

ROYAL BANK OF CANADA  
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Product Supplement No. EQUITY INDICES ARN-1  
(To Prospectus dated September 7, 2018  
and Series H Prospectus Supplement dated September 7, 2018)  
March 28, 2019

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### Accelerated Return Notes® “ARN®” Linked to One or More Equity Indices

The ARNs are unsecured senior debt securities issued by Royal Bank of Canada. Any payments due on the ARNs, including any repayment of principal, will be subject to the credit risk of Royal Bank of Canada.

The ARNs do not guarantee the return of principal at maturity, and we will not pay interest on the ARNs. Instead, the return on the ARNs will be based on the performance of an underlying “Market Measure,” which will be an equity index or a basket of equity indices.

The ARNs provide an opportunity to earn a multiple (which will be 3 times, unless otherwise set forth in the applicable term sheet (as defined below)) of the positive performance of the Market Measure, up to a specified cap (the “Capped Value”), while exposing you to any negative performance of the Market Measure on a 1-to-1 basis. If the value of the Market Measure increases from its Starting Value to its Ending Value (each as defined below), you will receive at maturity a cash payment per unit (the “Redemption Amount”) that equals the principal amount plus a multiple of that increase, up to the Capped Value.

If the value of the Market Measure decreases from its Starting Value to its Ending Value, you will be subject to 1-to-1 downside exposure to that decrease. In such case, you may lose all or a significant portion of the principal amount of your ARNs.

This product supplement describes the general terms of the ARNs, the risk factors to consider before investing, the general manner in which they may be offered and sold, and other relevant information.

For each offering of the ARNs, we will provide you with a pricing supplement (which we refer to as a “term sheet”) that will describe the specific terms of that offering, including the specific Market Measure and the Capped Value, and certain risk factors. The term sheet will identify, if applicable, any additions or changes to the terms specified in this product supplement.

The ARNs will be issued in denominations of whole units. Unless otherwise set forth in the applicable term sheet, each unit will have a principal amount of \$10. The term sheet may also set forth a minimum number of units that you must purchase.

Unless otherwise specified in the applicable term sheet, the ARNs will not be listed on a securities exchange or quotation system.

Merrill Lynch, Pierce, Fenner & Smith Incorporated (“MLPF&S”) and one or more of its affiliates may act as our agents to offer the ARNs, and MLPF&S will act in a principal capacity in such role.

The ARNs are unsecured and are not savings accounts or insured deposits of a bank. The ARNs are not insured by the Canada Deposit Insurance Corporation, the U.S. Federal Deposit Insurance Corporation (the “FDIC”) or any other Canadian or U.S. governmental agency or instrumentality. Potential purchasers of the ARNs should consider the information in “Risk Factors” beginning on page PS-6 of this product supplement, page S-1 of the accompanying Series H prospectus supplement, and page 1 of the accompanying prospectus. You may lose all or a significant portion of your investment in the ARNs.

None of the Securities and Exchange Commission (the “SEC”), any state securities commission, or any other regulatory body has approved or disapproved of these securities or passed upon the adequacy or accuracy of this product

supplement, the prospectus supplement, or the prospectus. Any representation to the contrary is a criminal offense.  
Merrill Lynch & Co.

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ARNs® and “Accelerated Return Note®” are registered service marks of Bank of America Corporation, the parent corporation of MLPF&S.

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## SUMMARY

The information in this “Summary” section is qualified in its entirety by the more detailed explanation set forth elsewhere in this product supplement, the prospectus supplement, and the prospectus, as well as the applicable term sheet. Neither we nor MLPF&S have authorized any other person to provide you with any information different from the information set forth in these documents. If anyone provides you with different or inconsistent information about the ARNs, you should not rely on it.

### Key Terms:

- The ARNs are senior debt securities issued by Royal Bank of Canada, and are not guaranteed or insured by the Canada Deposit Insurance Corporation or the FDIC, or secured by collateral. They rank equally with all of our other unsecured senior debt from time to time outstanding. Any payments due on the ARNs, including any repayment of principal, are subject to our credit risk.
- General:** The return on the ARNs will be based on the performance of a Market Measure and there is no guaranteed return of principal at maturity. Therefore, you may lose all or a significant portion of your investment if the value of the Market Measure decreases from the Starting Value to the Ending Value. Each issue of the ARNs will mature on the date set forth in the applicable term sheet. We cannot redeem the ARNs at any earlier date. We will not make any payments on the ARNs until maturity, and you will not receive any interest payments.
- The Market Measure may consist of one or more of the following:
- U.S. broad-based equity indices;
  - U.S. sector or style-based equity indices;
  - non-U.S. or global equity indices; or
  - any combination of the above.
- Market Measure:** The Market Measure may consist of a group, or “Basket,” of the foregoing. We refer to each equity index included in any Basket as a “Basket Component.” If the Market Measure to which your ARNs are linked is a Basket, the Basket Components will be set forth in the applicable term sheet.
- The performance of the Market Measure will be measured according to the percentage change of the Market Measure from its Starting Value to its Ending Value.
- Unless otherwise specified in the applicable term sheet:
- Market Measure Performance:** The “Starting Value” will be the closing level of the Market Measure on the date when the ARNs are priced for initial sale to the public (the “pricing date”).
- If the Market Measure consists of a Basket, the Starting Value will be equal to 100. See “Description of the ARNs—Basket Market Measures.”
- The “Ending Value” will equal the average of the closing levels of the Market Measure on each calculation day during the Maturity Valuation Period (each as defined below).
- If the Market Measure consists of a Basket, the Ending Value will be determined as

described in “Description of the ARNs—Basket Market Measures—Ending Value of the Basket.”

If a Market Disruption Event (as defined below) occurs and is continuing on a scheduled calculation day, or if certain other events occur, the calculation agent will determine the Ending Value as set forth in the section “Description of the ARNs—The Starting Value and the Ending Value—Ending Value” and “—Basket Market Measures—Ending Value of the Basket.”

- Participation Rate: The rate at which investors participate in any increase in the value of the Market Measure, as calculated below. The Participation Rate will be 300% for ARNs, unless otherwise set forth in the applicable term sheet.
- Capped Value: The maximum Redemption Amount. Your investment return is limited to the return represented by the Capped Value specified in the applicable term sheet. We will determine the applicable Capped Value on the pricing date of each issue of ARNs.
- Redemption Amount at Maturity: At maturity, you will receive a Redemption Amount that is greater than the principal amount if the value of the Market Measure increases from the Starting Value to the Ending Value. However, in no event will the Redemption Amount exceed the Capped Value. If the value of the Market Measure decreases from the Starting Value to the Ending Value, you will be subject to 1-to-1 downside exposure to that decrease, and will receive a Redemption Amount that is less than the principal amount.
- Any payments due on the ARNs, including any repayment of principal, are subject to our credit risk as issuer of the ARNs.
- The Redemption Amount, denominated in U.S. dollars, will be calculated as follows:
- Principal at Risk: You may lose all or a significant portion of the principal amount of the ARNs. Further, if you sell your ARNs prior to maturity, you may find that the market value per the ARN is less than the price that you paid for the ARNs.
- Calculation Agent: The calculation agent will make all determinations associated with the ARNs. Unless otherwise set forth in the applicable term sheet, we will appoint MLPF&S or one of its affiliates to act as calculation agent for the ARNs. See the section entitled “Description of the ARNs—Role of the Calculation Agent.”
- Agents: MLPF&S and one or more of its affiliates will act as our agents in connection with each offering of the ARNs and will receive an underwriting discount based on the number of

units of the ARNs sold. None of the agents is your fiduciary or advisor solely as a result of the making of any offering of the ARNs, and you should not rely upon this product supplement, the term sheet, or the accompanying prospectus or prospectus supplement as investment advice or a recommendation to purchase the ARNs.

