to the Indicative Note Value and any payments on the Notes.

**U.S. Tax Treatment:** 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 Notes as pre-paid cash-settled derivative contracts 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.”

**Secondary Market:** None of the issuer, RBCCM or any of their respective affiliates intends to make a secondary market for the Notes until, at the earliest, January 1, 2020. However, even after that date, none of those parties will have any obligation to make a market in the Notes. Accordingly, if you no longer wish to hold the Notes at any time prior to maturity, your only option may be to exercise the early redemption right set forth above.

**Listing:** The Notes will not be listed on any securities exchange.

**Clearance and Settlement:** DTC global (including through its indirect participants Euroclear and Clearstream, Luxembourg as described under “Description of Debt Securities—Ownership and Book-Entry Issuance” in the prospectus).

The Trade Date, Issue Date, Valuation Date and Maturity Date are subject to change, and will be set forth in the final pricing supplement relating to the Notes.

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Rules Based Investment  
Securities Linked to the RBC  
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Return Index

Hypothetical Examples of the Payment at Maturity

The following examples illustrate how the Notes would perform in a variety of hypothetical circumstances. The payment on the Notes at maturity will depend upon the Indicative Note Value on the Valuation Date. However, the Indicative Note Value is expected to change on each Index Trading Day during the term of the Notes, due to changes in the level of the Index and the impact of the Index Adjustment Factor. The impact of the Index Adjustment Factor will be greater on any Index Trading Day on which the level of the Index is higher, and the impact of the Index Adjustment Factor will be lower on any Index Trading Day on which the level of the Index is lower. Accordingly, the aggregate impact of the Index Adjustment Factor on the Notes over their term cannot be known until the maturity date.

The figures set forth in the examples below are for purposes of illustration only (including as to the periods of time that will have elapsed after the Trade Date) and are not actual historical results. For information relating to the historical performance of the Index, please see the discussion below, in the section below, “The RBC Global Tactical Equity Total Return Index.”

The hypothetical Initial Level of 100.00 set forth below is not expected to be the actual Initial Level of the Index on the Trade Date. In addition, each of these examples assumes that the Index will increase or decrease at a steady rate over each relevant year, which we do not expect to occur.

Rules Based Investment  
 Securities Linked to the RBC  
 Global Tactical Equity Total  
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Example 1. This example assumes that the Index has increased steadily by 2% each year.

Year of Notes	Index Level	Percentage Change in Level of the Index	Indicative Note Value	Cumulative Amount Deducted per \$1,000 in Principal Amount	Percentage Change in Indicative Note Value	Payment at Maturity
Trade Date	100.00	N/A	997.50	N/A	N/A	
1	102.00	2.00%	1010.84	9.16	1.34%	
2	104.04	2.00%	1024.35	16.05	1.34%	
3	106.12	2.00%	1038.05	23.16	1.34%	
4	108.24	2.00%	1051.93	30.51	1.34%	
5	110.41	2.00%	1065.99	38.09	1.34%	
6	112.62	2.00%	1080.24	45.92	1.34%	
7	114.87	2.00%	1094.69	54.00	1.34%	
8	117.17	2.00%	1109.32	62.34	1.34%	
9	119.51	2.00%	1124.15	70.94	1.34%	
10	121.90	2.00%	1139.18	79.81	1.34%	
11	124.34	2.00%	1154.41	88.96	1.34%	
12	126.82	2.00%	1169.85	98.39	1.34%	
13	129.36	2.00%	1185.49	108.12	1.34%	
14	131.95	2.00%	1201.34	118.14	1.34%	
15	134.59	2.00%	1217.40	128.47	1.34%	
16	137.28	2.00%	1233.68	139.11	1.34%	
17	140.02	2.00%	1250.17	150.07	1.34%	
18	142.82	2.00%	1266.89	161.36	1.34%	
19	145.68	2.00%	1283.82	172.99	1.34%	
20	148.59	2.00%	1300.99	184.96	1.34%	\$1,300.99

In this example, the payment at maturity would be \$1,300.99 per \$1,000 in principal amount of the Notes, a return of 30.1%, even though the level of the Index has increased by 48.6% from the Initial Level to the Final Level.

Rules Based Investment  
Securities Linked to the RBC  
Global Tactical Equity Total  
Return Index

Example 2. This example assumes that the Index has decreased steadily by 2% each year.

Year of Notes	Index Level	Percentage Change in Level of the Index	Indicative Note Value	Cumulative Amount Deducted per \$1,000 in Principal Amount	Percentage Change in Indicative Note Value	Payment at Maturity
Trade Date	100.00	N/A	997.50	N/A	N/A	
1	98.00	-2.00%	971.20	8.80	-2.64%	
2	96.04	-2.00%	945.59	14.81	-2.64%	
3	94.12	-2.00%	920.65	20.54	-2.64%	
4	92.24	-2.00%	896.37	26.00	-2.64%	
5	90.39	-2.00%	872.74	31.19	-2.64%	
6	88.58	-2.00%	849.72	36.12	-2.64%	
7	86.81	-2.00%	827.31	40.81	-2.64%	
8	85.08	-2.00%	805.50	45.26	-2.64%	
9	83.37	-2.00%	784.26	49.49	-2.64%	
10	81.71	-2.00%	763.58	53.50	-2.64%	
11	80.07	-2.00%	743.44	57.29	-2.64%	
12	78.47	-2.00%	723.84	60.88	-2.64%	
13	76.90	-2.00%	704.75	64.27	-2.64%	
14	75.36	-2.00%	686.16	67.48	-2.64%	
15	73.86	-2.00%	668.07	70.50	-2.64%	
16	72.38	-2.00%	650.45	73.34	-2.64%	
17	70.93	-2.00%	633.30	76.02	-2.64%	
18	69.51	-2.00%	616.60	78.53	-2.64%	
19	68.12	-2.00%	600.34	80.89	-2.64%	
20	66.76	-2.00%	584.51	83.10	-2.64%	\$584.51

In this example, the payment at maturity would be \$584.51 per \$1,000 in principal amount of the Notes, a return of -41.5%. This return is less than the decrease of -33.2% in the level of the Index from the Initial Level to the Final Level.

Rules Based Investment  
 Securities Linked to the RBC  
 Global Tactical Equity Total  
 Return Index

Example 3. This example assumes that the level of the Index is unchanged during the term of the Notes, and illustrates the cumulative impact of the Index Adjustment Factor.

Year of Notes	Index Level	Percentage Change in Level of the Index	Indicative Note Value	Cumulative Amount Deducted per \$1,000 in Principal Amount	Percentage Change in Indicative Note Value	Payment at Maturity
Trade Date	100.00	N/A	997.50	N/A	N/A	
1	100.00	0.00%	991.02	8.98	-0.65%	
2	100.00	0.00%	984.57	15.43	-0.65%	
3	100.00	0.00%	978.17	21.83	-0.65%	
4	100.00	0.00%	971.82	28.18	-0.65%	
5	100.00	0.00%	965.50	34.50	-0.65%	
6	100.00	0.00%	959.22	40.78	-0.65%	
7	100.00	0.00%	952.99	47.01	-0.65%	
8	100.00	0.00%	946.79	53.21	-0.65%	
9	100.00	0.00%	940.64	59.36	-0.65%	
10	100.00	0.00%	934.53	65.47	-0.65%	
11	100.00	0.00%	928.45	71.55	-0.65%	
12	100.00	0.00%	922.42	77.58	-0.65%	
13	100.00	0.00%	916.42	83.58	-0.65%	
14	100.00	0.00%	910.46	89.54	-0.65%	
15	100.00	0.00%	904.55	95.45	-0.65%	
16	100.00	0.00%	898.67	101.33	-0.65%	
17	100.00	0.00%	892.83	107.17	-0.65%	
18	100.00	0.00%	887.02	112.98	-0.65%	
19	100.00	0.00%	881.26	118.74	-0.65%	
20	100.00	0.00%	875.53	124.47	-0.65%	\$875.53

In this example, the payment at maturity would be \$875.53 per \$1,000 in principal amount of the Notes, a return of -12.4%. This return is negative, even though the level of the Index was unchanged during the term of the Notes.

Rules Based Investment  
 Securities Linked to the RBC  
 Global Tactical Equity Total  
 Return Index

Example 4. This example assumes that the Index has increased steadily by 2% each year during the first 10 years of the term of the Notes, prior to decreasing steadily by 2% each year during the final 10 years of the term of the Notes.

Year of Notes	Index Level	Percentage Change in Level of the Index	Indicative Note Value	Cumulative Amount Deducted per \$1,000 in Principal Amount	Percentage Change in Indicative Note Value	Payment at Maturity
Trade Date	100.00	N/A	997.50	N/A	N/A	
1	102.00	2.00%	1010.84	9.16	1.34%	
2	104.04	2.00%	1024.35	16.05	1.34%	
3	106.12	2.00%	1038.05	23.16	1.34%	
4	108.24	2.00%	1051.93	30.51	1.34%	
5	110.41	2.00%	1065.99	38.09	1.34%	
6	112.62	2.00%	1080.24	45.92	1.34%	
7	114.87	2.00%	1094.69	54.00	1.34%	
8	117.17	2.00%	1109.32	62.34	1.34%	
9	119.51	2.00%	1124.15	70.94	1.34%	
10	121.90	2.00%	1139.18	79.81	1.34%	
11	119.46	-2.00%	1109.14	85.47	-2.64%	
12	117.07	-2.00%	1079.89	90.83	-2.64%	
13	114.73	-2.00%	1051.42	95.89	-2.64%	
14	112.44	-2.00%	1023.69	100.67	-2.64%	
15	110.19	-2.00%	996.70	105.18	-2.64%	
16	107.98	-2.00%	970.41	109.42	-2.64%	
17	105.82	-2.00%	944.82	113.42	-2.64%	
18	103.71	-2.00%	919.91	117.17	-2.64%	
19	101.63	-2.00%	895.65	120.68	-2.64%	
20	99.60	-2.00%	872.03	123.97	-2.64%	\$872.03

In this example, the payment at maturity would be \$872.03 per \$1,000 in principal amount of the Notes, a return of -12.8%.

Rules Based Investment  
 Securities Linked to the RBC  
 Global Tactical Equity Total  
 Return Index

Example 5. This example assumes that the Index has decreased steadily by 2% each year during the first 10 years of the term of the Notes, prior to increasing steadily by 2% each year during the final 10 years of the term of the Notes.

Year of Notes	Index Level	Percentage Change in Level of the Index	Indicative Note Value	Cumulative Amount Deducted per \$1,000 in Principal Amount	Percentage Change in Indicative Note Value	Payment at Maturity
Trade Date	100.00	N/A	997.50	N/A	N/A	
1	98.00	-2.00%	971.20	8.80	-2.64%	
2	96.04	-2.00%	945.59	14.81	-2.64%	
3	94.12	-2.00%	920.65	20.54	-2.64%	
4	92.24	-2.00%	896.37	26.00	-2.64%	
5	90.39	-2.00%	872.74	31.19	-2.64%	
6	88.58	-2.00%	849.72	36.12	-2.64%	
7	86.81	-2.00%	827.31	40.81	-2.64%	
8	85.08	-2.00%	805.50	45.26	-2.64%	
9	83.37	-2.00%	784.26	49.49	-2.64%	
10	81.71	-2.00%	763.58	53.50	-2.64%	
11	83.34	2.00%	773.79	59.63	1.34%	
12	85.01	2.00%	784.13	65.95	1.34%	
13	86.71	2.00%	794.61	72.47	1.34%	
14	88.44	2.00%	805.24	79.19	1.34%	
15	90.21	2.00%	816.00	86.11	1.34%	
16	92.02	2.00%	826.91	93.24	1.34%	
17	93.86	2.00%	837.97	100.59	1.34%	
18	95.73	2.00%	849.17	108.16	1.34%	
19	97.65	2.00%	860.53	115.95	1.34%	
20	99.60	2.00%	872.03	123.97	1.34%	\$872.03

In this example, the payment at maturity would be \$872.03 per \$1,000 in principal amount of the Notes, a return of -12.8%.

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## RISK FACTORS

An investment in the Notes is subject to the risks described below, as well as the risks described under “Risk Factors” in the prospectus and the prospectus supplement. The Notes are not secured debt and are riskier than ordinary unsecured debt securities. Also, investing in the Notes is not equivalent to investing directly in the assets represented by the Index. You should carefully consider whether the Notes are suited to your particular circumstances. This pricing supplement should be read together with the prospectus and the prospectus 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 pricing supplement, the prospectus supplement and the prospectus, before investing in the Notes.

### General Risks Related to the Notes

#### You May Lose All or a Portion of the Principal Amount.

Investors in the Notes could lose all or a substantial portion of their principal amount. The Indicative Note Value will be set on the Trade Date to only \$997.50 per \$1,000 in principal amount of the Notes. In order for you not to incur a loss on the Notes, the level of the Index must increase sufficiently to enable the Indicative Note Value to reach an amount greater than \$1,000, as well as to offset the impact of the Index Adjustment Factor. The aggregate impact of the Index Adjustment Factor over the term of the Notes will depend upon the level of the Index on each Index Trading Day, and cannot be determined prior to the Valuation Date or the time at which you exercise your redemption right. There is no minimum amount payable on the Notes, whether at maturity, or upon an early redemption. Accordingly, your investment may result in a significant loss.

#### 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 one of our conventional senior interest bearing debt securities.

#### 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 our senior unsecured debt securities. As a result, your receipt of any payment due on the Notes is dependent upon our ability to repay our obligations on the applicable payment date. This will be the case even if the level of the Index increases after the Trade Date. No assurance can be given as to what our financial condition will be at any time during the term of the Notes, including any time at which you elect to have your Notes redeemed or on the maturity date.

#### There Is Not Expected to Be an Active Trading Market for the Notes, and 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. None of us, RBCCM and our other affiliates will make a market for the Notes or purchase them in the secondary market until, at the earliest, January 1, 2020. Even after that date, none of such entities will have any obligation to make a market in the Notes at any time. As a result, we expect that transaction costs in any secondary market would be high. If you no longer wish to hold the Notes prior to maturity, your only option is likely to be to exercise the optional redemption right described in this document.