Listing: Unless otherwise specified in the applicable term sheet, the ARNs will not be listed on a securities exchange or quotation system.

This product supplement relates only to the ARNs and does not relate to any equity index that comprises the Market Measure described in any term sheet. You should read carefully the entire prospectus, prospectus supplement, and product supplement, together with the applicable term sheet, to understand fully the terms of your ARNs, as well as the tax and other considerations important to you in making a decision about whether to invest in any ARNs. In particular, you should review carefully the sections in this product supplement and the accompanying prospectus supplement and prospectus entitled "Risk Factors," which highlight a number of risks of an investment in the ARNs, to determine whether an investment in the ARNs is appropriate for you. If information in this product supplement is inconsistent with the prospectus or prospectus supplement, this product supplement will supersede those documents. However, if information in any term sheet is inconsistent with this product supplement, that term sheet will supersede this product supplement.

Neither we nor any agent is making an offer to sell the ARNs in any jurisdiction where the offer or sale is not permitted.

Certain capitalized terms used and not defined in this product supplement have the meanings ascribed to them in the prospectus supplement and prospectus. Unless otherwise indicated or unless the context requires otherwise, all references in this product supplement to "we," "us," "our," or similar references are to Royal Bank of Canada.

You are urged to consult with your own attorneys and business and tax advisors before making a decision to purchase any ARNs.

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## RISK FACTORS

Your investment in the ARNs is subject to investment risks, many of which differ from those of a conventional debt security. Your decision to purchase the ARNs should be made only after carefully considering the risks, including those discussed below, in light of your particular circumstances. The ARNs are not an appropriate investment for you if you are not knowledgeable about the material terms of the ARNs or investments in equity or equity-based securities in general.

### General Risks Relating to the ARNs

Your investment may result in a loss; there is no guaranteed return of principal. There is no fixed principal repayment amount on the ARNs at maturity. The return on the ARNs will be based on the performance of a Market Measure and therefore, you may lose all or a significant portion of your investment if the value of the Market Measure decreases from the Starting Value to the Ending Value.

Your return on the ARNs may be less than the yield on a conventional fixed or floating rate debt security of comparable maturity. There will be no periodic interest payments on the ARNs as there would be on a conventional fixed-rate or floating-rate debt security having the same maturity. Any return that you receive on the ARNs may be less than the return you would earn if you purchased a conventional debt security with the same maturity date. As a result, your investment in the ARNs may not reflect the full opportunity cost to you when you consider factors, such as inflation, that affect the time value of money.

Your investment return is limited to the return represented by the Capped Value and may be less than a comparable investment directly in the Market Measure. The appreciation potential of ARNs is limited to the Capped Value. You will not receive a Redemption Amount greater than the Capped Value, regardless of the appreciation of the Market Measure. In contrast, a direct investment in the Market Measure (or the securities included in the Market Measure) would allow you to receive the full benefit of any appreciation in the value of the Market Measure (or those underlying securities).

In addition, unless otherwise set forth in the applicable term sheet, the Ending Value will not reflect the value of dividends paid, or distributions made, on the securities included in the Market Measure or any other rights associated with those securities. Thus, any return on the ARNs will not reflect the return you would realize if you actually owned the securities underlying the Market Measure.

Additionally, the Market Measure may consist of one or more equity indices that include securities traded in a non-U.S. currency and are calculated in such non-U.S. currency. If the value of that currency strengthens against the U.S. dollar during the term of your ARNs, you may not obtain the benefit of that increase, which you would have received if you had owned the securities included in the index or indices.

Payments on the ARNs are subject to our credit risk, and actual or perceived changes in our creditworthiness are expected to affect the value of the ARNs. The ARNs are our senior unsecured debt securities. As a result, your receipt of the Redemption Amount at maturity is dependent upon our ability to repay our obligations on the maturity date, regardless of whether the Market Measure increases from the Starting Value to the Ending Value. No assurance can be given as to what our financial condition will be on the maturity date. If we become unable to meet our financial obligations as they become due, you may not receive the amounts payable under the terms of the ARNs.

In addition, our credit ratings are an assessment by ratings agencies of our ability to pay our obligations. Consequently, our perceived creditworthiness and actual or anticipated decreases in our credit ratings or increases in the spread between the yield on our securities and the yield on U.S. Treasury securities (the “credit spread”) prior to the maturity date may adversely affect the market value of the ARNs. However, because your return on the ARNs depends upon factors in addition to our ability to pay our obligations, such as the value of the Market Measure, an improvement in our credit ratings will not reduce the other investment risks related to the ARNs.

The initial estimated value of the ARNs considers certain assumptions and variables and relies in part on certain forecasts about future events, which may prove to be incorrect. The initial estimated value of the ARNs, which will be set forth in the applicable term sheet, is an estimate only, determined as of a particular point in time by reference to our and our affiliates’ pricing models. These pricing models consider certain assumptions and variables, including our credit spreads, our internal funding rate on the pricing date, mid-market terms on hedging transactions, expectations on interest rates and volatility, price-sensitivity analysis, and the expected term of the ARNs. These pricing models rely in part on certain forecasts about future events, which may prove to be incorrect.

The public offering price you pay for the ARNs will exceed the initial estimated value. If you attempt to sell the ARNs prior to maturity, their market value may be lower than the price you paid for them and lower than the initial estimated value. This is due to, among other things, changes in the value of the Market Measure, the internal funding rate we pay to issue market-linked notes, and the inclusion in the public offering price of the underwriting discount and an expected hedging related charge. These factors, together with various credit, market and economic factors over the term of the ARNs, are expected to reduce the price at which you may be able to sell the ARNs in any secondary market and will affect the value of the ARNs in complex and unpredictable ways.

The initial estimated value does not represent a minimum or maximum price at which we, MLPF&S or any of our respective affiliates would be willing to purchase your ARNs in any secondary market (if any exists) at any time. The value of your ARNs at any time after issuance will vary based on many factors that cannot be predicted with accuracy, including the performance of the Market Measure, our creditworthiness and changes in market conditions.

We cannot assure you that there will be a trading market for your ARNs. If a secondary market exists, we cannot predict how the ARNs will trade, or whether that market will be liquid or illiquid. The development of a trading market for the ARNs will depend on various factors, including our financial performance and changes in the value of the Market Measure. The number of potential buyers of your ARNs in any secondary market may be limited. There is no assurance that any party will be willing to purchase your ARNs at any price in any secondary market.

We anticipate that one or more of the agents or their affiliates will act as a market-maker for the ARNs, but none of them is required to do so and may cease to do so at any time. Any price at which an agent or its affiliates may bid for, offer, purchase, or sell any ARNs may be higher or lower than the applicable public offering price, and that price may differ from the values determined by pricing models that it may use, whether as a result of dealer discounts, mark-ups, or other transaction costs. These bids, offers, or transactions may adversely affect the prices, if any, at which the ARNs might otherwise trade in the market. In addition, if at any time any entity were to cease acting as a market-maker for any issue of the ARNs, it is likely that there would be significantly less liquidity in that secondary market. In such a case, the price at which those ARNs could be sold likely would be lower than if an active market existed.

Unless otherwise stated in the term sheet, we will not list the ARNs on any securities exchange or quotation system. Even if an application were made to list your ARNs, we cannot assure you that the application will be approved or that your ARNs will be listed and, if listed, that they will remain listed for their entire term. The listing of the ARNs on any securities exchange or quotation system will not necessarily ensure that a trading market will develop, and if a trading market does develop, that there will be liquidity in the trading market.

The Redemption Amount will not reflect changes in the value of the Market Measure that occur other than during the Maturity Valuation Period. Changes in the value of the Market Measure during the term of the ARNs other than during the Maturity Valuation Period will not be reflected in the calculation of the Redemption Amount. To calculate the Redemption Amount, the calculation agent will compare only the Ending Value to the Starting Value. No other values of the Market Measure will be taken into account. As a result, even if the value of the Market Measure has increased at certain times during the term of the ARNs, you will receive a Redemption Amount that is less than the principal amount if the Ending Value is less than the Starting Value.

If your ARNs are linked to a Basket, changes in the levels of one or more of the Basket Components may be offset by changes in the levels of one or more of the other Basket Components. The Market Measure of your ARNs may be a Basket. In such a case, changes in the levels of one or more of the Basket Components may not correlate with changes in the levels of one or more of the other Basket Components. The levels of one or more Basket Components may increase, while the levels of one or more of the other Basket Components may decrease or not increase as much. Therefore, in calculating the value of the Market Measure at any time, increases in the level of one Basket Component may be moderated or wholly offset by decreases or lesser increases in the levels of one or more of the other Basket Components. If the weightings of the applicable Basket Components are not equal, adverse changes in the levels of the Basket Components which are more heavily weighted could have a greater impact upon the value of the Market Measure and, consequently, the return on your ARNs.

The respective publishers of the applicable indices may adjust those indices in a way that affects their levels, and these publishers have no obligation to consider your interests. Unless otherwise specified in the term sheet, we, the agents and our respective affiliates have no affiliation with any publisher of an index to which your ARNs are linked (each, an "Index Publisher"). Consequently, we have no control over the actions of any Index Publisher. The Index Publisher can add, delete, or substitute the components included in that index or make other methodological changes that could change its level. A new security included in an index may perform significantly better or worse than the replaced security, and the performance will impact the level of the applicable index. Additionally, an Index Publisher may alter, discontinue, or suspend calculation or dissemination of an index. Any of these actions could adversely affect the value of your ARNs. The Index Publishers will have no obligation to consider your interests in calculating or revising any index.

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Exchange rate movements may adversely impact the value of the ARNs. If any security included in a Market Measure is traded in a currency other than U.S. dollars and, for purposes of the applicable index, is converted into U.S. dollars, then the value of the Market Measure may depend in part on the relevant exchange rates. If the value of the U.S. dollar strengthens against the currencies of that index, the level of the applicable index may be adversely affected and the Redemption Amount may be reduced. Exchange rate movements may be particularly impacted by existing and expected rates of inflation and interest rate levels; political, civil or military unrest; the balance of payments between countries; and the extent of governmental surpluses or deficits in the relevant countries and the United States. All of these factors are in turn sensitive to the monetary, fiscal, and trade policies pursued by the governments of those countries and the United States and other countries important to international trade and finance.

If you attempt to sell the ARNs prior to maturity, their market value, if any, will be affected by various factors that interrelate in complex ways, and their market value may be less than the principal amount. The ARNs are not designed to be short-term trading instruments. You have no right to have your ARNs redeemed prior to maturity. If you wish to liquidate your investment in the ARNs prior to maturity, your only option would be to sell them. At that time, there may be an illiquid market for your ARNs or no market at all. Even if you were able to sell your ARNs, there are many factors outside of our control that may affect their market value, some of which, but not all, are stated below. The impact of any one factor may be offset or magnified by the effect of another factor. The following paragraphs describe a specific factor's expected impact on the market value of the ARNs, assuming all other conditions remain constant.

**Value of the Market Measure.** We anticipate that the market value of the ARNs prior to maturity generally will depend to a significant extent on the value of the Market Measure. In general, it is expected that the market value of the ARNs will decrease as the value of the Market Measure decreases, and increase as the value of the Market Measure increases. However, as the value of the Market Measure increases or decreases, the market value of the ARNs is not expected to increase or decrease at the same rate. If you sell your ARNs when the value of the Market Measure is less than, or not sufficiently above the applicable Starting Value, then you may receive less than the principal amount of your ARNs.

In addition, because the Redemption Amount will not exceed the applicable Capped Value, we do not expect that the ARNs will trade in any secondary market at a price that is greater than the Capped Value.

**Volatility of the Market Measure.** Volatility is the term used to describe the size and frequency of market fluctuations. Increases or decreases in the volatility of the Market Measure may have an adverse impact on the market value of the ARNs. Even if the value of the Market Measure increases after the applicable pricing date, if you are able to sell your ARNs before their maturity date, you may receive substantially less than the amount that would be payable at maturity based on that value because of the anticipation that the value of the Market Measure will continue to fluctuate until the Ending Value is determined.

**Economic and Other Conditions Generally.** The general economic conditions of the capital markets in the United States, as well as geopolitical conditions and other financial, political, regulatory, and judicial events and related uncertainties that affect stock markets generally, may adversely affect the value of the Market Measure and the market value of the ARNs. If the Market Measure includes one or more indices that have

returns that are calculated based upon securities prices in one or more non-U.S. markets (a “non-U.S. Market Measure”), the value of your ARNs may also be adversely affected by similar events in the markets of the relevant foreign countries.

**Interest Rates.** We expect that changes in interest rates will affect the market value of the ARNs. In general, if U.S. interest rates increase, we expect that the market value of the ARNs will decrease, and conversely, if U.S. interest rates decrease, we expect that the market value of ARNs will increase. In general, we expect that the longer the amount of time that remains until maturity, the more significant the impact of these changes will be on the value of the ARNs. In the case of non-U.S. Market Measures, the level of interest rates in the relevant foreign countries may also affect their economies and in turn the value of the non-U.S. Market Measure, and, thus, the market value of the ARNs may be adversely affected.

**Dividend Yields.** In general, if cumulative dividend yields on the securities included in the Market Measure increase, we anticipate that the market value of the ARNs will decrease; conversely, if those dividend yields decrease, we anticipate that the market value of your ARNs will increase.

**Exchange Rate Movements and Volatility.** If the Market Measure of your ARNs includes any non-U.S. Market Measures, changes in, and the volatility of, the exchange rates between the U.S. dollar and the relevant non-U.S. currency or currencies could have an adverse impact on the value of your ARNs, and the Redemption Amount may depend in part on the relevant exchange rates. In addition, the correlation between the relevant exchange rate and any applicable non-U.S. Market Measure reflects the extent to which a percentage change in that exchange rate corresponds to a percentage change in the applicable non-U.S. Market Measure, and changes in these correlations may have an adverse impact on the value of your ARNs.

**Our Financial Condition and Creditworthiness.** Our perceived creditworthiness, including any increases in our credit spreads and any actual or anticipated decreases in our credit ratings, may adversely affect the market value of the ARNs. In general, we expect the longer the amount of time that remains until maturity, the more significant the impact will be on the value of the ARNs. However, a decrease in our credit spreads or an improvement in our credit ratings will not necessarily increase the market value of the ARNs.

**Time to Maturity.** There may be a disparity between the market value of the ARNs prior to maturity and their value at maturity. This disparity is often called a time “value,” “premium,” or “discount,” and reflects expectations concerning the value of the Market Measure prior to the maturity date. As the time to maturity decreases, this disparity may decrease, such that the value of the ARNs will approach the expected Redemption Amount to be paid at maturity.

**Trading and hedging activities by us, the agents, and our respective affiliates may affect your return on the ARNs and their market value.** We, the agents, and our respective affiliates may buy or sell the securities included in the Market Measure, futures, options contracts or exchange-traded instruments on the Market Measure or its component securities, or other listed or over-the counter derivative instruments linked to the Market Measure or its component securities. We, the agents, and our respective affiliates may execute such purchases or sales for our own or their own accounts, for business reasons, or in connection with hedging our obligations under the ARNs. These transactions could adversely affect the value of these securities and, in turn, the value of a Market Measure in a manner that could be

adverse to your investment in the ARNs. On or before the applicable pricing date, any purchases by us (including those for the purpose of hedging our obligations under the ARNs), the agents, and our respective affiliates, or others on our or their behalf may increase the value of the Market Measure or its component securities. Consequently, the values of that Market Measure or the securities included in that Market Measure may decrease subsequent to the pricing date of an issue of the ARNs, which may adversely affect the market value of the ARNs.