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**The Initial Estimated Value of the Notes Will Be Less Than the Price to the Public.**

The initial estimated value that will be set forth in the final pricing supplement for the Notes does not represent a minimum price at which we, RBCCM or any of our affiliates would be willing to purchase the Notes in any secondary market (if any exists) at any time. If you attempt to sell the Notes prior to maturity, their market value may be lower than the price you paid for them and the initial estimated value. This is due to, among other things, changes in the level of the Index, the borrowing rate we pay to issue securities of this kind, and the inclusion in the price to the public of 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 the Notes prior to maturity may be less than your original purchase price, as any such sale price would not be expected to include the hedging costs relating to the Notes. In addition to bid-ask spreads, the value of the Notes determined for any secondary market price is expected to be based on the secondary rate rather than the internal funding rate used to price the Notes and determine the initial estimated value. As a result, the secondary price will be less than if the internal funding rate was used. The Notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold the Notes to maturity.

**The Initial Estimated Value of the Notes That We Will Provide in the Final Pricing Supplement Is an Estimate Only, Calculated as of the Time the Terms of the Notes Are 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 or derivatives 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, 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.

**You Will Not Know the Early Redemption Amount at the Time You Elect to Request that We Redeem Your Notes.**

You will not know the Early Redemption Amount you will receive at the time you elect to request that we redeem your Notes. Your notice to us to redeem your Notes is irrevocable and must be received by us no later than 12:00 p.m., New York City time, on the applicable Early Redemption Notice Date and a completed and signed confirmation of such redemption must be received by us no later than 5:00 p.m., New York City time, on the same day.

Accordingly, you will not know the Early Redemption Amount until the level of the Index is determined on the Early Redemption Notice Date, and we will pay you the Early Redemption Amount, if any, on the Early Redemption Date, which is the third Business Day following the applicable Early Redemption Notice Date. As a result, you will be exposed to market risk until the level of the Index and the Indicative Note Value is determined for the Early Redemption Notice Date. Accordingly, your exercise of your redemption right could result in a loss of principal. For additional information about the exercise of your optional redemption right, please see the section, “Additional Terms of the Notes—Early Redemption at the Option of the Holders.”

**There Are Restrictions and Procedures You Must Follow to Have Your Notes Redeemed Prior to Maturity.**

We will redeem your Notes at your election prior to maturity only if you have satisfied the requirements and have followed the procedures set forth below under “Additional Terms of the Notes—Early Redemption at the Option of the Holders.” To offer your Notes for early redemption, you must offer at least the applicable minimum early redemption amount, as set forth below.

In addition, you must follow the procedures for early redemption set forth in this pricing supplement. These procedures represent substantial restrictions on your ability to cause us to redeem your Notes prior to the maturity date. If your irrevocable offer for early redemption is received after 12:00 p.m., New York City time on an Index

Trading Day, you will be deemed to have made your offer for early redemption on the following Index Trading Day.

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Additionally, unless the scheduled Early Redemption Date is postponed because it is not a business day or because there is a Market Disruption Event on the scheduled Early Redemption Notice Date, the final day on which we will redeem your Notes prior to maturity will be December 30, 2039. As a result, you must offer your Notes for early redemption no later than December 27, 2039.

We May Redeem the Notes, or Reduce the Payments on the Notes, if a Hedging Disruption Event (as defined below) Occurs.

A variety of legal and regulatory regimes in the United States and, in some cases, in other countries, may change in ways that could adversely affect our ability to hedge our obligations under the Notes. These changes, including, for example, the adoption of, or a change in, laws, regulations, rules, or orders (including those relating to tax matters) that are applicable to us, our affiliates, or our counterparties, may cause us to be unable to effect transactions that are necessary or appropriate for us to hedge our obligations under the Notes. In such a case, we may, in our sole and absolute discretion, redeem the Notes as described in the section below, “Additional Terms of the Notes—Hedging Disruption Events.” In addition, and as described in that section, we may reduce the amounts that are payable on the Notes at maturity or upon your exercise of an early redemption option. If any of these events occur, you may incur losses on your investment, and/or may hold the Notes for a shorter period of time than you anticipated, which could result in adverse tax consequences for you. There can be no assurance that a Hedging Disruption Event will not occur during the term of the Notes.

The Amounts to Be Paid on the Notes Will Not Be Affected by All Developments Relating to the Index.

Changes in the level of the Index and the Indicative Note Value during the term of the Notes before the Valuation Date (or the Early Redemption Notice Date, as applicable) will not be reflected in the calculation of the payment due on the Notes. The Calculation Agent for the Notes will calculate this amount based on the Indicative Note Value as of the Valuation Date or the Early Redemption Notice Date, as applicable. No other Indicative Note Values will be taken into account. As a result, you may receive less than the principal amount of the Notes, even if the Indicative Note Value has increased at certain times during the term of the Notes before decreasing as of the Valuation Date or the Early Redemption Notice Date, as applicable.

The Payments on the Notes May Be Influenced by Many Unpredictable Factors.

The following factors, which are beyond our control, may influence the amounts of the payments on the Notes:

- the level of the Index;
- the volatility (i.e., the frequency and magnitude of changes) of the level of the Index, the Relevant Futures Contracts and the Underlying Indices;
- the dividend rate on the stocks represented by the Underlying Indices;
- economic, financial, political, military, regulatory, legal and other events that affect the applicable securities markets generally, and which may affect the level of the Index;
- changes in, and the volatility of, the exchange rates between the U.S. dollar and the currencies in which the securities represented by the MXEA and the MXEF are traded;
- interest and yield rates in the market; and
- the time remaining to maturity of the Notes.

These factors may influence the payments on the Notes and their value prior to maturity. Our creditworthiness, as represented by our credit ratings or as otherwise perceived in the market will also affect the market value of the Notes. The value of the Notes prior to maturity may be less than the principal amount.

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

The Calculation Agent for the Notes will, among other things, determine the Indicative Note Value on each Index Trading Day, and the amount of your payment at maturity or upon an early redemption. Our wholly-owned

subsidiary, RBCCM, will serve as the Calculation Agent. We may change the Calculation Agent during the term of the Notes without notice to

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you. The Calculation Agent will exercise its judgment when performing its functions. Since this determination by the Calculation Agent may affect the payment due on the Notes, the Calculation Agent may have a conflict of interest if it needs to make a determination of this kind.

We Are Under No Obligation to Issue or Sell Additional Notes at Any Time, and if We Do Sell Additional Notes, We May Limit or Restrict those Sales, and We May Stop and Subsequently Resume Selling Additional Notes at Any Time.

At our sole discretion, we may decide to issue and sell additional Notes from time to time at a price that is higher or lower than the stated principal amount, based on the most recent Indicative Note Value. The price of the Notes in any subsequent sale may differ substantially (higher or lower) from the issue price paid in connection with any other issuance of the Notes. However, we are under no obligation to issue or sell additional Notes at any time, and if we do sell additional Notes, we may limit or restrict such sales, and we may stop and subsequently resume selling additional Notes at any time.

Additional Risk Factors Related to the Index

The Index is exposed to the performance of the Relevant Futures Contracts linked to the Underlying Indices and, accordingly, the risks associated with those assets. You should read the information set forth below concerning these assets. Additionally, the Index has its own index methodology that will affect the return on the Notes. You should understand how the Index is calculated, including the risks in this section related to the Index.

The Index May Not Be Successful and May Underperform Alternative Investment Strategies.

There can be no assurance that the level of the Index will increase over the term of the Notes. The performance of the Index may be less favorable than alternative investment strategies that could be implemented relating to one or more of the markets that are represented by the Relevant Futures Contracts and the Underlying Indices.

The Index Has Limited History and May Perform in Unexpected Ways.

The Index was launched on February 18, 2019. Accordingly, the Index has only limited performance history. Because the Index was only recently developed, and has only limited performance history, an investment linked to the Index may involve a greater degree of risk than an investment linked to one or more indices with a more significant record of performance. A longer history of actual performance through various economic and market conditions may provide greater information and more reliable information based on which an investor could assess the validity of the Index's investment thesis and index methodology. A longer history of actual performance may also have made the Index more widely accepted in the market and, consequently, less likely for the Index Calculation Agent to make any changes to the Index in the future.

The Tactical Trigger Is Subject to Limitations.

The Index's methodology is based on the notion that, each month, the Tactical Trigger may provide an accurate indicator of the future performance of the relevant Underlying Index. In other words, the methodology is based on the notion that the value of the Relevant Futures Contract for an Underlying Index is likely to appreciate if the Tactical Trigger indicates an allocation to the Relevant Futures Contract. However, there is no guarantee that this will be the case. It is possible that a Sub-Index will be allocated to the Relevant Futures Contract during one or more months in which that contract decreases in value, and/or that it will be allocated away from the Relevant Futures Contract during one or more months in which that contract increases in value.

In addition, the Tactical Trigger is subject to a number of important limitations, including the following:

- Past performance may not predict future performance. The fact that the price of the relevant ETF is higher than its Moving Average as of the relevant monthly measurement date does not necessarily mean that the price of the Relevant Futures Contract will perform favorably in the future. Future market conditions may differ from prior market conditions, and the conditions that may have caused the favorable performance of the ETF as compared to its

Moving Average may no longer exist.

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Time lag. The Tactical Trigger measures the performance of the relevant ETF over the past 100 or 200 trading days for that ETF, as discussed below. Accordingly, it is subject to a time lag, which may cause it to be late in indicating whether the applicable Sub-Index should be allocated to the Relevant Futures Contract. If the trend in the performance of the applicable ETF changes, it may be a significant period of time before the Tactical Trigger reflects the change, particularly in the case of the RBC Large Cap US Tactical Equity Total Return Index (the “RBCELTUT”), in light of its use of a 200 day Moving Average. As a result of this time lag, the Tactical Trigger may signal an allocation of the applicable Sub-Index to the Relevant Futures Contract, or away from the Relevant Futures Contract, as applicable, long after the price of the relevant ETF changes direction.

Differences between the Tactical Trigger and the Sub-Indices. The Tactical Trigger for each Sub-Index is determined on a monthly basis, depending upon recent prices for the relevant ETF. In contrast, the level of each Sub-Index, if allocated to the Relevant Futures Contract, will depend upon the value of that futures contract. As discussed in more detail below, there can be no assurance that the value of the Relevant Futures Contract will increase or decrease at the same rate or at the same time as changes in the prices of the relevant ETF.

Markets may be efficient, such that any relevant information upon which the Tactical Trigger is based may be reflected in current asset values. Historical asset prices may not necessarily be an indicator of future asset prices, even if future market conditions do not differ to a significant extent from prior market conditions. The efficient market hypothesis, which is a theory in financial literature, posits that the investment markets are efficient and that current asset prices typically reflect all available relevant information. If true, the efficient market hypothesis implies that any perceived historical trend in the performance of the relevant ETFs may not be an accurate predictor of their future performance, or the future performance of the Relevant Futures Contract. If the relevant prior prices of the relevant ETF are not an accurate indicator of the performance of the Relevant Futures Contract over the following month, then the Index’s allocation methodology may perform poorly.

Whipsaws. Trend-following methodologies may perform particularly poorly in “choppy” markets, where they may be subject to “whipsaws.” Choppy markets are characterized by short-term volatility and the absence of consistent long-term performance trends. In choppy markets, whipsaws occur when the market reverses and does the opposite of what may be indicated by past performance. The Index may experience a significant decline in these market conditions because, for example, if one or more of the Sub-Indices identifies an applicable ETF as being valued at more than its Moving Average, the Sub-Index will be allocated to the Relevant Futures Contract, even if the price of the Relevant Futures Contract decreases in value thereafter. This is more likely to occur in the case of the three Sub-Indices other than the RBCELTUT, due to their use of a 100 day Moving Average.

Mean reversion. The Tactical Trigger may be ineffective if one or more of the Relevant Futures Contracts or relevant ETFs exhibit mean reversion tendencies. Mean reversion is the theory that asset prices tend to fluctuate around, and revert to, a particular level (the “mean”) over time. For example, if one or more of the relevant ETFs and Relevant Futures Contracts exhibit a high degree of mean reversion, the prices of the relevant ETFs may increase for a sufficient period of time to cause the Tactical Trigger to allocate the relevant Sub-Index to the Relevant Futures Contract; however, the value of that ETF and the Relevant Futures Contract may fall back toward its long-term mean shortly thereafter. Market conditions of this kind could cause decreases in the level of the Index.

Hypothetical Back-Tested Index Performance Information Is Subject to Significant Limitations.

All information regarding the performance of the Index prior to February 18, 2019 is hypothetical and back-tested, as the Index did not exist prior to that time. Hypothetical back-tested index performance information is subject to significant limitations, in addition to the fact that past performance is not a guarantee of future performance.

RBC Capital Markets developed the rules and methodology of the Index with the benefit of hindsight. In other words, the Index was developed with the benefit of being able to evaluate how the Index rules would have caused the Index to perform had it existed during the hypothetical back-tested period. The fact that the Index generally appreciated over

the hypothetical back-tested period may not therefore be an accurate or reliable indication of any aspect of the Index methodology.

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The hypothetical back-tested performance of the Index might look different if it covered a different historical period. The market conditions that existed during the historical period covered by the hypothetical back-tested Index performance information are not necessarily representative of the market conditions that will exist during the term of the Notes.

As set forth in more detail below, historical information for the Relevant Futures Contracts and the relevant ETFs is not available for all periods covered by the hypothetical back-tested information. For those periods, the back-tested information is based on the performance of related assets, as described below. Accordingly, the information for these periods may not reflect the performance of the Index had the Relevant Futures Contracts and/or ETFs been available at those times.

It is impossible to predict whether the Index will rise or fall. The actual future performance of the Index may bear no relation to the historical or hypothetical back-tested levels of the Index.

The Performance of Each Sub-Index Is Expected to Be Reduced by an Implicit Financing Cost, and Any Increase in This Cost Will Adversely Affect the Performance of the Index.

Each Sub-Index is linked to a Relevant Futures Contract that has an implicit financing cost associated with it. As a result, each Sub-Index is expected to reflect not only the performance of its Underlying Index, but also the implicit cost of a financed position in the Relevant Futures Contract. The cost of this financed position will adversely affect the level of each Sub-Index and, therefore, the Index. Any increase in market interest rates will be expected to further increase this implicit financing cost and will increase the negative effect on the performance of the Sub-Indices and, therefore, the performance of the Index. Because of this implicit financing cost, each Sub-Index, to the extent it is allocated to the Relevant Futures Contract, is expected to underperform the total return performance of its Underlying Index.

The Index Is Exposed to Risks Related to the Relevant Equity Indices.

The performance of each Sub-Index will depend to a significant extent upon the performance of its Underlying Index. As a result, the Index's performance will be directly affected by the performance of the Relevant Futures Contract, which in turn will relate to the value of its Underlying Index and the related risks of that Underlying Index.

Changes in the Values of the Sub-Indices May Offset Each Other.

Movements in the values of the four Sub-Indices may not correlate with each other. At a time when the level of one or more of the Sub-Indices increases, the levels of one or more of the other Sub-Indices may not increase as much or may even decline. Therefore, in calculating the level of the Index and the payments on the Notes, increases in the level of one or more of the Sub-Indices may be moderated, or more than offset, by lesser increases or declines in the levels of the other Sub-Indices. Furthermore, the Target Weights of the Sub-Indices are not equal. As a result, a change in the level of a Sub-Index with a higher Target Weight will have a greater impact on the level of the Index than a similar percentage change in the levels of the other Sub-Indices.

The Index May Not Be Diversified at Some Times.

The performance of the Index will depend upon the levels of the four Sub-Indices. However, each month during the term of the Notes, it is possible that one or more of the Sub-Indices will be allocated solely to the Federal Funds (Effective) Rate, such that none, or only one, two or three of the Sub-Indices, will be allocated to the Relevant Futures Contract. In such a case, the Index as a whole will not be as diversified to the extent it would have been had each of the Sub-Indices been allocated to the Relevant Futures Contract.

Similarly, the Index is rebalanced to the Target Weights once each calendar year. Accordingly, better performance by any Relevant Futures Contract during the course of a year could result in greater exposure of the Index to that Relevant Futures Contract than initially assigned, until the annual rebalancing occurs.



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The Index May Have Significant Exposure to the Federal Funds (Effective) Rate, Which Has Limited Return Potential.

At any time when one or more of the Sub-Indices is allocated to the Federal Funds (Effective) Rate, any positive return of that Sub-Index, and its positive impact on the level of the Index as a whole, may be minimal. A significant hypothetical allocation to the Federal Funds (Effective) Rate will significantly reduce the Index's potential for gains. If interest rates are low during any period in which one or more of the Sub-Indices are allocated to the Federal Funds Rate, the potential for the level of the Index to increase is minimal. Interest rates are subject to change due to a variety of factors, and the level of the Federal Funds Rate during the term of the Notes cannot be estimated with accuracy.

The Notes Do Not Offer Direct Exposure to the Relevant Equity Indices or ETFs.

Each of the Sub-Indices tracks futures contracts on the applicable Underlying Index, and does not directly track any of those indices or any ETF. The price of each such futures contract reflects the expected value of the applicable Underlying Index in the future; in contrast, the level of the applicable Underlying Index reflects the current value of its components.

A variety of factors can lead to a disparity between the expected future price of an underlying asset and the spot price or level at a given point in time. These factors include expectations concerning supply and demand for the underlying asset. The price movements of a Relevant Futures Contract are typically correlated with the movements of the spot price of the applicable Underlying Index, but the correlation is generally imperfect and price movements in the underlying market may not be reflected in the futures market. In addition, the markets on which the Relevant Futures Contracts trade have trading hours that differ from the trading hours of the securities markets represented by the Underlying Indices; as a result, material economic or company news may not be reflected at the same times or days in the prices of the Relevant Futures Contracts as levels of the Underlying Indices. Accordingly, the Notes may underperform a similar investment linked to the current levels of the Underlying Indices represented by the Sub-Indices, or an ETF linked to those Sub-Indices.

Higher Future Prices of the Relevant Futures Contracts Relative to Their Current Prices, or "Contango," May Lead to a Decrease in the Levels of the Sub-Indices and the Amount Payable on the Notes.

The Sub-Indices are linked to the Relevant Futures Contracts. As these futures contracts approach their expiration dates, they are replaced by contracts that have a later expiration. For example, a contract purchased and held in June may specify September expiration. As time passes, the contract expiring in September is replaced by a contract for delivery in a future month, for example, December. This is accomplished by selling the September contract and purchasing the December contract. This process is referred to as "rolling." If all other factors are unchanged, if the market for these contracts is in "contango," where the prices are higher in the distant delivery months than in the nearer delivery months, the sale of the September contract would take place at a price that is lower than the price of the December contract, thereby creating a negative "carry" or "roll yield." By contrast, if the market for these contracts is in "backwardation," where the prices are lower in the distant delivery months than in the nearer delivery months, the sale of the September contract would take place at a price that is higher than the price of the December contract, thereby creating a positive "carry" or "roll yield." It is also possible that some futures contracts may be in contango, while other futures contracts may be in backwardation. Any of these circumstances could cause a decline in the level of one or more of the Sub-Indices and, therefore the value of and return on the Notes.

Because "carry" and "roll yields" are considered in the calculation of the levels of the Sub-Indices, the presence of contango in the futures markets could result in negative "carry" or "roll yields," which could adversely affect their levels and the amounts payable on the Notes.

You Will Not Have Any Rights in Any Futures Contracts Tracked by the Sub-Indices.

As an owner of the Notes, you will not have rights that holders of any futures contracts tracked by the Sub-Indices may have. Payments on the Notes will be paid in cash, and you will have no right to receive any payment or delivery

in respect of any futures contracts.

Owning the Notes Is Not the Same as Directly Owning the Securities or Futures Contracts Directly or Indirectly

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Tracked by the Sub-Indices.

Your return on the Notes will not reflect the return you would have realized on a direct investment in any of the Relevant Futures Contracts or any of the securities that they represent. For example, as an investor in the Notes, you will not have rights to receive dividends or other distributions or any other rights, including voting rights, with respect to any stocks included in the Underlying Indices. The Calculation Agent for the Notes will calculate the amount payable to you at maturity by reference to the level of the Index on the Valuation Date, and will not include the amount of any of those dividend payments or other distributions. Therefore, the return on your investment will not be the same as the return based on the purchase of any stocks or futures contracts that are tracked directly or indirectly by any of the Sub-Indices.

**Suspension or Disruptions of Market Trading in Stocks or Futures Contracts May Adversely Affect the Value of the Notes.**

Securities markets and futures markets are subject to temporary distortions or other disruptions due to various factors, including the lack of liquidity in the markets, the participation of speculators, and government regulation and intervention. In addition, futures markets typically have regulations that limit the amount of fluctuation in some futures contract prices that may occur during a single business day. These limits are generally referred to as “daily price fluctuation limits,” and the maximum or minimum price of a contract on any given day as a result of these limits is referred to as a “limit price.” Once the limit price has been reached in a particular contract, no trades may be made at a price beyond the limit, or trading may be limited for a specified period of time. Limit prices have the effect of precluding trading in a particular contract or forcing the liquidation of contracts at potentially disadvantageous times or prices. These circumstances could affect the level of one or more of the Sub-Indices and, therefore, could adversely affect the payments on the Notes.

**Adjustments to the Index or to the Sub-Indices Could Adversely Affect the Notes.**

Solactive AG, as Index Calculation Agent, is responsible for calculating and maintaining the Index and each of the Sub-Indices. The Index Calculation Agent can make methodological changes that could change the levels of the Index and/or each Sub-Index at any time. Any of these actions could adversely affect the amounts payable on the Notes or their market value.

**The Index and the Sub-Indices Will Be Calculated According to Fixed Rules and Will Not Be Actively Managed. If They Perform Poorly, the Index Rules Will Not Be Changed in an Attempt to Improve Performance.**

The Index and the Sub-Indices will not be actively managed. If the Index or one or more of the Sub-Indices performs poorly, we do not expect that the relevant index rules will be modified in order to improve that performance. Unlike, for example, a mutual fund, which could be actively managed by the fund manager in an attempt to maximize returns in changing market conditions, the rules of the Index and the Sub-Indices will remain unchanged, even if those rules might result in decreasing levels of the Index under future market conditions.

**The Notes Are Subject to Risks Associated with Foreign Securities Markets.**

Because foreign companies or foreign equity securities included in the MXEA and the MXEF are publicly traded in the applicable foreign countries and trade in currencies other than U.S. dollars, investments in the Notes involve particular risks. For example, the foreign securities markets may be more volatile than the U.S. securities markets, and market developments may affect these markets differently than 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.

Securities prices generally are subject to political, economic, financial and social factors that apply to the markets in which they trade and, to a lesser extent, foreign markets. Securities prices outside the U.S. are subject to political, economic, financial and social factors that apply in foreign countries. These factors, which could negatively affect foreign securities

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markets, include the possibility of changes in a foreign government's economic and fiscal policies, the possible imposition of, or changes in, currency exchange laws or other laws or restrictions applicable to foreign companies or investments in foreign equity securities and the possibility of fluctuations in the rate of exchange between currencies. Moreover, foreign economies may differ favorably or unfavorably from the U.S. economy in important respects such as growth of gross national product, rate of inflation, capital reinvestment, resources and self-sufficiency.

**The Notes Are Subject to Risks Relating to Exchange Rates.**

The payment amount on the Notes will be calculated based on the Index, which depends in part upon the levels of the MXEA, the MXEF and the Relevant Futures Contracts as to these Underlying Indices. The prices of the relevant stocks are converted into U.S. dollars for purposes of calculating the levels of these indices. As a result, investors in the Notes will be exposed to currency exchange rate risk with respect to each of the currencies represented by these indices. An investor's exposure to exchange rate fluctuations will depend on the extent to which the currencies represented by these indices strengthen or weaken against the U.S. dollar and the relative weight of each relevant currency represented by these indices. If, taking into account such weight, the dollar strengthens against such currencies, the levels of these indices may be adversely affected.

**The Notes Are Subject to Emerging Markets Risks.**

Investments in securities linked directly or indirectly to emerging market equity securities, such as the MXEF, involve many risks, including, but not limited to: economic, social, political, financial and military conditions in the emerging market; regulation by national, provincial and local governments; less liquidity and smaller market capitalizations than exist in the case of many large U.S. companies; different accounting and disclosure standards; and political uncertainties. Stock prices of emerging market companies may be more volatile and may be affected by market developments differently than U.S. companies. Government intervention to stabilize securities markets and cross-shareholdings may affect prices and volume of trading of the securities of emerging market companies. Economic, social, political, financial and military factors could, in turn, negatively affect such companies' value. These factors could include changes in the emerging market government's economic and fiscal policies, possible imposition of, or changes in, currency exchange laws or other laws or restrictions applicable to the emerging market companies or investments in their securities, and the possibility of fluctuations in the rate of exchange between currencies. Moreover, emerging market economies may differ favorably or unfavorably from the U.S. economy in a variety of ways, including growth of gross national product, rate of inflation, capital reinvestment, resources and self-sufficiency. You should carefully consider the risks related to emerging markets, to which the Notes are susceptible, before making a decision to invest in the Notes.

**An Investment in the Notes Is Subject to Risks Associated with Investing in Stocks With a Small Market Capitalization.**

The RTY 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 RTY 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 financially stable 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.

Trading and Other Transactions by Us or Our Affiliates in the Index or Its Components, Futures, Options, ETFs or Other Derivative Products May Adversely Affect the Value of the Notes.

We or one or more of our affiliates may hedge our obligations under the Notes by purchasing or selling the assets related to the Index or the Sub-Indices. These assets may include securities, futures, options, ETFs and other derivative

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instruments with returns linked or related to changes in the performance of the Index or the Sub-Indices. 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 Index or one or more of the Sub-Indices and, therefore, the payments on the Notes. It is possible that we or one or more of our affiliates could receive substantial returns from these hedging activities while the value of or payments on the Notes decreases. We or one or more of our affiliates may also engage in trading in the Index or the Sub-Indices 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 Index or one or more of the Sub-Indices 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 Index or the Sub-Indices. 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.

**Our Business Activities May Create Conflicts of Interest.**

We and our affiliates may presently or from time to time engage in business with one or more of the issuers of the securities included in the Underlying Indices. This business may include extending loans to, or making equity investments in, such companies or providing advisory services to such companies, including merger and acquisition advisory services. In the course of business, we and our affiliates may acquire non-public information relating to these companies, which we have no obligation to disclose to you, and, in addition, one or more of our affiliates may publish research reports about these companies. Neither we nor RBCCM have made any independent investigation regarding any matters whatsoever relating to the issuers of those securities.

Moreover, we and our affiliates may have published, and in the future expect to publish, research reports with respect to the Underlying Indices and the relevant ETFs. 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 undertaken by us or one or more of our affiliates may affect the level of the Index and, therefore, the payments on the Notes. You must rely on your own evaluation of the merits of an investment linked to the Index.

**Additional Risk Factors Relating to the Underlying Indices and the ETFs**

**We Have No Affiliation with Any Index Sponsor or Advisor or Sponsor of any ETF, and Will Not Be Responsible for Any Actions Taken by any Such Party.**

The sponsors of the Underlying Indices, and the sponsors and investment advisors of the related ETFs, are not our affiliates and will not be involved in the offering of the Notes in any way. Consequently, we have no control over the actions of these entities, including any methodological or other changes to the applicable index or ETF that could affect the level of the Index. None of these entities have any obligation of any sort with respect to the Notes.

**We Do Not Control Any Company Included in an Underlying Index or Held by an ETF, 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 represented by the Underlying Indices and the ETFs. We do not 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 index or ETF.