We, the agents, or one or more of our respective affiliates may also engage in hedging activities that could increase the value of the Market Measure on the applicable pricing date. In addition, these activities may decrease the market value of your ARNs prior to maturity, including during the Maturity Valuation Period, and may reduce the Redemption Amount. We, the agents, or one or more of our respective affiliates may purchase or otherwise acquire a long or short position in ARNs, and may hold or resell ARNs. For example, the agents may enter into these transactions in connection with any market making activities in which they engage. We cannot assure you that these activities will not adversely affect the value of the Market Measure, the market value of your ARNs prior to maturity or the Redemption Amount.

Our trading, hedging and other business activities, and those of the agents or one or more of our respective affiliates, may create conflicts of interest with you. We, the agents, or one or more of our respective affiliates may engage in trading activities related to the Market Measure and to securities included in the Market Measure that are not for your account or on your behalf. We, the agents, or one or more of our respective affiliates also may issue or underwrite other financial instruments with returns based upon the applicable Market Measure. These trading and other business activities may present a conflict of interest between your interest in the ARNs and the interests we, the agents and our respective affiliates may have in our proprietary accounts, in facilitating transactions, including block trades, for our or their other customers, and in accounts under our or their management. These trading and other business activities, if they influence the value of the Market Measure or secondary trading in your ARNs, could be adverse to your interests as a beneficial owner of the ARNs.

We, the agents, and our respective affiliates expect to enter into arrangements or adjust or close out existing transactions to hedge our obligations under the ARNs. We, the agents, or our respective affiliates also may enter into hedging transactions relating to other securities or instruments that we or they issue, some of which may have returns calculated in a manner related to that of a particular issue of the ARNs. We may enter into such hedging arrangements with one or more of our subsidiaries or affiliates, or with one or more of the agents or their affiliates. Such a party may enter into additional hedging transactions with other parties relating to the ARNs and the applicable Market Measure. This hedging activity is expected to result in a profit to those engaging in the hedging activity, which could be more or less than initially expected, but could also result in a loss. We, the agents, and our respective affiliates will price these hedging transactions with the intent to realize a profit, regardless of whether the value of the ARNs increases or decreases or whether the Redemption Amount on the ARNs is more or less than the principal amount of the ARNs. Any profit in connection with such hedging activities will be in addition to any other compensation that we, the agents, and our respective affiliates receive for the sale of the ARNs, which creates an additional incentive to sell the ARNs to you.

There may be potential conflicts of interest involving the calculation agent. We may appoint and remove the calculation agent. We expect to appoint MLPF&S or one of its affiliates as the calculation agent for the ARNs and, as such, it will determine the Starting Value, the Ending Value, and the Redemption Amount. As the calculation agent, MLPF&S or one of its affiliates will have discretion in making various determinations that affect your ARNs. The exercise of this discretion by the calculation agent could adversely affect the value of your

ARNs and may present the calculation agent with a conflict of interest of the kind described under “—Trading and hedging activities by us, the agents, and our respective affiliates may affect your return on the ARNs and their market value” and “—Our trading, hedging and other business activities, and those of the agents or one or more of our respective affiliates, may create conflicts of interest with you” above.

The U.S. federal income tax consequences of an investment in the ARNs are uncertain, and may be adverse to a holder of the ARNs. No statutory, judicial, or administrative authority directly addresses the characterization of the ARNs or securities similar to the ARNs for U.S. federal income tax purposes. As a result, significant aspects of the U.S. federal income tax consequences of an investment in the ARNs are not certain. Under the terms of the ARNs, you will have agreed with us to treat the ARNs as pre-paid cash settled derivative contracts, as described under “U.S. Federal Income Tax Summary—General.” If the Internal Revenue Service (the “IRS”) were successful in asserting an alternative characterization for the ARNs, the timing and character of gain or loss with respect to the ARNs may differ. No ruling will be requested from the IRS with respect to the ARNs and no assurance can be given that the IRS will agree with the statements made in the section entitled “U.S. Federal Income Tax Summary.”

**YOU ARE URGED TO CONSULT WITH YOUR OWN TAX ADVISOR REGARDING ALL ASPECTS OF THE U.S. FEDERAL INCOME TAX CONSEQUENCES OF INVESTING IN THE ARNS.**

#### Risks Relating to the Market Measures

You must rely on your own evaluation of the merits of an investment linked to the applicable Market Measure. In the ordinary course of business, we, the agents, and our respective affiliates may have expressed views on expected movements in a Market Measure or the securities included in the Market Measure, and may do so in the future. These views or reports may be communicated to our clients and clients of these entities. However, these views are subject to change from time to time. Moreover, other professionals who deal in markets relating to a Market Measure may at any time have significantly different views from our views and the views of these entities. For these reasons, you are encouraged to derive information concerning a Market Measure and its component securities from multiple sources, and you should not rely on our views or the views expressed by these entities.

You will have no rights of a holder of the securities represented by the Market Measure, and you will not be entitled to receive securities, dividends or other distributions by issuers of those securities. The ARNs are our debt securities. They are not equity instruments, shares of stock, or securities of any other issuer. Investing in the ARNs will not make you a holder of any of the securities represented by the Market Measure. You will not have any voting rights, any rights to receive dividends or other distributions, or any other rights with respect to those securities. As a result, the return on your ARNs may not reflect the return you would realize if you actually owned those securities and received the dividends paid or other distributions made in connection with them. Additionally, the levels of certain indices reflect only the prices of the securities included in that index and do not take into consideration the value of dividends paid on those securities. Your ARNs will be paid in cash and you have no right to receive any of those securities.

If the Market Measure to which your ARNs are linked includes equity securities traded on foreign exchanges, your return may be affected by factors affecting international securities markets. The value of securities traded outside of the U.S. may be

adversely affected by a variety of factors relating to the relevant securities markets. Factors which could affect those markets, and therefore the return on your ARNs, include:

**Market Liquidity and Volatility.** The relevant foreign securities markets may be less liquid and/or more volatile than U.S. or other securities markets and may be affected by market developments in different ways than U.S. or other securities markets.

**Political, Economic, and Other Factors.** The prices and performance of securities of companies in foreign countries may be affected by political, economic, financial, and social factors in those regions. Direct or indirect government intervention to stabilize a particular securities market and cross-shareholdings in companies in the relevant foreign markets may affect prices and the volume of trading in those markets. In addition, recent or future changes in government, economic, and fiscal policies in the relevant jurisdictions, the possible imposition of, or changes in, currency exchange laws, or other laws or restrictions, and possible fluctuations in the rate of exchange between currencies, are factors that could adversely affect the relevant securities markets. The relevant foreign economies may differ from the U.S. economy in economic factors such as growth of gross national product, rate of inflation, capital reinvestment, resources, and self-sufficiency.

In particular, many emerging nations are undergoing rapid change, involving the restructuring of economic, political, financial and legal systems. Regulatory and tax environments may be subject to change without review or appeal, and many emerging markets suffer from underdevelopment of capital markets and tax systems. In addition, in some of these nations, issuers of the relevant securities face the threat of expropriation of their assets, and/or nationalization of their businesses. The economic and financial data about some of these countries may be unreliable.

**Publicly Available Information.** There is generally less publicly available information about foreign companies than about U.S. companies that are subject to the reporting requirements of the SEC. In addition, accounting, auditing, and financial reporting standards and requirements in foreign countries differ from those applicable to U.S. reporting companies.