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#### ADDITIONAL TERMS OF THE NOTES

You should read this pricing supplement together with the prospectus dated September 7, 2018, as supplemented by the prospectus supplement dated September 7, 2018 relating to our Senior Global Medium-Term Notes, Series H, of which these Notes are a part. Capitalized terms used but not defined in this pricing supplement will have the meanings given to them in the prospectus supplement. In the event of any conflict, this pricing supplement will control. The Notes vary from the terms described in the prospectus supplement in several important ways. You should read this pricing supplement carefully.

This pricing supplement, together with the documents listed below, contains the terms of the Notes and supersedes all prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in “Risk Factors” in the prospectus supplement dated September 7, 2018, as the Notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisors before you invest in the Notes. You may access these documents on the Securities and Exchange Commission (the “SEC”) website at [www.sec.gov](http://www.sec.gov) as follows (or if that address has changed, by reviewing our filings for the relevant date on the SEC website):

Prospectus dated September 7, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465918005973/196181424b3.htm>

Prospectus Supplement dated September 7, 2018:

<https://www.sec.gov/Archives/edgar/data/1000275/000121465918005975/f97180424b3.htm>

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.

Royal Bank of Canada has filed a registration statement (including a prospectus supplement and a prospectus) with the SEC for the offering to which this pricing supplement relates. Before you invest, you should read those documents and the other documents relating to this offering that we have filed with the SEC for more complete information about us and this offering. You may obtain these documents without cost by visiting EDGAR on the SEC website at [www.sec.gov](http://www.sec.gov). Alternatively, Royal Bank of Canada, any agent or any dealer participating in this offering will arrange to send you the prospectus supplement and the prospectus if you so request by calling toll-free at 1-877-688-2301.

#### Maturity Date

The maturity date of the Notes will be the date specified above, unless that date is not a business day (as defined in the prospectus supplement), in which case the maturity date will be the next following business day. The maturity date will be postponed by the same number of Index Trading Days as the Valuation Date if a Market Disruption Event occurs or is continuing on the scheduled Valuation Date as described below. No interest will accrue on the Notes if the maturity date is so postponed.

#### Early Redemption at the Option of the Holders

Beginning on the Index Trading Day after the issue date, and subject to your compliance with the procedures described below, you may submit a request on any business day to elect to require us to redeem your Notes. Any such request must relate to at least \$5,000 in principal amount of the Notes. In our sole discretion, we may reduce this minimum amount at any time, in connection with any proposed redemption. Additionally, unless the scheduled Early

Redemption Date is postponed because it is not a business day or because there is a Market Disruption Event on the scheduled Early

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Redemption Notice Date, the final day on which we will redeem your Notes prior to maturity will be December 30, 2039. As a result, you must offer your Notes for early redemption no later than December 27, 2039.

If you so elect and have done so in compliance with the redemption procedures described below, you will receive payment for the redeemed Notes on the applicable Early Redemption Date. You must comply with the redemption procedures described below in order to redeem your Notes. For any applicable redemption request, the “Early Redemption Notice Date” will be the date that the applicable Redemption Notice and Redemption Confirmation (each as defined below) are validly delivered. If the Redemption Notice or Redemption Confirmation is delivered on a day that is not an Index Trading Day, then the Early Redemption Notice Date shall be the next Index Trading Day.

The Notes will be redeemed and the holders will receive payment for their Notes on the third business day following the applicable Redemption Notice Date (the “Early Redemption Date”).

If you exercise your right to have us redeem your Notes, subject to your compliance with the procedures described under “— Optional Redemption Procedures,” you will receive for each Note a cash payment on the relevant Early Redemption Date equal to the Indicative Note Value as of the close of trading on the Early Redemption Notice Date. We refer to this cash payment as the “Early Redemption Amount.” This amount will not be less than zero.

You may lose some or all of your investment upon early redemption.

If the Early Redemption Notice Date is postponed as a result of a Market Disruption Event, as set forth below, the Early Redemption Date will be postponed by the same number of business days.

#### Optional Redemption Procedures

To redeem your Notes, you must instruct your broker or other person through whom you hold your Notes to take the following steps through normal clearing system channels:

- deliver a notice of redemption, which we refer to as a “Redemption Notice,” which is attached to this document as Annex A, to Royal Bank of Canada or its agent via e-mail no later than 12:00 p.m. (New York City time) on the applicable Index Trading Day. If we receive your Redemption Notice by the time specified in the preceding sentence, we (or our agent) will respond by sending you a form of confirmation of redemption, which is attached to this document as Annex B, for your execution;

- deliver the signed confirmation of redemption, which we refer to as the “Redemption Confirmation,” to us via e-mail in the specified form by 5:00 p.m. (New York City time) on the same day. We or our affiliate must acknowledge receipt in order for your Redemption Confirmation to be effective;

- instruct your DTC custodian to book a delivery vs. payment trade with respect to your Notes on the applicable Redemption Notice Date at a price equal to the Early Redemption Amount; and
- cause your DTC custodian to deliver the trade as booked for settlement via DTC at or prior to 10:00 a.m. (New York City time) on the applicable Early Redemption Date.

Different brokerage firms may have different deadlines for accepting instructions from their customers. Accordingly, as a beneficial owner of the Notes, you should consult the brokerage firm through which you own your interest for the relevant deadline. If your broker delivers your notice of redemption after 12:00 p.m. (New York City time), or your confirmation of redemption after 5:00 p.m. (New York City time), on the date intended to be the Early Redemption Notice Date, your notice will not be effective, you will not be able to redeem your Notes until the following Index Business Day, and your broker will need to complete all the required steps if you wish to redeem your Notes on that day. In addition, we or our agent may request a medallion signature guarantee or assurances of delivery as it may deem necessary in its sole

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discretion. All instructions given to participants from beneficial owners of the Notes relating to the right to redeem their Notes will be irrevocable.

Unavailability of the Level of the Index

If the Index Calculation Agent discontinues publication of the Index and the Index Calculation Agent or another entity (which may be us or one of our affiliates) publishes a successor or substitute index that the Calculation Agent determines, in its sole discretion, to be comparable to the discontinued index (such successor or substitute index being referred to in this section as a “successor index”), then any subsequent index closing level will be determined by reference to the published level of that successor index on the applicable Index Trading Day.

Upon any selection by the Calculation Agent of a successor index, the Calculation Agent will provide written notice to the trustee of the selection, and the trustee will furnish written notice thereof, to the extent the trustee is required to under the senior debt indenture, to holders of the Notes.

If a successor index is selected by the Calculation Agent, that successor index will be used as a substitute for the Index for all purposes, including for purposes of determining whether a Market Disruption Event exists with respect to that index.

If the publication of the Index is discontinued by the Index Calculation Agent, and the Calculation Agent does not identify a successor index, we will have the option to redeem the Notes on a date within 30 calendar days of that determination, based upon the most recently available Indicative Note Value, as reasonably determined by the Calculation Agent.

If at any time the method of calculating the level of the Index is changed in a material respect, or if the Index is in any other way modified so that the Index does not, in the opinion of the Calculation Agent, fairly represent the level of the Index had those changes or modifications not been made, then, from and after that time, (a) the Calculation Agent may at the close of business in New York City on the applicable Index Trading Day, make such calculations and adjustments as, in the good faith judgment of the Calculation Agent, may be necessary in order to arrive at a level of an index comparable to the Index as if those changes or modifications had not been made or (b) we may redeem the Notes as provided in the preceding paragraph. For example, if the method of calculating the Index is modified so that the level of the Index is a fraction of what it would have been if it had not been modified (e.g., due to a split in the Index), then the Calculation Agent will adjust the index in order to arrive at a value of the Index as if it had not been modified (e.g., as if such split had not occurred).

Market Disruption Events

If the Calculation Agent determines that a Market Disruption Event occurs on any Index Trading Day (including an Early Redemption Notice Date), the Calculation Agent may, in its discretion, postpone the determination of the Indicative Note Value to the next Index Trading Day upon which a Market Disruption Event does not occur or continue. If a Market Disruption Event occurs or is continuing on the Valuation Date (or an Early Redemption Notice Date) and each Index Trading Day to and including the tenth scheduled Index Trading Day following the Valuation Date (or Early Redemption Notice Date), the Indicative Note Value on that day and the payment on the Notes 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 day, regardless of the occurrence of a Market Disruption Day on that day. In such an event, the Calculation Agent will make a good faith estimate in its sole discretion of the level of the Index that would have prevailed in the absence of that Market Disruption Event.

A “Market Disruption Event” means, as to any Underlying Index or Relevant Futures Contract, any event, circumstance or cause which the Calculation Agent determines may have a material adverse effect on our ability to perform our obligations under the Notes or to determine the level of the Index or to hedge our position in respect of the Notes, and more specifically includes the following events:

a suspension, absence or limitation of trading in index components constituting 20% or more, by weight, of an Underlying Index;

a suspension, absence or limitation of trading in futures or options contracts relating to that index on their respective markets;

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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, index components constituting 20% or more, by weight, of that index, or (ii) effect transactions in, or obtain market values for, futures or options contracts relating to that index on their respective markets;

the closure on any day of the primary market for futures or options contracts relating to that index or index components constituting 20% or more, by weight, of that index 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 markets for index components constituting 20% or more, by weight, of that index or (ii) the exchanges or quotation systems, if any, on which futures or options contracts on that index 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 document.

Hedging Disruption Events

A “Hedging Disruption Event” will occur if the Calculation Agent determines that any of the following events occurs:

(i) due to: (a) the adoption of, or any change in, any applicable law, regulation or rule; or (b) the promulgation of, or any change in, the interpretation by any court, tribunal or regulatory authority with competent jurisdiction of any applicable law, rule, regulation or order (including in each case as to tax matters), and in each case occurring on or after the Trade Date (each, an “Applicable Event”), the Calculation Agent determines in good faith and in a commercially reasonable manner that it is contrary to such law, rule, regulation or order to purchase, sell, enter into, maintain, hold, acquire or dispose of our or our affiliates’ (A) positions or contracts in securities, options, futures, derivatives or foreign exchange or (B) other instruments or arrangements, in each case, in order to hedge individually or in the aggregate on a portfolio basis our obligations under the Notes (clauses (A) and (B) together, “Hedge Positions”), including, without limitation, if such Hedge Positions are (or, but for the consequent disposal thereof, would otherwise be) in excess of any allowable position limit(s) in relation to any asset traded on any exchange(s) or other trading facility (the Calculation Agent will determine in good faith and in a commercially reasonable manner which of the hedge positions are counted towards such limit); or

(ii) after using commercially reasonable efforts to identify alternative means of hedging following the occurrence of an Applicable Event, our or our affiliates’ costs relating to the Hedge Positions (individually or in the aggregate on a portfolio basis) would increase from the amount of such costs existing or expected as of the Trade Date. For purposes of the foregoing sentence, our or our affiliates’ costs will be deemed to include, but not be limited to, tax, duties, expenses and fees incurred in connection with acquiring, establishing, re-establishing, substituting, maintaining, unwinding or disposing of Hedge Positions.

**Redemption at Our Option.** If a Hedging Disruption Event occurs, we will have the right, but not the obligation, to redeem the Notes (in whole, and not in part) by providing written notice of our election to redeem the Notes to the trustee under the Notes, reasonably promptly after the Calculation Agent has determined that the Hedging Disruption Event has occurred. The date of such redemption, which will be determined by the Calculation Agent in consultation with us, is referred to herein as the “Hedging Disruption Redemption Date.” If we redeem the Notes in this manner, we will pay the holders of the Notes, for each \$1,000 in principal amount, the Indicative Note Value on the third Index

Trading Day prior to the Hedging Disruption Redemption Date.

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Reduction of Payments on the Notes. As an alternative to redeeming the Notes as described in this section, we may elect to:

request that the Calculation Agent for the Notes determine or estimate the aggregate financial impact upon us and our affiliates of the applicable Hedging Disruption Event (the “Hedging Disruption Cost”) relating to the Notes; and reduce the amount payable on the Notes at maturity or on an Early Redemption Date by the pro rata portion of the aggregate Hedging Disruption Cost of the Notes that are maturing or that are being repaid on the applicable Early Redemption Date.

For the avoidance of doubt, in determining the amount of Hedging Disruption Cost, the Calculation Agent may take into account any and all direct or indirect costs that we or our affiliates incur, including, but not limited to, the costs and expenses incurred in unwinding or adjusting any related hedging transactions, any professional fees occurred in connection with such transactions, and any impact upon our funding expenses arising from these costs through the maturity or redemption date, as applicable. The Calculation Agent’s determination of the Hedging Disruption Cost will be binding upon us and upon all holders of the Notes, in the absence of a final judicial determination of a manifest error in its determination.

We intend to notify holders of the Notes reasonably promptly after we determine that a Hedging Disruption Event has occurred if we intend to, or are likely to, reduce any payments on the Notes in this manner; the Calculation Agent will determine the form and substance of that notice. If we reduce any payment on the Notes in the manner described in this subsection, upon the written request of any holder impacted thereby, the Calculation Agent will furnish a summary of the calculation of the relevant reduction; such notice will contain such details and descriptions as the Calculation Agent determines to be appropriate under the circumstances. Any failure to deliver such a notice will not affect the validity of any action that we elect to take.

No Waiver of Rights. If we elect not to take any of the actions set forth in this section upon the occurrence of a Hedging Disruption Event, we will not be deemed to waive any right to take such an action in connection with any subsequent Hedging Disruption Event.

Payment of Additional Amounts

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



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(iii) 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);

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

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

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

For the avoidance of doubt, we will not have any obligation to pay any holders Additional Amounts on any tax which is payable otherwise than by deduction or withholding from payments made under or in respect of the Notes at maturity.