Unless otherwise set forth in the applicable term sheet, we and the agents do not control any company included in any Market Measure and have not verified any disclosure made by any other company. We, the agents, or our respective affiliates currently, or in the future, may engage in business with companies included in a Market Measure, and we, the agents, or our respective affiliates may from time to time own securities of companies included in a Market Measure. However, none of us, the agents, or any of our respective affiliates has the ability to control the actions of any of these companies or has undertaken any independent review of, or made any due diligence inquiry with respect to, any of these companies, unless (and only to the extent that) the securities of us, the agents, or our respective affiliates are represented by that Market Measure. In addition, unless otherwise set forth in the applicable term sheet, none of us, the agents, or any of our respective affiliates is responsible for the calculation of any index represented by a Market Measure. You should make your own investigation into the Market Measure.

Unless otherwise set forth in the applicable term sheet, none of the Index Publishers, their affiliates, or any companies included in the Market Measure will be involved in any offering of the ARNs or will have any obligation of any sort with respect to the ARNs. As a

result, none of those companies will have any obligation to take your interests as holders of the ARNs into consideration for any reason, including taking any corporate actions that might adversely affect the value of the securities represented by the Market Measure or the value of the ARNs.

Our business activities and those of the agents relating to the companies represented by a Market Measure or the ARNs may create conflicts of interest with you. We, the agents, and our respective affiliates, at the time of any offering of the ARNs or in the future, may engage in business with the companies represented by a Market Measure, including making loans to, equity investments in, or providing investment banking, asset management, or other services to those companies, their affiliates, and their competitors.

In connection with these activities, any of these entities may receive information about those companies that we will not divulge to you or other third parties. We, the agents, and our respective affiliates have published, and in the future may publish, research reports on one or more of these companies. The agents may also publish research reports relating to our or our affiliates' securities, including the ARNs. This research is modified from time to time without notice and may express opinions or provide recommendations that are inconsistent with purchasing or holding your ARNs. Any of these activities may adversely affect the value of the Market Measure and, consequently, the market value of your ARNs. None of us, the agents, or our respective affiliates makes any representation to any purchasers of the ARNs regarding any matters whatsoever relating to the issuers of the securities included in a Market Measure. Any prospective purchaser of the ARNs should undertake an independent investigation of the companies included in a Market Measure to a level that, in its judgment, is appropriate to make an informed decision regarding an investment in the ARNs. The composition of the Market Measure does not reflect any investment recommendations from us, the agents, or our respective affiliates.

#### Other Risk Factors Relating to the Applicable Market Measure

The applicable term sheet may set forth additional risk factors as to the Market Measure that you should review prior to purchasing the ARNs.

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USE OF PROCEEDS AND HEDGING

We will use the net proceeds we receive from each sale of the ARNs for the purposes described in the accompanying prospectus supplement under “Use of Proceeds.” In addition, we expect that we or our affiliates may use a portion of the net proceeds to hedge our obligations under the ARNs.

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## DESCRIPTION OF THE ARNS

### General

Each issue of the ARNs will be part of a series of medium-term notes entitled “Senior Global Medium-Term Notes, Series H” that will be issued under the senior indenture, as amended and supplemented from time to time. The senior indenture is described more fully in the prospectus and prospectus supplement. The following description of the ARNs supplements and, to the extent it is inconsistent with, supersedes the description of the general terms and provisions of the notes and debt securities set forth under the headings “Description of the Notes We May Offer” in the prospectus supplement and “Description of Debt Securities” in the prospectus. These documents should be read in connection with the applicable term sheet.

The maturity date of the ARNs and the aggregate principal amount of each issue of the ARNs will be stated in the term sheet. If the scheduled maturity date is not a business day, we will make the required payment on the next business day, and no interest will accrue as a result of such delay.

We will not pay interest on the ARNs. The ARNs do not guarantee the return of principal at maturity. The ARNs will be payable only in U.S. dollars.

Prior to the maturity date, the ARNs are not redeemable by us or repayable at the option of any holder. The ARNs are not subject to any sinking fund. The ARNs are not subject to the defeasance provisions described in the prospectus under the caption “Description of Debt Securities—Defeasance.”

We will issue the ARNs in denominations of whole units. Unless otherwise set forth in the applicable term sheet, each unit will have a principal amount of \$10. The CUSIP number for each issue of the ARNs will be set forth in the applicable term sheet. You may transfer the ARNs only in whole units.

### Payment at Maturity

At maturity, subject to our credit risk as issuer of the ARNs, you will receive a Redemption Amount, denominated in U.S. dollars. The “Redemption Amount” will be calculated as follows:

·If the Ending Value is greater than the Starting Value, then the Redemption Amount will equal:

The Redemption Amount will not exceed a “Capped Value” set forth in the term sheet.

·If the Ending Value is less than or equal to the Starting Value, then the Redemption Amount will equal:

The Redemption Amount will not be less than zero.

Your participation in any upside performance of the Market Measure underlying your ARNs will also be impacted by the Participation Rate. The “Participation Rate” will be 300% for ARNs unless otherwise set forth in the term sheet. Each term sheet will provide examples of the Redemption Amounts based on a range of hypothetical Ending Values. If specified in the term sheet, your ARNs may be “Relative Value ARNs,” the return on which will be determined based on the relative performance of two or more indices. The specific terms of any Relative Value ARNs will be set forth in the term sheet.

The term sheet will set forth information as to the applicable Market Measure, including information as to the historical values of the Market Measure. However, historical values of the Market Measure are not indicative of its future performance or the performance of your ARNs.

An investment in the ARNs does not entitle you to any ownership interest, including any voting rights, dividends paid, or other distributions made, in the securities of any of the companies included in a Market Measure.

The Starting Value and the Ending Value

Starting Value

Unless otherwise specified in the term sheet, the “Starting Value” will be the closing level of the Market Measure on the pricing date.

If the Market Measure consists of a Basket, the Starting Value will be equal to 100. See “—Basket Market Measures.”

Ending Value

Unless otherwise specified in the term sheet, the “Ending Value” will equal the average of the closing levels of the Market Measure determined on each calculation day during the Maturity Valuation Period.

The “Maturity Valuation Period” means the period consisting of one or more calculation days shortly before the maturity date. The timing and length of the period will be set forth in the term sheet.

A “calculation day” means any Market Measure Business Day during the Maturity Valuation Period on which a Market Disruption Event has not occurred.

Unless otherwise specified in the applicable term sheet, a “Market Measure Business Day” means a day on which (1) the New York Stock Exchange (the “NYSE”) and The Nasdaq Stock Market, or their successors, are open for trading and (2) the applicable index(es) (or any successor) is calculated and published.

If (i) a Market Disruption Event occurs on a scheduled calculation day during the Maturity Valuation Period or (ii) any scheduled calculation day is determined by the calculation agent not to be a Market Measure Business Day by reason of an extraordinary event,

occurrence, declaration, or otherwise (any such day in either (i) or (ii) being a “non-calculation day”), the closing level of the Market Measure for the applicable non-calculation day will be the closing level of the Market Measure on the next calculation day that occurs during the Maturity Valuation Period. For example, if the first and second scheduled calculation days during the Maturity Valuation Period are non-calculation days, then the closing level of the Market Measure on the next calculation day will also be the closing level for the Market Measure on the first and second scheduled calculation days during the Maturity Valuation Period. If no further calculation days occur after a non-calculation day, or if every scheduled calculation day after that non-calculation day is also a non-calculation day, then the closing level of the Market Measure for that non-calculation day and each following non-calculation day, if any (or for all the scheduled calculation days during the Maturity Valuation Period, if applicable), will be determined (or, if not determinable, estimated) by the calculation agent in a commercially reasonable manner on the last scheduled calculation day during the Maturity Valuation Period, regardless of the occurrence of a Market Disruption Event on that last scheduled calculation day.

If the Market Measure consists of a Basket, the Starting Value and the Ending Value of the Basket will be determined as described in “—Basket Market Measures.”

#### Market Disruption Events

For an index, “Market Disruption Event” means one or more of the following events, as determined by the calculation agent in its sole discretion:

- (A) the suspension of or material limitation on trading, in each case, for more than two consecutive hours of trading, or during the one-half hour period preceding the close of trading, on the primary exchange where the securities included in an index trade (without taking into account any extended or after-hours trading session), in 20% or more of the securities which then compose the index or any successor index; and
- (B) the suspension of or material limitation on trading, in each case, for more than two consecutive hours of trading, or during the one-half hour period preceding the close of trading, on the primary exchange that trades options contracts or futures contracts related to the index (without taking into account any extended or after-hours trading session), whether by reason of movements in price otherwise exceeding levels permitted by the relevant exchange or otherwise, in options contracts or futures contracts related to the index, or any successor index.

For the purpose of determining whether a Market Disruption Event has occurred:

- (1) a limitation on the hours in a trading day and/or number of days of trading will not constitute a Market Disruption Event if it results from an announced change in the regular business hours of the relevant exchange;
- (2) a decision to permanently discontinue trading in the relevant futures or options contracts related to the index, or any successor index, will not constitute a Market Disruption Event;

- a suspension in trading in a futures or options contract on the index, or any successor index, by a major securities market by reason of (a) a price change violating limits set by that securities market, (b) an imbalance of orders relating to those contracts, or (c) a disparity in bid and ask quotes relating to those contracts will constitute a suspension of or material limitation on trading in futures or options contracts related to the index;
- (3) a suspension of or material limitation on trading on the relevant exchange will not include any time when that exchange is closed for trading under ordinary circumstances; and
- (4) if applicable to indices with component securities listed on the NYSE, for the purpose of clause (A) above, any limitations on trading during significant market fluctuations under NYSE Rule 80B, or any applicable rule or regulation enacted or promulgated by the NYSE or any other self-regulatory organization or the SEC of similar scope as determined by the calculation agent, will be considered “material.”
- (5)

#### Adjustments to an Index

After the applicable pricing date, an Index Publisher may make a material change in the method of calculating an index or in another way that changes the index such that it does not, in the opinion of the calculation agent, fairly represent the level of the index had those changes or modifications not been made. In this case, the calculation agent will, at the close of business in New York, New York, on each date that the closing level is to be calculated, make adjustments to the index. Those adjustments will be made in good faith as necessary to arrive at a calculation of a level of the index as if those changes or modifications had not been made, and calculate the closing level of the index, as so adjusted.

#### Discontinuance of an Index

After the pricing date, an Index Publisher may discontinue publication of an index to which an issue of the ARNs is linked. The Index Publisher or another entity may then publish a substitute index that the calculation agent determines, in its sole discretion, to be comparable to the original index (a “successor index”). If this occurs, the calculation agent will substitute the successor index as calculated by the relevant Index Publisher or any other entity and calculate the Ending Value as described under “—The Starting Value and the Ending Value” or “—Basket Market Measure,” as applicable. If the calculation agent selects a successor index, the calculation agent will give written notice of the selection to the trustee, to us, and to the holders of the ARNs.

If an Index Publisher discontinues publication of the index before the end of the Maturity Valuation Period and the calculation agent does not select a successor index, then on each day that would have been a calculation day, until the earlier to occur of:

- the determination of the Ending Value; and
  - a determination by the calculation agent that a successor index is available,
- the calculation agent will compute a substitute level for the index in accordance with the procedures last used to calculate the index before any discontinuance as if that day were a calculation day. The calculation agent will make available to holders of the ARNs information regarding those levels by means of Bloomberg L.P., Thomson Reuters, a website, or any other means selected by the calculation agent in its reasonable discretion.

If a successor index is selected or the calculation agent calculates a level as a substitute for an index, the successor index or level will be used as a substitute for all purposes, including for the purpose of determining whether a Market Disruption Event exists.

Notwithstanding these alternative arrangements, any modification or discontinuance of the publication of any index to which your ARNs are linked may adversely affect trading in the ARNs.

**Basket Market Measures**

If the Market Measure to which your ARNs are linked is a Basket, the Basket Components will be set forth in the term sheet. We will assign each Basket Component a weighting (the “Initial Component Weight”) so that each Basket Component represents a percentage of the Starting Value of the Basket on the pricing date. The Basket Components may or may not have equal Initial Component Weights, as set forth in the term sheet.

**Determination of the Component Ratio for Each Basket Component**

The “Starting Value” of the Basket will be equal to 100. We will set a fixed factor (the “Component Ratio”) for each Basket Component on the pricing date, based upon the weighting of that Basket Component. The Component Ratio for each Basket Component will equal:

- the Initial Component Weight (expressed as a percentage) for that Basket Component, multiplied by 100; divided by
- the closing level of that Basket Component on the pricing date.

Each Component Ratio will be rounded to eight decimal places.

The Component Ratios will be calculated in this way so that the Starting Value of the Basket will equal 100 on the pricing date. The Component Ratios will not be revised subsequent to their determination on the pricing date, except that the calculation agent may in its good faith judgment adjust the Component Ratio of any Basket Component in the event that Basket Component is materially changed or modified in a manner that does not, in the opinion of the calculation agent, fairly represent the value of that Basket Component had those material changes or modifications not been made.

The following table is for illustration purposes only, and does not reflect the actual composition, Initial Component Weights, or Component Ratios, which will be set forth in the term sheet.

Example: The hypothetical Basket Components are Index ABC, Index XYZ, and Index RST, with their Initial Component Weights being 50.00%, 25.00% and 25.00%, respectively, on a hypothetical pricing date:

Basket Component	Initial Component Weight	Hypothetical Closing Level <sup>(1)</sup>	Hypothetical Component Ratio <sup>(2)</sup>	Initial Basket Value Contribution
Index ABC	50.00%	500.00	0.10000000	50.00

Index XYZ	25.00%	2,420.00	0.01033058	25.00
Index RST	25.00%	1,014.00	0.02465483	<u>25.00</u>
Starting Value				100.00

(1) This column sets forth the hypothetical closing level of each Basket Component on the hypothetical pricing date. The hypothetical Component Ratio for each Basket Component equals its Initial Component Weight (expressed as (2) a percentage) multiplied by 100, and then divided by the hypothetical closing level of that Basket Component on the hypothetical pricing date, with the result rounded to eight decimal places.

Unless otherwise stated in the term sheet, if a Market Disruption Event occurs on the pricing date as to any Basket Component or the pricing date is determined by the calculation agent not to be a Market Measure Business Day for any Basket Component by reason of an extraordinary event, occurrence, declaration or otherwise, the calculation agent will establish the closing level of that Basket Component (the “Basket Component Closing Level”), and thus its Component Ratio, based on the closing level of that Basket Component on the first Market Measure Business Day following the pricing date on which no Market Disruption Event occurs for that Basket Component. In the event that a Market Disruption Event occurs for that Basket Component on each day after the pricing date to and including the second scheduled Market Measure Business Day following the pricing date, the calculation agent (not later than the close of business in New York, New York on the second scheduled Market Measure Business Day following the pricing date) will estimate the Basket Component Closing Level, and thus the applicable Component Ratio, in a manner that the calculation agent considers commercially reasonable. The final term sheet will provide the Basket Component Closing Level, a brief statement of the facts relating to the establishment of the Basket Component Closing Level (including the applicable Market Disruption Event(s)), and the applicable Component Ratio. For purposes of determining whether a Market Disruption Event has occurred as to any Basket Component, “Market Disruption Event” will have the meaning stated above in “—Market Disruption Events.”