We will also make such withholding or deduction and remit the full amount deducted or withheld to the relevant authority in accordance with applicable law. We will furnish to the trustee, within 30 days after the date the payment of any taxes is due pursuant to applicable law, certified copies of tax receipts evidencing that such payment has been made or other evidence of such payment satisfactory to the trustee. We will indemnify and hold harmless each holder of Notes (other than an Excluded Holder) and upon written request reimburse each such holder for the amount of (x) any taxes so levied or imposed and paid by such holder as a result of payments made under or with respect to the Notes, and (y) any taxes levied or imposed and paid by such holder with respect to any reimbursement under (x) above, but excluding any such taxes on such holder's net income or capital.

For additional information, see the section of the prospectus supplement entitled "Certain Income Tax Consequences—Canadian Taxation."

Default Amount on Acceleration

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 per \$1,000 in principal amount of the Notes equal to the Indicative Note Value, calculated as if the date of acceleration were the 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 depositary, of the cash amount due with respect to the Notes as promptly as possible.



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Role of Calculation Agent

The Calculation Agent will make all determinations regarding the Notes, including the level of the Index, the Indicative Note Value on each Index Trading Day, business days, Market Disruption Events, Hedging Disruption Events, the default amount, and the amounts payable on the 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 the Notes at any time without notice and the Calculation Agent may resign as Calculation Agent at any time.

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## THE RBC GLOBAL TACTICAL EQUITY TOTAL RETURN INDEX

### Introduction

RBC Capital Markets designed the Index, and Solactive AG acts as Index Calculation Agent. The level of the Index is calculated and disseminated once per Index Trading Day (as defined below) through Reuters under the symbol .RBCEGTUT, and through Bloomberg under the symbol RBCEGTUT.

The full methodology of the Index and the Sub-Indices (which are listed below) may be found at the following website: [www.solactive.com](http://www.solactive.com). Information on that website is not included or incorporated by reference in this document. The Index Calculation Agent may change the methodology of the Index and the Sub-Indices at any time. For purposes of this document, an “Index Trading Day” is a day that is a Sub-Index Trading Day (as defined below) for each of the four Sub-Indices.

### Index Summary

The Index, subject to the operation of the “Tactical Trigger” described below, is designed to provide exposure to four different equity markets:

- large-cap U.S. stocks;
- small-cap U.S. stocks;
- large-cap stocks in non-U.S. developed markets; and
- emerging market stocks.

In order to obtain exposure to these markets, the Index is allocated on a fixed-weight basis, rebalancing once a year to the four Sub-Indices at the Target Weights that are set forth in the table below. Each Sub-Index obtains exposure to one of the relevant markets by tracking the performance of the Relevant Futures Contract set forth in that table. Each of these Relevant Futures Contracts is linked to the respective Underlying Index set forth in the table.

To attempt to mitigate the impact of market downturns in each of those equity markets, a tactical shift is provided in relation to each Sub-Index. That is, each Sub-Index may or may not be allocated to the Relevant Futures Contract for a particular month, depending on the “Tactical Trigger” that is described below, and which relates to the performance of the applicable exchange traded fund (“ETF”) set forth in the table below. Depending upon the Tactical Trigger, each Sub-Index is allocated in its entirety each month to either:

- a) both the front-month (as discussed in the section below, “—Futures Contracts Generally”) Relevant Futures Contract and the U.S. Federal Funds (Effective) Rate (the “Federal Funds (Effective) Rate”); or
- b) only the Federal Funds (Effective) Rate.

Each Sub-Index will remain so allocated until the following month.

The Index is intended to help improve asset allocation among (a) the relevant equity markets versus (b) cash, as represented by the Federal Funds (Effective) Rate. The Tactical Trigger is designed to allocate each Sub-Index (a) to the Relevant Futures Contract when the monthly Tactical Trigger indicates increasing levels of the relevant equity market, or (b) to the Federal Funds (Effective) Rate when the monthly Tactical Trigger indicates decreasing levels of the relevant equity market.

The Index is rebalanced on an annual basis, based on the respective Target Weights of the Sub-Indices, on the day that is two (2) scheduled Index Trading Days prior to the third (3<sup>rd</sup>) Friday of December of each year (the “Rebalancing Day”). Accordingly, on each Rebalancing Day, the weighting of each Sub-Index within the Index will be restored to its Target Weight set forth in the table below.

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The Sub-Indices

There are four Sub-Indices that comprise the Index. The Sub-Indices are weighted as follows, and link, subject to the operation of the Tactical Trigger, to the indicated Relevant Futures Contract.

Sub-Index	Reuters Symbol	Relevant Futures Contract	Trading Market for Futures Contract	Underlying Index	Relevant ETF	Moving Average	Target Weight
RBC Large Cap US Tactical Equity Total Return Index	RBCELTUT	E-mini S&P 500 Index Future	Chicago Mercantile Exchange (“CME”)	S&P 500® Index	SPDR® S&P 500® ETF (ticker: SPY)	200 trading days	50%
RBC Small Cap US Tactical Equity Total Return Index	RBCESTUT	E-mini Russell 2000 Index Future	CME	Russell 2000® Index	iShares® Russell® 2000 ETF (ticker: IWM)	100 trading days	10%
RBC Emerging Market Tactical Equity Total Return Index	RBCEETUT	MSCI Emerging Markets Future	Intercontinental Exchange (“ICE”)	MSCI Emerging Markets Index	iShares® MSCI Emerging Markets ETF (ticker: EEM)	100 trading days	15%
RBC International Developed Tactical Equity Total Return Index	RBCEITUT	MSCI EAFE Future	ICE	MSCI EAFE Index	iShares® MSCI EAFE ETF (ticker: EFA)	100 trading days	25%

Subject to the operation of the Tactical Trigger, each Sub-Index is linked to the front-month futures contract on the relevant Underlying Index. When the Sub-Index is allocated to its front-month futures contract, that futures contract is rolled into the next relevant futures contract two Sub-Index Trading Days prior to the applicable expiration date. On that expiration date, the next-month futures contract becomes the new front-month futures contract until its eventual expiration. Each Relevant Futures Contract is currently scheduled to expire on a quarterly basis (as discussed in the section below, “—Futures Contracts Generally”).

The Tactical Trigger

The monthly allocation of each Sub-Index is based on the Tactical Trigger. The Index Calculation Agent determines the applicability of the Tactical Trigger on the fourth (4<sup>th</sup>) scheduled Sub-Index Trading Day before the third (3<sup>rd</sup>) Friday of the relevant month (the “Sub-Index Allocation Determination Day”). The Tactical Trigger compares the

closing price of the relevant ETF (as set forth in the table above) on that day to the average of its closing prices over the immediately preceding 100 or 200 trading days including the relevant Sub-Index Allocation Determination Day (with respect to each ETF, the “Moving Average”, set forth in the table above). If, on such Sub-Index Allocation Determination Day, the closing price of the relevant ETF was greater than or equal to its Moving Average, then two (2) Sub-Index Trading Days after such Sub-Index Allocation Determination Day (the “Sub-Index Allocation Day”), the applicable Sub-Index is allocated in its entirety to both the Relevant Futures Contract and the Federal Funds (Effective) Rate. Otherwise, the Sub-Index will be allocated solely to the Federal Funds (Effective) Rate until the next Sub-Index Allocation Day.

For purposes of this paragraph and the determination of the closing prices of the relevant ETF, “trading day” refers to a day on which the ETF is scheduled to trade on its primary U.S. securities exchange.

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In the section below, “Information Regarding the ETFs and Underlying Indices,” we have provided a summary description of these ETFs and indices.

Calculation of the Index Level

The level of the Index was set to 100 on December 16, 2009. On any relevant Index Trading Day, subject to the discussion “—Index Market Disruption Events” as described below, the level of the Index is equal to the sum of:

- the closing level of the Index on the most recent Rebalancing Day; and
- the product of:
  - o the closing level of the Index on the most recent Rebalancing Day; and
  - o the sum of the following for each Sub-Index:
    - the product of:
      - o the Target Weight of the Sub-Index on the most recent Rebalancing Day; and
      - o the percentage change in the level of that Sub-Index on that Index Trading Day from the most recent Rebalancing Day.

Calculation of the Level of Each Sub-Index

The level of each Sub-Index was set to 100 as of December 16, 2009. The level of each Sub-Index is calculated on each day when the Relevant Futures Contract is scheduled to trade (a “Sub-Index Trading Day”). (Accordingly, the Sub-Index Trading Days for each Sub-Index may differ from one another from time to time.)

On each Sub-Index Trading Day, subject to the “Index Market Disruption Events” as described further below, the level of each Sub-Index is equal to the sum of:

- the closing level of the Sub-Index on the preceding Sub-Index Trading Day; and
- the product of:
  - o the closing level of the Sub-Index on the most recent Sub-Index Allocation Day; and
  - o the sum of:
    - the product of:
      - o the Sub-Index Allocation (as defined below);
      - o subject to the discussion under “—Front-Month Expiration” below, the percentage change in the settlement price of the front-month Relevant Futures Contract price on such Sub-Index Trading Day from the immediately preceding Sub-Index Trading Day; and
      - o the product of the Federal Funds (Effective) Rate on the immediately preceding relevant Sub-Index Trading Day, and
      - o the ratio of the number of calendar days that elapsed since that Sub-Index Trading Day and the most recent Sub-Index Trading Day, divided by 360.

The “Sub-Index Allocation” with respect to a Sub-Index is, (i) if the relevant Sub-Index Trading Day is not a Sub-Index Allocation Day, the Sub-Index Allocation for such Sub-Index on the immediately preceding Sub-Index Allocation Day, or (ii) if the relevant Sub-Index Trading Day is a Sub-Index Allocation Day, then if the closing price of the relevant ETF is greater than or equal to its Moving Average, one (1), otherwise zero (0).

Front-Month Expiration

Whenever a Sub-Index Trading Day is either (i) the Sub-Index Trading Day immediately before the expiration date for the front-month Relevant Futures Contract, or (ii) the expiration date for the front-month Relevant Futures Contract itself, and only on those two days each month, the level of each Sub-Index is determined with respect to the prices of the next-month Relevant Futures Contract rather than the front-month Relevant Futures Contract prices. On the Sub-Index Trading



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Day immediately following the expiration date of the most recently expired front-month Relevant Futures Contract, the futures contract that was the next-month Relevant Futures Contract will automatically become the new front-month Relevant Futures Contract, until its own expiration. For additional information about the expiration of futures contracts, please see the section below, “—Futures Contracts Generally.”

The Federal Funds (Effective) Rate

The Federal Funds (Effective) Rate is the rate at which U.S. banks lend reserve balances to other banks on an overnight basis. On each Sub-Index Trading Day, the Index Calculation Agent will determine the Federal Funds (Effective) Rate as it is published in H.15(519) under the heading “Federal Funds (effective)”, as that rate is displayed on Reuters page FEDFUNDS1 under the heading “EFFECT” (or any successor page).

Index Market Disruption Events

From time to time, market disruption events may occur that will result in the postponement of the determination of the level of the Index, or of the level of one or more Sub-Indices, and/or the adjustment of the roll period for a Relevant Futures Contracts. A “Market Disruption Day” will be deemed to have occurred if any of the following events occur:

- the settlement price of a Relevant Futures Contract is not published by the relevant exchange on a scheduled Sub-Index Trading Day; or
- the settlement price of an applicable futures contract is a “limit price” (as defined by the rules of the applicable exchange).

If any of these events occur on a Sub-Index Trading Day that is not a Rebalancing Day, no immediate action will be taken, and that day will remain a Sub-Index Trading Day; however, if a settlement price is not published, and if the applicable exchange publishes a settlement price subsequently, the levels of the applicable Sub-Index and the Index will be restated for that particular day. If any of these events occur on a Rebalancing Day, the rebalancing of the applicable Sub-Index to its Target Weight will be postponed to the next Sub-Index Trading Day that is not a Market Disruption Day.

If any of these events occur on a Sub-Index Allocation Determination Day, the Tactical Trigger will compare the closing price of the relevant ETF on the immediately preceding Sub-Index Trading Day that is not a Market Disruption Day to the relevant Moving Average.

If any of these events occur on a Sub-Index Allocation Day, any change to the Sub-Index Allocation will be postponed to the next Sub-Index Trading Day that is not a Market Disruption Day.

If a Market Disruption Day continues over a period of eight Sub-Index Trading Days, then the Index Committee (as defined below) will determine the appropriate action to take (including but not limited to taking into account the market conditions prevailing at the applicable points in time, the last quoted prices for each of the Relevant Futures Contracts, as well as any other conditions that it deems relevant for calculating the level of the applicable Sub-Index and the Index.

Oversight of the Index

A committee composed of personnel selected by Solactive AG (the “Index Committee”) is responsible for decisions regarding the composition of the Index and the Sub-Index, as well as any amendments to the methodology of these indices. Members of the Index Committee may recommend any such amendments, and submit them to the Index Committee for approval.

The Futures Contracts

Subject to the operation of the Tactical Trigger, each Sub-Index provides exposure to its Relevant Futures Contract as well as the Federal Funds (Effective) Rate. In the case of the S&P 500<sup>®</sup> Index and Russell 2000<sup>®</sup> Index, these are “E-mini



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futures.” E-mini futures are futures contracts on the applicable index that are traded on the CME. The CME trades E-mini futures contracts based on these indices with expiration dates in March, June, September and December of each year.

In the case of the MSCI EAFE Index and the MSCI Emerging Markets Index, these are futures contracts traded on the ICE. The ICE trades futures contracts based on these indices with expiration dates in March, June, September and December of each year.

Each of these futures contracts has a notional value of \$50, multiplied by the value of the applicable index.

Futures Contracts Generally

This section provides a brief description of futures contracts generally.

Generally speaking, a futures contract is an agreement to buy or sell an underlying asset on a future expiration date at a price that is agreed upon today. If the underlying asset is worth more on the expiration date than the price specified in the futures contract, then the purchaser of that contract will achieve a gain on that contract, and if it is worth less, the purchaser will incur a loss.

For example, suppose that a futures contract entered into in January calls for the purchaser to buy the underlying asset in March at a price of \$1,000. If the underlying asset is worth \$1,200 in March, then upon settlement of the futures contract in March, the purchaser will buy for \$1,000 an underlying asset worth \$1,200, achieving a \$200 gain.