#### Ending Value of the Basket

The calculation agent will calculate the value of the Basket for a calculation day by summing the products of the Basket Component Closing Level on that calculation day and the Component Ratio for each Basket Component. The value of the Basket will vary based on the increase or decrease in the level of each Basket Component. Any increase in the level of a Basket Component (assuming no change in the level of the other Basket Component or Basket Components) will result in an increase in the value of the Basket. Conversely, any decrease in the level of a Basket Component (assuming no change in the level of the other Basket Component or Basket Components) will result in a decrease in the value of the Basket.

The “Ending Value” of the Basket will be the average value of the Basket on each calculation day during the Maturity Valuation Period.

Unless otherwise specified in the term sheet, if, for any Basket Component (an “Affected Basket Component”), (i) a Market Disruption Event occurs on a scheduled

calculation day during the Maturity Valuation Period or (ii) any scheduled calculation day is determined by the calculation agent not to be a Market Measure Business Day by reason of an extraordinary event, occurrence, declaration, or otherwise (any such day in either (i) or (ii) being a “non-calculation day”), the calculation agent will determine the closing levels of the Basket Components for that non-calculation day, and as a result, the Ending Value, as follows:

The closing level of each Basket Component that is not an Affected Basket Component will be its closing level on such non-calculation day.

The closing level of each Basket Component that is an Affected Basket Component for the applicable non-calculation day will be determined in the same manner as described in the fifth paragraph of subsection “—The Starting Value and the Ending Value—Ending Value,” provided that references to “Market Measure” will be references to “Basket Component

#### Role of the Calculation Agent

The calculation agent has the sole discretion to make all determinations regarding the ARNs as described in this product supplement, including determinations regarding the Starting Value, the Ending Value, the Market Measure, the Redemption Amount, any Market Disruption Events, a successor index, Market Measure Business Days, business days, calculation days, non-calculation days, and determinations related to any adjustments to, or discontinuance of, any index. Absent manifest error, all determinations of the calculation agent will be conclusive for all purposes and final and binding on you and us, without any liability on the part of the calculation agent.

We expect to appoint MLPF&S or one of its affiliates as the calculation agent for each issue of the ARNs. However, we may change the calculation agent at any time without notifying you. The identity of the calculation agent will be set forth in the applicable term sheet.

#### Payment of Additional Amounts

We will pay any amounts to be paid by us on the ARNs 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 ARNs, 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 an ARN or of a right to receive payments in respect thereto (a “Payment Recipient”), which we refer to as an “Excluded Holder,” in respect of a beneficial owner or Payment Recipient:

- (i) with whom we do not deal at arm’s length (within the meaning of the Income Tax Act (Canada)) at the time of making such payment;

- who is subject to such taxes by reason of the holder being connected presently or formerly with Canada or any
- (ii) province or territory thereof otherwise than by reason of the holder's activity in connection with purchasing the ARNs, the holding of the ARNs or the receipt of payments thereunder;
    - 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
  - (iii) "specified shareholder" for this purpose if that person, either alone or together with persons with whom the person does not deal at arm's length, owns 25% or more of (a) our voting shares, or (b) the fair market value of all of our issued and outstanding shares);
    - who presents such ARNs for payment (where presentation is required, such as if an ARN is issued in definitive
  - (iv) form) more than 30 days after the relevant date; for this purpose, the "relevant date" in relation to any payments on any ARN means:
    - (a) the due date for payment thereof (whether at maturity or upon an earlier acceleration), or
      - if the full amount of the monies payable on such date has not been received by the trustee on or prior to such due
    - (b) date, the date on which the full amount of such monies has been received and notice to that effect is given to holders of the ARNs in accordance with the indenture;
      - who could lawfully avoid (but has not so avoided) such withholding or deduction by complying, or procuring that
    - (v) any third party comply with, any statutory requirements 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
      - 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
    - (vi) 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 purposes of clause (iv) above, if an ARN is presented for payment more than 30 days after the relevant date, we shall only be required to pay such Additional Amounts as shall have accrued as of such 30th day, and no further Additional Amounts shall accrue or become payable after such date.

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 ARNs.

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 the ARNs (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 ARNs and (y) any taxes levied or imposed and paid by such holder with respect to any reimbursement under (x) above, but excluding any such taxes on such holder's net income or capital.

For additional information, see the section entitled "Tax Consequences—Canadian Taxation" in the accompanying prospectus.

#### Same-Day Settlement and Payment

The ARNs will be delivered in book-entry form only through The Depository Trust Company against payment by purchasers of the ARNs in immediately available funds. We will pay the Redemption Amount in immediately available funds so long as the ARNs are maintained in book-entry form.

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#### Events of Default and Acceleration

Events of default are defined in the senior indenture. If such event occurs and is continuing, unless otherwise stated in the term sheet, the amount payable to a holder of the ARNs upon any acceleration permitted under the senior indenture will be equal to the Redemption Amount described under the caption “—Payment at Maturity,” determined as if the date of acceleration were the maturity date of the ARNs and as if the final calculation day of the Maturity Valuation Period were the fifth Market Measure Business Day prior to the date of acceleration. If a bankruptcy proceeding is commenced in respect of us, your claim may be limited under applicable bankruptcy law. In case of a default in payment of the ARNs, whether at their maturity or upon acceleration, they will not bear a default interest rate. For additional discussion of these matters, please see the discussion in the prospectus under the headings “Description of Debt Securities – Modification and Waiver of the Debt Securities” beginning on page 10 and “– Events of Default” beginning on page 15.

#### Listing

Unless otherwise specified in the applicable term sheet, the ARNs will not be listed on a securities exchange or quotation system.

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## SUPPLEMENTAL PLAN OF DISTRIBUTION

MLPF&S and one or more of its affiliates may act as our agents for any offering of the ARNs. The agents may act on either a principal basis or an agency basis, as set forth in the applicable term sheet. Each agent will be a party to the distribution agreement described in the “Supplemental Plan of Distribution” on page S-29 of the accompanying prospectus supplement.

Each agent will receive an underwriting discount that is a percentage of the aggregate principal amount of the ARNs sold through its efforts, which will be set forth in the applicable term sheet. You must have an account with the applicable agent in order to purchase the ARNs.

None of the agents is acting as your fiduciary or advisor solely as a result of the making of any offering of the ARNs, and you should not rely upon this product supplement, the term sheet, or the accompanying prospectus or prospectus supplement as investment advice or a recommendation to purchase any ARNs. You should make your own investment decision regarding the ARNs after consulting with your legal, tax, and other advisors.

MLPF&S and its affiliates may use this product supplement, the prospectus supplement, and the prospectus, together with the applicable term sheet, in market-making transactions for any ARNs after their initial sale solely for the purpose of providing investors with the description of the terms of the ARNs that were made available to investors in connection with the initial distribution of the ARNs. Secondary market investors should not, and will not be authorized to rely on these documents for information regarding Royal Bank of Canada or for any purpose other than that described in the immediately preceding sentence.

### Selling Restrictions

#### European Economic Area

None of this product supplement, the prospectus supplement, the prospectus nor any related term sheet is a prospectus for the purposes of the Prospectus Directive (as defined below). This product supplement, the prospectus supplement, the prospectus and any related term sheet have been prepared on the basis that any offer of the ARNs in any Member State of the European Economic Area (the “EEA”) which has implemented the Prospectus Directive (each, a “Relevant Member State”) will only be made to a legal entity which is a qualified investor under the Prospectus Directive (“Qualified Investors”). Accordingly any person making or intending to make an offer in that Relevant Member State of the ARNs which are the subject of the offering contemplated in this product supplement, the prospectus supplement, the prospectus and any related term sheet may only do so with respect to Qualified Investors. Neither Royal Bank of Canada nor the agents have authorized, nor do they authorize, the making of any offer of the ARNs other than to Qualified Investors. The expression “Prospectus Directive” means Directive 2003/71/EC (as amended, including by Directive 2010/73/EU), including any relevant implementing measure in the Relevant Member State.