Conversely, if the underlying asset is worth \$800 in March, then upon settlement of the futures contract in March the purchaser will buy for \$1,000 an underlying asset worth only \$800, incurring a \$200 loss.

The gain or loss to the purchaser of this futures contract is different from the gain or loss that could have been achieved by the direct purchase of the underlying asset in January and the sale of that underlying asset in March. This is because a futures contract is a “leveraged” way to invest in the underlying asset. In other words, purchasing a futures contract is similar to borrowing money to buy the underlying asset, in that (i) it enables an investor to gain exposure to the underlying asset without having to pay the full cost of it up front and (ii) it entails a financing cost.

This financing cost is implicit in the difference between the spot price of the underlying asset and the futures price. A “futures price” is the price at which market participants may agree today to buy or sell the underlying asset in the future, and the “spot price” is the current price of the underlying asset for immediate delivery. The futures price is determined by market supply and demand and is independent of the spot price, but it is nevertheless generally expected that the futures price will be related to the spot price in a way that reflects a financing cost (because if it did not do so there would be an opportunity for traders to make sure profits, known as “arbitrage”). For example, if January’s futures price is \$1,000, January’s spot price may be \$975. If the underlying asset is worth \$1,200 in April, the gain on the futures contract would be \$200 (\$1,200 minus \$1,000), while the gain on a direct investment made at the January spot price would have been \$225 (\$1,200 minus \$975). The lower return on the futures contract as compared to the direct investment reflects this implicit financing cost. Because of this implicit financing cost, it is possible for a purchaser to incur a loss on a futures contract even if the spot price of the underlying asset increases over the term of the futures contract. The amount of this implicit financing cost is expected to increase as general market interest rates increase.

Futures Markets

Futures contracts are standardized instruments that are traded on regulated futures exchanges, known as “contract markets” in the United States, through the facilities of a centralized clearing house and a brokerage firm which is a member of the clearing house. The clearing house stands between the two parties to the futures contract, in effect taking the opposite side of each party’s transaction. As a result, each party faces the clearinghouse and not the other party.

An exchange-traded futures contract provides for the purchase and sale of a specified type and quantity of an underlying asset or financial instrument during a stated delivery month for a fixed price. A futures contract provides for a specified



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settlement month in which the underlying asset or financial instrument is to be delivered by the seller (whose position is described as “short”) and acquired by the purchaser (whose position is described as “long”) or in which the related cash settlement amount is to be paid.

The amount paid upon the purchase or sale of a futures contract does not correspond to a purchase price for the underlying asset. Instead, an amount of cash or cash equivalents must be deposited with the broker as “initial margin.” This amount varies based on the requirements imposed by the exchange clearing houses. This margin deposit provides collateral for the obligations of the parties to the futures contract.

On each day that a futures contract is traded, the exchange determines a settlement price (which may also be referred to as a closing price) for the futures contract based on the prices at which market participants entered into that futures contract on that day. Open positions in futures contracts are “marked to market,” and a transfer of margin, or of a settlement payment, is required to be made on each trading day. This means that, on each trading day, the current settlement price for a futures contract is compared to the futures price at which the purchaser entered into that futures contract. If the current settlement price has decreased from the initial futures price, then the purchaser will be required to provide cash (or assets with a cash value) corresponding to the decrease in value of that futures contract.

Conversely, if the current settlement price has increased, the purchaser will be credited with cash (or assets with a cash value) corresponding to such increase. Accordingly, gains or losses on a futures contract are effectively realized on a daily basis up until the point when the position in that futures contract is closed out.

Unlike equity securities, futures contracts, by their terms, have stated expirations and, at a specified point in time prior to expiration, trading in a futures contract for the current delivery month will cease. As a result, a market participant wishing to maintain its exposure to a futures contract on a particular asset or financial instrument with the nearest expiration (often referred to as a “front-month contract”) must close out its position in the expiring contract and establish a new position in the contract for the next delivery month (often referred to as a “next-month contract”), a process referred to as “rolling.” The market participant will establish the new position in the next-month contract at a price that is based on the then prevailing futures price. For example, a market participant with a long position in a December futures contract that wishes to maintain a position in the nearest delivery month will, as the December futures contract nears expiration, sell the December futures contract, which serves to close out the existing long position, and purchase a March futures contract. These transactions will “roll” the December position into a March position, and, when the December futures contract expires, the market participant will continue to have a long position in the nearest delivery month.

At any time prior to the expiration of a futures contract, subject to the availability of a liquid secondary market, a trader may elect to close out its position by taking an opposite position on the exchange on which the trader obtained the position. Doing so operates to terminate the position and fix the trader’s profit or loss.

U.S. futures contract markets, as well as brokers and market participants, are subject to regulation by the CFTC. NEITHER THE CME NOR THE ICE GUARANTEES THE ACCURACY AND/OR THE COMPLETENESS OF THE PRICES OF ANY FUTURES CONTRACT, AND SHALL HAVE NO LIABILITY FOR ANY ERRORS, OMISSIONS OR INTERRUPTIONS THEREOF. THE CME AND THE ICE MAKE NO WARRANTY, EXPRESS OR IMPLIED, AS TO RESULTS TO BE OBTAINED BY US OR ANY OTHER PERSON OR ENTITY FROM THE USE OF THE PRICES OF THE RELEVANT FUTURES CONTRACTS. THE CME AND THE ICE MAKE NO EXPRESS OR IMPLIED WARRANTIES, AND EXPRESSLY DISCLAIM ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE WITH RESPECT TO THE PRICES OF THE RELEVANT FUTURES CONTRACTS. WITHOUT LIMITING ANY OF THE FOREGOING, IN NO EVENT SHALL THE CME OR THE ICE HAVE ANY LIABILITY FOR ANY SPECIAL, PUNITIVE, INDIRECT, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS), EVEN IF NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES.



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Hypothetical Back-Tested and Historical Index Performance Information

This section contains hypothetical back-tested performance information about the Index. All Index performance information prior to February 18, 2019 is hypothetical and back-tested, as the Index did not exist prior to that date. Hypothetical back-tested Index performance information is subject to significant limitations. RBC Capital Markets and Solactive AG developed the methodology of the Index and the Sub-Indices with the benefit of hindsight—that is, with the benefit of being able to evaluate how the methodology rules would have caused the Index to perform had it existed during the hypothetical back-tested period. As a result, the fact that the Index generally appreciated over the hypothetical back-tested period may not be an accurate or reliable indication of any aspect of the Index methodology, or the future performance of the Index. Furthermore, the hypothetical back-tested performance of the Index might have been different if it covered a different historical period. The market conditions that existed during the hypothetical back-tested period may not be representative of market conditions that will exist in the future. In addition, please see the discussion following the graph as to the periods in which the Relevant Futures Contracts and the Relevant ETFs did not yet exist.

It is impossible to predict whether the level of the Index will increase or decrease during the term of the Notes. By providing the hypothetical back-tested and historical performance information below, none of RBC, RBCCM or their respective affiliates are making any representation that the Index is likely to perform as it has in the past. In fact, there are often significant differences between hypothetical performance results and the actual results subsequently achieved by any particular investment. Among the limitations of hypothetical performance information is that it does not involve financial risk and cannot account for all factors that would affect actual performance. The actual future performance of the Index may bear no relation to the hypothetical back-tested or historical performance of the Index. Please see the section above, “Risk Factors—Additional Risks Relating to the Index— Hypothetical Back-Tested Index Performance Information Is Subject to Significant Limitations.”

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The graph below depicts the hypothetical back-tested performance of the Index for the period from December 31, 1995 to February 15, 2019 (the portion of the graph to the left of the dotted vertical line on the right side of the graph), and historical Index performance for the period from February 18, 2019 to March 31, 2019 (the portion to the right of that line).

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The Relevant Futures Contracts and the Relevant ETFs did not exist for all periods set forth in the graph above. Accordingly, to construct the graph above, we applied the Index and Sub-Index methodology to the changes in the prices or levels of the following assets, for the periods specified below. We believe that movements in the prices or levels of these assets approximate, but do not necessarily reflect completely, movements in the prices or levels of the applicable Relevant Futures Contracts and Relevant ETFs, as applicable, during the indicated periods. Accordingly, the hypothetical back-tested Index performance information may not reflect how the Index would have performed had the Relevant Futures Contracts or the Relevant ETFs existed during the relevant time period.

Relevant Futures Contract	Relevant Period(s)	Substitute Measure(s)
E-mini S&P 500® Index Future	12.31.95 to 9.9.97	CME S&P 500® Index Futures Contract
	1. 10.24.01 to 8.20.07	1. CME E-Mini Russell® 2000 Index Futures Contract
E-mini Russell 2000® Index Future	2. 12.31.95 to 10.24.01	2. CME Russell 2000® Index Futures Contract
	1. 3.20.06 to 9.9.09	1. CME E-Mini MSCI EAFE Index Futures Contract
MSCI EAFE Future	2. 12.31.98 to 3.20.06	2. MSCI EAFE Net Total Return USD Index
	3. 1.31.95 to 12.31.95	3. MSCI EAFE IMI Net Total Return USD Index
	1. 10.22.07 to 9.9.09	1. CME MSCI Emerging Markets E-Mini Index Futures Contract
MSCI Emerging Markets Future	2. 12.29.00 to 10.22.07	2. MSCI Emerging Markets Net Total Return USD Index
	3. 12.31.95 to 12.29.00	3. MSCI Investible Market Index Net Total Return USD Index
Relevant ETF	Relevant Period	Substitute Measure(s)
SPDR® S&P 500® ETF	N/A	N/A
iShares® Russell® 2000 ETF	12.31.95 to 10.17.00	Russell 2000 Index
iShares® MSCI EAFE ETF	12.31.95 to 1.15.02	MSCI EAFE Index
iShares® MSCI Emerging Markets ETF	12.31.95 to 4.11.03	MSCI Emerging Markets Index

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#### INFORMATION REGARDING THE ETFS AND UNDERLYING INDICES

We have derived the following information regarding each of the applicable Underlying Indices and ETFs from publicly available documents. We have not independently verified the accuracy or completeness of the following information. Neither we nor our affiliates have made any due diligence inquiry with respect to any of the Underlying Indices and ETFs in connection with the offering of the Notes.

The selection of the Underlying Indices and these ETFs is not a recommendation to invest in any of these assets. Neither we nor any of our affiliates make any representation to you as to the performance of these indices and ETFs. Information provided to or filed with the SEC under the Securities Exchange Act of 1934 and the Investment Company Act of 1940 relating to each of the ETFs may be obtained through the SEC's website at <http://www.sec.gov>. SPDR® S&P® 500 ETF Trust (the "SPY")

The shares of the SPDR® S&P 500® ETF trade on the NYSE Arca under the symbol "SPY." The SPY's investment adviser is State Street Global Advisors.

The SPY seeks to provide investment results that correspond generally to the price and yield performance, before fees and expenses, of the S&P 500® Index (the "SPX Index"). To maintain the correspondence between the composition and weightings of stocks held by the SPY and component stocks of the SPX Index, the SPY adjusts its holdings from time to time to conform to periodic changes in the identity and/or relative weightings of the index securities.

The SPY utilizes a "passive" or "indexing" investment approach in attempting to track the performance of the SPX Index. The SPY seeks to invest in substantially all of the securities that comprise the SPX Index. The SPY typically earns income from dividends from securities that it holds. These amounts, net of expenses and taxes (if applicable), are passed along to the SPY's shareholders as "ordinary income." In addition, the SPY realizes capital gains or losses whenever it sells securities. Net long-term capital gains are distributed to shareholders as "capital gain distributions." The S&P 500® Index ("SPX Index")

The SPX Index is intended to provide an indication of the pattern of common stock price movement. The calculation of the level of the SPX Index is based on the relative value of the aggregate market value of the common stocks of 500 companies as of a particular time compared to the aggregate average market value of the common stocks of 500 similar companies during the base period of the years 1941 through 1943.

S&P calculates the SPX Index by reference to the prices of the constituent stocks of the SPX Index without taking account of the value of dividends paid on those stocks. As a result, the return on the Notes will not reflect the return you would realize if you actually owned the SPX Index constituent stocks and received the dividends paid on those stocks.

Effective with the September 2015 rebalance, consolidated share class lines will no longer be included in the SPX Index. Each share class line will be subject to public float and liquidity criteria individually, but the company's total market capitalization will be used to evaluate each share class line. This may result in one listed share class line of a company being included in the SPX Index while a second listed share class line of the same company is excluded.

#### Computation of the SPX Index

While S&P currently employs the following methodology to calculate the SPX Index, no assurance can be given that S&P will not modify or change this methodology in a manner that may affect the Payment at Maturity.

Historically, the market value of any component stock of the SPX Index was calculated as the product of the market price per share and the number of then outstanding shares of such component stock. In March 2005, S&P began shifting the SPX Index halfway from a market capitalization weighted formula to a float-adjusted formula, before moving the SPX Index to full float adjustment on September 16, 2005. S&P's criteria for selecting stocks for the SPX Index did not change with the shift to float adjustment. However, the adjustment affects each company's weight in the SPX Index.

Under float adjustment, the share counts used in calculating the SPX Index reflect only those shares that are available to investors, not all of a company's outstanding shares. Float adjustment excludes shares that are closely held by control groups, other publicly traded companies or government agencies.

In September 2012, all shareholdings representing more than 5% of a stock's outstanding shares, other than holdings by "block owners," were removed from the float for purposes of calculating the SPX Index. Generally, these "control holders"

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will include officers and directors, private equity, venture capital and special equity firms, other publicly traded companies that hold shares for control, strategic partners, holders of restricted shares, ESOPs, employee and family trusts, foundations associated with the company, holders of unlisted share classes of stock, government entities at all levels (other than government retirement/pension funds) and any individual person who controls a 5% or greater stake in a company as reported in regulatory filings. However, holdings by block owners, such as depository banks, pension funds, mutual funds and ETF providers, 401(k) plans of the company, government retirement/pension funds, investment funds of insurance companies, asset managers and investment funds, independent foundations and savings and investment plans, will ordinarily be considered part of the float.

Treasury stock, stock options, equity participation units, warrants, preferred stock, convertible stock, and rights are not part of the float. Shares held in a trust to allow investors in countries outside the country of domicile, such as depository shares and Canadian exchangeable shares are normally part of the float unless those shares form a control block.

For each stock, an investable weight factor (“IWF”) is calculated by dividing the available float shares by the total shares outstanding. Available float shares are defined as the total shares outstanding less shares held by control holders. This calculation is subject to a 5% minimum threshold for control blocks. For example, if a company’s officers and directors hold 3% of the company’s shares, and no other control group holds 5% of the company’s shares, S&P would assign that company an IWF of 1.00, as no control group meets the 5% threshold. However, if a company’s officers and directors hold 3% of the company’s shares and another control group holds 20% of the company’s shares, S&P would assign an IWF of 0.77, reflecting the fact that 23% of the company’s outstanding shares are considered to be held for control. As of July 31, 2017, companies with multiple share class lines are no longer eligible for inclusion in the SPX Index. Constituents of the SPX Index prior to July 31, 2017 with multiple share class lines will be grandfathered in and continue to be included in the SPX Index. If a constituent company of the SPX Index reorganizes into a multiple share class line structure, that company will remain in the SPX Index at the discretion of the S&P Index Committee in order to minimize turnover.

The SPX Index is calculated using a base-weighted aggregate methodology. The level of the SPX Index reflects the total market value of all 500 component stocks relative to the base period of the years 1941 through 1943. An indexed number is used to represent the results of this calculation in order to make the level easier to use and track over time. The actual total market value of the component stocks during the base period of the years 1941 through 1943 has been set to an indexed level of 10. This is often indicated by the notation 1941-43 = 10. In practice, the daily calculation of the SPX Index is computed by dividing the total market value of the component stocks by the “index divisor.” By itself, the index divisor is an arbitrary number. However, in the context of the calculation of the SPX Index, it serves as a link to the original base period level of the SPX Index. The index divisor keeps the SPX Index comparable over time and is the manipulation point for all adjustments to the SPX Index, which is index maintenance.

#### Index Maintenance

Index maintenance includes monitoring and completing the adjustments for company additions and deletions, share changes, stock splits, stock dividends, and stock price adjustments due to company restructuring or spinoffs. Some corporate actions, such as stock splits and stock dividends, require changes in the common shares outstanding and the stock prices of the companies in the SPX Index, and do not require index divisor adjustments.

To prevent the level of the SPX Index from changing due to corporate actions, corporate actions which affect the total market value of the SPX Index require an index divisor adjustment. By adjusting the index divisor for the change in market value, the level of the SPX Index remains constant and does not reflect the corporate actions of individual companies in the SPX Index. Index divisor adjustments are made after the close of trading and after the calculation of the SPX Index closing level.

Changes in a company's total shares outstanding of 5% or more due to public offerings are made as soon as reasonably possible. Other changes of 5% or more (for example, due to tender offers, Dutch auctions, voluntary exchange offers, company stock repurchases, private placements, acquisitions of private companies or non-index companies that do not trade on a major exchange, redemptions, exercise of options, warrants, conversion of preferred stock, notes, debt, equity participations, at-the-market stock offerings or other recapitalizations) are made weekly, and are generally announced on Fridays for implementation after the close of trading the following Friday (one week later). If a 5% or more share change causes a company's IWF to change by five percentage points or more, the IWF is updated at the same time as the share change. IWF changes resulting from partial tender offers are considered on a case-by-case basis.

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The IWM, EFA and EEM – iShares

iShares consists of numerous separate investment portfolios (the “iShares Funds”), including each of IWM, EFA and EEM. Each of these ETFs seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of their respective Underlying Indices.

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The iShares® Russell 2000 ETF (the “IWM”)

The IWM seeks to track the investment results of the Russell 2000® Index. The shares of the IWM trade on the NYSE Arca, Inc. under the symbol “IWM.”

Russell 2000® Index

The Russell 2000® Index (Bloomberg L.P. index symbol “RTY”) was developed by Russell Investments (“Russell”) before FTSE International Limited (“FTSE”) and Russell combined in 2015 to create FTSE Russell, which is wholly owned by London Stock Exchange Group. Russell began dissemination of the RTY on January 1, 1984. The RTY was set to 135 as of the close of business on December 31, 1986. FTSE Russell calculates and publishes the RTY. 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® Index, the RTY consists of the smallest 2,000 companies included in the Russell 3000® Index. The Russell 3000® 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 Comprising the RTY

All companies eligible for inclusion in the RTY must be classified as a U.S. company under the index sponsor’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, the index sponsor 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, the index sponsor 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, the index sponsor 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. The index sponsor 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, the index sponsor 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

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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 last trading 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 and rights, installment receipts or trust receipts, are excluded from the calculation. If multiple share classes of common stock exist, they are combined. 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.

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 not eligible for inclusion in the Russell U.S. Indices. 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. On the last trading day of May, all eligible securities are ranked by their total market capitalization. The largest 4,000 become the Russell 3000E Index, and the other of the index sponsor’s indexes are determined from that set of securities. 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, the index sponsor adds initial public offerings to the RTY on a quarterly basis based on total market capitalization guidelines 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.

iShares® MSCI EAFE ETF (the “EFA”) and the iShares® MSCI Emerging Markets ETF (the “EEM”)

The iShares® MSCI EAFE ETF trades on the NYSE Arca under the ticker symbol “EFA.” Its investment advisor employs a technique known as representative sampling to track the MSCI EAFE Index. The EFA generally invests at least 90% of its assets in the securities of the MSCI EAFE Index and in American Depositary Receipts or Global Depositary Receipts based on the securities of the MSCI EAFE Index. The EFA may invest the remainder of its assets in securities not included in the MSCI EAFE Index, but which its investment advisor believes will help the EFA track the MSCI EAFE Index, or in futures contracts, options on futures contracts, other types of options and swaps related to the MSCI EAFE Index, as well as cash and cash equivalents, including shares of money market funds affiliated with its investment advisor or its affiliates. The investment advisor will waive portfolio management fees in an amount equal to the portfolio management fees of such other iShares funds for any portion of the EFA’s assets invested in shares of such other funds.

The EEM trades on the NYSE Arca under the ticker symbol “EEM.” Its investment advisor employs a technique known as representative sampling to track the MSCI Emerging Markets Index. The EEM generally invests at least 90% of its assets in the securities of the MSCI Emerging Markets Index and in American Depositary Receipts or Global Depositary Receipts based on the securities of the MSCI Emerging Markets Index. The EEM may invest the

remainder of its assets in securities not included in the MSCI Emerging Markets Index, but which its investment advisor believes will help the EEM track the MSCI Emerging Markets Index, or in futures contracts, options on futures contracts, other types of options and swaps related to the MSCI Emerging Markets Index, as well as cash and cash equivalents, including shares of money market funds affiliated with the investment advisor or its affiliates. The investment advisor will waive portfolio management fees in an amount equal to the portfolio management fees of such other iShares funds for any portion of the EEM's assets invested in shares of such other funds.

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The MSCI EAFE Index

The information below is included only to give insight to the MSCI EAFE Index, the performance of which the EFA attempts to reflect. The Notes are linked to the performance of the EFA and not to the MSCI EAFE Index. We have derived all information contained in this document regarding the MSCI EAFE Index, including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information. The MSCI EAFE Index is a stock index calculated, published and disseminated daily by MSCI, Inc. (“MSCI”), a majority-owned subsidiary of Morgan Stanley, through numerous data vendors, on the MSCI website and in real time on Bloomberg Financial Markets and Reuters Limited. Neither MSCI nor Morgan Stanley has any obligation to continue to calculate and publish, and may discontinue calculation and publication of the MSCI EAFE Index.

The MSCI EAFE Index is a free float-adjusted market capitalization index with a base date of December 31, 1969 and an initial value of 100. The MSCI EAFE Index is calculated daily in U.S. dollars and published in real time every 60 seconds during market trading hours. The MSCI EAFE Index currently consists of the following 21 developed countries: Australia, Austria, Belgium, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, The Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom. The MSCI EAFE Index is comprised of companies in both the Large Cap Index and Mid Cap Index, as discussed in the section “—Defining Market Capitalization Size Segments for Each Market” below. The MSCI EAFE Index is part of the MSCI Regional Equity Indices series and is an MSCI Global Investable Market Index, which is a family within the MSCI International Equity Indices.

The MSCI Emerging Markets Index

The information below is included only to give insight to the MSCI Emerging Markets Index, the performance of which the EEM attempts to reflect. The Notes are linked to the performance of the EEM and not to the MSCI Emerging Markets Index. We have derived all information contained in this document regarding the MSCI Emerging Markets Index, including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information. The MSCI Emerging Markets Index is a stock index calculated, published and disseminated daily by MSCI, through numerous data vendors, on the MSCI website and in real time on Bloomberg Financial Markets and Reuters Limited. Neither MSCI nor Morgan Stanley has any obligation to continue to calculate and publish, and may discontinue calculation and publication of the MSCI Emerging Markets Index.

The MSCI Emerging Markets Index is intended to measure equity market performance in the global emerging markets. The MSCI Emerging Markets Index is a free float-adjusted market capitalization index with a base date of December 31, 1987 and an initial value of 100. The MSCI Emerging Markets Index is calculated daily in U.S. dollars and published in real time every 60 seconds during market trading hours. The MSCI Emerging Markets Index currently consists of the following 23 emerging market country indices: Brazil, Chile, China, Colombia, Czech Republic, Greece, Egypt, Hungary, India, Indonesia, South Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates. The MSCI Emerging Markets Index is part of the MSCI Regional Equity Indices series and is an MSCI Global Investable Market Index, which is a family within the MSCI International Equity Indices.

General – MSCI Indices

MSCI provides global equity indices intended to measure equity performance in international markets and the MSCI International Equity Indices are designed to serve as global equity performance benchmarks. In constructing these indices, MSCI applies its index construction and maintenance methodology across developed, emerging, and frontier markets.

MSCI enhanced the methodology used in its MSCI International Equity Indices. The MSCI Standard and MSCI Small Cap Indices, along with the other MSCI equity indices based on them, transitioned to the global investable market indices methodology described below. The transition was completed at the end of May 2008. The Enhanced MSCI

Standard Indices are composed of the MSCI Large Cap and Mid Cap Indices. The MSCI Global Small Cap Index transitioned to the MSCI Small Cap Index resulting from the Global Investable Market Indices methodology and contains no overlap with constituents of the transitioned MSCI Standard Indices. Together, the relevant MSCI Large Cap, Mid Cap, and Small Cap Indices will make up the MSCI investable market index for each country, composite, sector, and style index that MSCI offers.

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Constructing the MSCI Global Investable Market Indices. MSCI undertakes an index construction process, which involves:

- defining the equity universe;
- determining the market investable equity universe for each market;
- determining market capitalization size segments for each market;
- applying index continuity rules for the MSCI Standard Index;
  - creating style segments within each size segment within each market; and
- classifying securities under the Global Industry Classification Standard (the “GICS”).

Defining the Equity Universe. The equity universe is defined by:

Identifying Eligible Equity Securities: the equity universe initially looks at securities listed in any of the countries in the MSCI Global Index Series, which will be classified as either Developed Markets (“DM”) or Emerging Markets (“EM”). All listed equity securities, including Real Estate Investment Trusts, are eligible for inclusion in the equity universe. Conversely, mutual funds, ETFs, equity derivatives and most investment trusts are not eligible for inclusion in the equity universe.

Classifying Eligible Securities into the Appropriate Country: each company and its securities (i.e., share classes) are classified in only one country.

Effective with the November 2015 semi-annual index review, companies traded outside of their country of classification (i.e., “foreign listed companies”) became eligible for inclusion in the MSCI Country Investable Market Indexes along with the applicable MSCI Global Index. In order for a MSCI Country Investable Market Index to be eligible to include foreign listed companies, it must meet the Foreign Listing Materiality Requirement. To meet the Foreign Listing Materiality Requirement, the aggregate market capitalization of all securities represented by foreign listings should represent at least (i) 5% of the free float-adjusted market capitalization of the relevant MSCI Country Investable Market Index and (ii) 0.05% of the free-float adjusted market capitalization of the MSCI ACWI Investable Market Index.

Determining the Market Investable Equity Universes. A market investable equity universe for a market is derived by applying investability screens to individual companies and securities in the equity universe that are classified in that market. A market is equivalent to a single country, except in DM Europe, where all DM countries in Europe are aggregated into a single market for index construction purposes. Subsequently, individual DM Europe country indices within the MSCI Europe Index are derived from the constituents of the MSCI Europe Index under the global investable market indices methodology.

The investability screens used to determine the investable equity universe in each market are as follows:

Equity Universe Minimum Size Requirement: this investability screen is applied at the company level. In order to be included in a market investable equity universe, a company must have the required minimum full market capitalization.

Equity Universe Minimum Free Float–Adjusted Market Capitalization Requirement: this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have a free float–adjusted market capitalization equal to or higher than 50% of the equity universe minimum size requirement.

DM and EM Minimum Liquidity Requirement: This investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security must have adequate liquidity. The twelve-month and three-month Annual Traded Value Ratio (“ATVR”), a measure that screens out extreme daily trading volumes and takes into account the free float–adjusted market capitalization size of securities, together with the three-month frequency of trading are used to measure liquidity. A minimum liquidity level of 20% of three- and

twelve-month ATVR and 90% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of a DM, and a minimum liquidity level of

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15% of three- and twelve-month ATVR and 80% of three-month frequency of trading over the last four consecutive quarters are required for inclusion of a security in a market investable equity universe of an EM.

**Global Minimum Foreign Inclusion Factor Requirement:** this investability screen is applied at the individual security level. To be eligible for inclusion in a market investable equity universe, a security's Foreign Inclusion Factor ("FIF") must reach a certain threshold. The FIF of a security is defined as the proportion of shares outstanding that is available for purchase in the public equity markets by international investors. This proportion accounts for the available free float of and/or the foreign ownership limits applicable to a specific security (or company). In general, a security must have an FIF equal to or larger than 0.15 to be eligible for inclusion in a market investable equity universe.

**Minimum Length of Trading Requirement:** this investability screen is applied at the individual security level. For an initial public offering ("IPO") to be eligible for inclusion in a market investable equity universe, the new issue must have started trading at least three months before the implementation of a semi-annual index review (as described below). This requirement is applicable to small new issues in all markets. Large IPOs are not subject to the minimum length of trading requirement and may be included in a market investable equity universe and the Standard Index outside of a Quarterly or Semi-Annual Index Review.

**Minimum Foreign Room Requirement:** this investability screen is applied at the individual security level.

For a security that is subject to a foreign ownership limit to be eligible for inclusion in a market investable equity universe, the proportion of shares still available to foreign investors relative to the maximum allowed (referred to as "foreign room") must be at least 15%.

**Defining Market Capitalization Size Segments for Each Market.** Once a market investable equity universe is defined, it is segmented into the following size-based indices:

- Investable Market Index (Large + Mid + Small);
- Standard Index (Large + Mid);
- Large Cap Index;
- Mid Cap Index; or
- Small Cap Index.

Creating the size segment indices in each market involves the following steps:

- defining the market coverage target range for each size segment;
- determining the global minimum size range for each size segment;
- determining the market size segment cutoffs and associated segment number of companies;
- assigning companies to the size segments; and
- applying final size-segment investability requirements.

**Index Continuity Rules for the Standard Indices.** In order to achieve index continuity, as well as to provide some basic level of diversification within a market index, and notwithstanding the effect of other index construction rules described in this section, a minimum number of five constituents will be maintained for a DM Standard Index and a minimum number of three constituents will be maintained for an EM Standard Index.

**Creating Style Indices within Each Size Segment.** All securities in the investable equity universe are classified into value or growth segments using the MSCI Global Value and Growth methodology.

**Classifying Securities under the Global Industry Classification Standard.** All securities in the global investable equity universe are assigned to the industry that best describes their business activities. To this end, MSCI has designed, in conjunction with S&P Dow Jones Indexes, the GICS. Under the GICS, each company is assigned to one sub-industry

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according to its principal business activity. Therefore, a company can belong to only one industry grouping at each of the four levels of the GICS.

Index Maintenance

The MSCI Global Investable Market Indices are maintained with the objective of reflecting the evolution of the underlying equity markets and segments on a timely basis, while seeking to achieve index continuity, continuous investability of constituents and replicability of the indices, index stability and low index turnover. In particular, index maintenance involves:

- (i) Semi-Annual Index Reviews (“SAIRs”) in May and November of the Size Segment and Global Value and Growth Indices which include:
- updating the indices on the basis of a fully refreshed equity universe;
  - taking buffer rules into consideration for migration of securities across size and style segments; and
  - updating FIFs and Number of Shares (“NOS”).
- (ii) Quarterly Index Reviews in February and August of the Size Segment Indices aimed at:
- including significant new eligible securities (such as IPOs that were not eligible for earlier inclusion) in the index;
  - allowing for significant moves of companies within the Size Segment Indices, using wider buffers than in the SAIR;
  - and
  - reflecting the impact of significant market events on FIFs and updating NOS.
- (iii) Ongoing Event-Related Changes: changes of this type are generally implemented in the indices as they occur. Significantly large IPOs are included in the indices after the close of the company’s tenth day of trading. None of us, RBCCM or any of our other affiliates accepts any responsibility for the calculation, maintenance, or publication of, or for any error, omission, or disruption in, the index or any successor to the index.

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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 prospectus supplement under “Use of Proceeds.” We or our affiliates may also use those proceeds in transactions intended to hedge our obligations under the Notes as described below.

In anticipation of the sale of the Notes, we or our affiliates expect to enter into hedging transactions involving purchases of securities or other assets relating to the Index and/or listed and/or over-the-counter derivative instruments relating to the Index prior to or on the Trade Date. From time to time, we or our affiliates may enter into additional hedging transactions or unwind those we have entered into. In this regard, we or our affiliates may:

- acquire or dispose of assets relating to the Index 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 Index or its components; or
- any combination of the above two.

We or our affiliates may acquire a long or short position in the Notes or securities similar to the Notes from time to time. We 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 Valuation Date. That step may involve sales or purchases of the Index or its components or over-the-counter derivative instruments linked to those assets.

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

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

#### Supplemental U.S. Tax Considerations

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus under “Tax Consequences – United States Taxation” and prospectus supplement under “Certain Income Tax Consequences – United States Taxation” with respect to U.S. holders (as defined in the accompanying prospectus). It applies only to those initial holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. It does not apply to holders subject to special rules including holders subject to Section 451(b) of the Code. You should consult with your own tax advisor concerning the consequences of investing in and holding the Notes.

**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.**

In the opinion of our special tax counsel, Mayer Brown LLP, it would generally be reasonable to treat the Notes as pre-paid cash-settled derivative contracts in respect of the Index 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, a U.S. holder should generally recognize capital gain or loss upon the sale, exchange 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.

By purchasing the Notes, a holder represents that it does not own an equity interest in the Index Calculation Agent, does not hold the Notes as part of a “straddle” and that such holder’s purchase of the Notes is not part of a strategy of holding property and entering into a contract to sell such property (or substantially identical property).

We will not attempt to ascertain whether the issuer of any of the component stocks included in the Underlying Indices would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Code, or a “United States real property holding corporation” within the meaning of Section 897 of the Code. If the issuer of one or more of such stocks 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 by the issuers of the component stocks included in the Underlying Indices and consult your tax advisor regarding the possible consequences to you in this regard.

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 would also be possible to treat a Note, and the Internal Revenue Service might assert that a Note should be treated, as a single debt instrument. Pursuant to such characterization, since 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

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holder will not receive any payments from us prior to maturity. In addition, any gain a holder might recognize upon the sale, exchange or maturity of the Notes would be ordinary income, and any loss recognized by a holder at such time would be ordinary loss to the extent of interest included in income in the current or previous taxable years in respect of the Notes, and thereafter, would be capital loss.

Because of the absence of authority regarding the appropriate tax characterization of the Notes, it is also possible that the Internal Revenue Service could seek to characterize the Notes in a manner that results in tax consequences that are different from those described above. For example, the Internal Revenue Service could possibly assert that any gain or loss that a holder may recognize upon the sale, exchange or maturity of the Notes should be treated as ordinary gain or loss. In addition, it is possible that the Internal Revenue Service could require a holder to include amounts attributable to the Federal Funds (Effective) Rate as ordinary income, or as current income over the life of the Notes, or both.

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 such as 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 very generally can 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. We intend to treat the Notes for U.S. federal income tax purposes in accordance with the treatment described in this document 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.** Please see the discussion under “Tax Consequences — United States Taxation — Information Reporting and Backup Withholding” in the accompanying prospectus for a description of the applicability of the backup withholding and information reporting rules to payments made on the Notes.

**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 described 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, exchange 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.

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. Although the Internal Revenue Service has issued guidance that states that the U.S. Treasury Department and the Internal Revenue Service intend to amend the effective dates of the U.S. Treasury Department regulations to provide that withholding on dividend equivalent payments will not apply to specified ELIs that are not delta-one instruments and that are issued before January 1, 2021, we have determined that the Notes may be delta-one instruments. In addition, U.S. Treasury

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Department regulations provide that a “qualified index” (as defined in the applicable U.S. Treasury Department regulations) is treated for these purposes as a single security that is not an underlying security. Based on our determination that each Underlying Index is a qualified index, non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the Notes because the Notes should not be treated as referencing an underlying security. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Index or the component stocks 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.

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 on 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) will impose a 30% U.S. withholding tax on certain U.S.–source payments, including interest (and original issue discount), dividends, and other fixed or determinable annual or periodical gain, profits, and income (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. We will not pay any additional amounts in respect of any FATCA withholding. Therefore, if such withholding applies, any payments on the Notes will be significantly less than what you would have otherwise received. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the Notes.

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

On the Trade Date, we will sell a specified portion of the aggregate principal amount that will be set forth on the cover page of the final pricing supplement relating to the Notes. In connection with such sales, RBCCM will receive a commission equal to 0.25% of the principal amount.

Additional Notes may be offered and sold after the Trade Date from time to time through RBCCM and one or more dealers at a price that is higher or lower than the \$1,000 principal amount per Note, with an offering price that is related to the Indicative Note Value at that time. We will receive proceeds equal to 100% of the price that the Notes are sold to the public, less any commissions paid to RBCCM or any other dealer. We do not expect such commissions to exceed 0.25% of the principal amount. We may not sell the full amount of the Notes that will be set forth on the cover page of the final pricing supplement, and we may discontinue sales of the Notes at any time.

The Notes sold on the Trade Date will be issued on or about June 6, 2019, which is the third (3rd) business day following the Trade Date (this settlement cycle being referred to as “T+3”). We may make subsequent sales of the

Notes that will have an issue date that is three or more business days after the date of sale. Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes more than two business days prior to the applicable original issue date will be required to specify alternative arrangements to prevent a failed settlement.

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Rules Based Investment  
Securities Linked to the RBC  
Global Tactical Equity Total  
Return Index

For additional information as to the relationship between us and RBCCM, please see the section “Plan of Distribution—Conflicts of Interest” in the prospectus dated September 7, 2018.

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.

No Prospectus (as defined in Directive 2003/71/EC (as amended, the “Prospectus Directive”)) will be prepared in connection with the Notes. Accordingly, the Notes may not be offered to the public in any member state of the European Economic Area (the “EEA”), and any purchaser of the Notes who subsequently sells any of the 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.

#### STRUCTURING THE NOTES

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

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

The lower implied borrowing rate is a factor that reduces the economic terms of the Notes to you. The initial offering price of the Notes also reflects our estimated hedging costs. These factors result in the initial estimated value for the Notes on the Trade Date being less than their public offering price. See “Selected Risk Considerations—The Initial Estimated Value of the Notes Will Be Less than the Price to the Public” above.



Annex A

NOTICE OF EARLY REDEMPTION

To: [ ] .com

Subject: Notice of Early Redemption, CUSIP No.: 78013X7H5

[BODY OF EMAIL]

Name of broker: [ ]

Name of beneficial holder: [ ]

Principal amount of Notes to be redeemed: \$[ ]

Applicable Early Redemption Notice Date: [ ], 20[ ]<sup>1</sup>

Broker Contact Name: [ ]

Broker Telephone #: [ ]

Broker DTC # (and any relevant sub-account): [ ]

The undersigned acknowledges that in addition to any other requirements specified in the pricing supplement relating to the Notes being satisfied, the Notes will not be redeemed unless (i) this notice of redemption is delivered to RBC Capital Markets, LLC (“RBC Capital Markets”) by 12:00 p.m. (New York City time) on the applicable Index Business Day; (ii) the confirmation, as completed and signed by the undersigned is delivered to RBC Capital Markets, LLC by 5:00 p.m. (New York City time) on the same day the notice of redemption is delivered; (iii) the undersigned has booked a delivery vs. payment (“DVP”) trade on the applicable Index Business Day, facing RBC Capital Markets, LLC DTC 235 and (iv) the undersigned instructs DTC to deliver the DVP trade to RBC Capital Markets, LLC as booked for settlement via DTC at or prior to 10:00 a.m. (New York City time) on the applicable Early Redemption Date.

The undersigned further acknowledges that the undersigned has read the section “Risk Factors — You Will Not Know the Early Redemption Amount at the Time You Elect to Request That We Redeem Your Notes” in the pricing supplement relating to the Notes, and the undersigned understands that it will be exposed to market risk on the Early Redemption Notice Date.

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[Beneficial Holder]

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<sup>1</sup> Subject to adjustment as described in the pricing supplement relating to the notes.

Annex B

**BROKER'S CONFIRMATION OF REDEMPTION**

[TO BE COMPLETED BY BROKER]

Dated:

RBC Capital Markets, LLC

e-mail: [ ]

To Whom It May Concern:

The holder of \$[ ] Rules Based Investment Securities Linked to the RBC Global Tactical Equity Total Return Index, due December 31, 2039, CUSIP No. 78013X7H5 (the "Notes") hereby irrevocably elects to receive a cash payment on the Early Redemption Date\* of [holder to specify] with respect to the number of Notes indicated below, as of the date hereof, the redemption right as described in the pricing supplement relating to the Notes (the "Pricing Supplement"). Terms not defined herein have the meanings given to such terms in the Pricing Supplement.

The undersigned certifies to you that it will (i) book a DVP trade on the applicable Early Redemption Notice Date with respect to the number of Notes specified below at a price per Note equal to the Early Redemption Amount, facing RBC Capital Markets, LLC DTC 235 and (ii) deliver the trade as booked for settlement via DTC at or prior to 10:00 a.m. (New York City time) on the applicable Early Redemption Date.

The undersigned acknowledges that in addition to any other requirements specified in the Pricing Supplement being satisfied, the Notes will not be redeemed unless (i) this confirmation is delivered to RBC Capital Markets, LLC by 5:00 p.m. (New York City time) on the same day the notice of redemption is delivered; (ii) the undersigned has booked a DVP trade on the applicable Early Redemption Notice Date, facing RBC Capital Markets, LLC DTC 235; and (iii) the undersigned will deliver the DVP trade to RBC Capital Markets, LLC as booked for settlement via DTC at or prior to 10:00 a.m. (New York City time) on the applicable Early Redemption Date.

Very truly yours,

[NAME OF DTC PARTICIPANT HOLDER]

Name:

Title:

Telephone:

Fax:

E-mail:

Number of Notes surrendered for redemption:

DTC # (and any relevant sub-account):

Contact Name:

Telephone:

Fax:

E-mail:

(At least \$5,000 in principal amount of the Notes must be redeemed at one time to receive a cash payment on any Early Redemption Date.)

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\* Subject to adjustment, as described in the pricing supplement relating to the notes.

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