PRIIPs Regulation / Prospectus Directive / Prohibition of sales to EEA retail investors – The ARNs 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, a retail investor means a person who is one (or more) of: (i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU, as amended (“MiFID II”); or (ii) a customer within the meaning of Directive 2002/92/EC, as amended (the “Insurance Mediation Directive”), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or (iii) 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 ARNs or otherwise making them available to retail investors in the EEA has been prepared and therefore offering or selling the ARNs or otherwise making them available to any retail investor in the EEA may be unlawful under the PRIIPs Regulation.

MLPF&S has represented and agreed, and each further agent appointed under the program will be required to represent and agree, that it has not offered, sold or otherwise made available and will not offer, sell or otherwise make available any ARNs to any retail investor (as defined in the foregoing paragraph) in the EEA. For the purposes of this provision, and the foregoing paragraph, the expression “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the ARNs to be offered so as to enable an investor to decide to purchase or subscribe for the ARNs.

#### United Kingdom

MLPF&S has represented and agreed, and each further agent appointed under the program will be required to represent and agree, that:

- it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of section 21 of the United Kingdom's Financial Services and Markets Act 2000, as amended (the “FSMA”)) received by it in connection with the issue or sale of any ARNs in circumstances in which section 21(1) of the FSMA would not, if Royal Bank of Canada were not an authorized person, apply to Royal Bank of Canada; and
- (b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the ARNs in, from or otherwise involving the United Kingdom.

#### Argentina

The ARNs are not and will not be marketed in Argentina by means of a public offer of securities, as such term is defined under Sections 2 and 83 of the Argentine Capital Markets Law No. 26,831, as securities. No application has been or will be made with the Argentine Comisión Nacional de Valores, the Argentine securities governmental authority, to offer the ARNs in Argentina.

#### Brazil

The information contained in this product supplement and in the accompanying prospectus supplement and prospectus does not constitute a public offering or distribution of the ARNs in Brazil and no registration or filing with respect to any securities or financial products described in these documents has been made with the Comissão de Valores Mobiliários (the “CVM”). No public offer of securities or financial products described in this product supplement or in the accompanying prospectus supplement and prospectus should be made in Brazil without the applicable registration at the CVM.

#### The People’s Republic of China

These offering documents have not been filed with or approved by the People’s Republic of China (for such purposes, not including Hong Kong and Macau Special Administrative Regions or Taiwan) authorities, and is not an offer of securities (whether public offering or

private placement) within the meaning of the Securities Law or other pertinent laws and regulations of the People's Republic of China. These offering documents shall not be delivered to any party who is not an intended recipient or offered to the general public if used within the People's Republic of China, and the ARNs so offered cannot be sold to anyone that is not a qualified purchaser of the People's Republic of China. MLPF&S has represented, warranted and agreed that the ARNs are not being offered or sold and may not be offered or sold, directly or indirectly, in the People's Republic of China, except under circumstances that will result in compliance with applicable laws and regulations.

#### France

The offering documents have not been approved by the Autorité des marchés financiers ("AMF").

Offers of the ARNs (a) have only been made and will only be made to the public (offre au public) in France or an admission of the ARNs to trading on a regulated market in France in the period beginning (i) when a prospectus in relation to those ARNs has been approved by the AMF, on the date of such publication or, (ii) when a prospectus in relation to those ARNs has been approved by the competent authority of another Member State of the European Economic Area which has implemented the EU Prospectus Directive 2003/71/EC, on the date of notification of such approval to the AMF and, in either case, when the formalities required by French laws and regulations have been carried out, and ending at the latest on the date which is 12 months after the date of the approval of the prospectus, all in accordance with articles L.412-1 and L.621-8 to L.621-8-3 of the French Code monétaire et financier and the Règlement général of the AMF, or (b) have only been made and will only be made to the public in France or an admission of the ARNs to trading on a regulated market in France in circumstances which do not require the publication by the offeror of a prospectus pursuant to the French Code monétaire et financier and the Règlement général of the Autorité des marchés financiers.

The ARNs have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France, and have not been distributed or caused to be distributed and the offering documents, or any other offering material relating to the ARNs, will not be distributed or caused to be distributed to the public in France, and such offers, sales and distributions have been and will be made in France only to (i) providers of the investment service of portfolio management for the account of third parties, and/or (ii) qualified investors (investisseurs qualifiés) other than individuals, acting for their own account, all as defined in, and in accordance with, articles L.411-2, D.411-1 to D.411-3, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier. The direct or indirect resale of the ARNs to the public in France may be made only as provided by, and in accordance with, articles L.411-1, L.411-2, L.412-1 and L.621-8 to L.621-8-3 of the French Code monétaire et financier.

In addition, the ARNs, the offering documents and any other offering material relating to the ARNs, have not been and will not be distributed or caused to be distributed in the Republic of France, other than to investors to whom offers and sales of the ARNs in the Republic of France may be made as described above.

#### Italy

No offers of the ARNs may be made to residents of the Republic of Italy.

#### Mexico

The ARNs have not been and will not be registered in the National Securities Registry (Registro Nacional de Valores). Therefore, the ARNs may not be offered or sold in the United

Mexican States (“Mexico”) by any means except in circumstances which constitute a private offering (oferta privada) pursuant to Article 8 of the Securities Market Law (Ley del Mercado de Valores) and its regulations. All applicable provisions of the Securities Market Law must be complied with in respect to anything done in relation to the ARNs in, from or otherwise involving Mexico.

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Netherlands

No offers of the ARNs may be made to residents of the Netherlands.

New Zealand

No offeree of the ARNs shall directly or indirectly offer, sell or deliver any ARNs, or distribute the offering documents or any advertisement in relation to any offer of the ARNs, in New Zealand other than to persons whose principal business is the investment of money or who, in the course of and for the purposes of their business, habitually invest money, or who are each required to pay a minimum subscription price of at least NZ\$500,000 for the ARNs (excluding any amounts lent by the issuer or any of its affiliates) before the allotment of those ARNs, or who in all the circumstances can properly be regarded as having been selected otherwise than as members of the public, or in other circumstances where there is no contravention of the Securities Act 1978 of New Zealand.

Philippines

THE ARNS BEING OFFERED OR SOLD HAVE NOT BEEN REGISTERED WITH THE PHILIPPINES SECURITIES AND EXCHANGE COMMISSION UNDER THE ARNS REGULATION CODE. ANY FUTURE OFFER OR SALE THEREOF IS SUBJECT TO REGISTRATION REQUIREMENTS UNDER THE CODE UNLESS SUCH OFFER OR SALE QUALIFIES AS AN EXEMPT TRANSACTION.

Switzerland

The ARNs may not be offered, sold or advertised directly or indirectly into or in Switzerland except in a manner which will not result in a public offering within the meaning of article 652a or 1156 of the Swiss Federal Code of Obligations (“CO”). Neither this product supplement or the accompanying prospectus supplement and prospectus nor any other offering or marketing materials relating to the ARNs have been prepared with regard to the disclosure standards for prospectuses under article 652a or 1156 CO, and therefore do not constitute a prospectus within the meaning of article 652a or 1156 CO. Neither this prospectus supplement and the accompanying prospectus nor any other offering or marketing materials relating to the ARNs may be distributed, published or otherwise made available in Switzerland except in a manner which will not constitute a public offering of the ARNs into or in Switzerland.

Taiwan

The ARNs may be made available for purchase outside Taiwan by investors residing in Taiwan (either directly or through properly licensed Taiwan intermediaries acting on behalf of such investors) but may not be offered or sold in Taiwan.

Uruguay

The ARNs have not been registered under the Uruguayan Securities Market Law or recorded in the Uruguayan Central Bank. The ARNs are not available publicly in Uruguay and are offered only on a private basis. No action may be taken in Uruguay that would render any offering of the ARNs a public offering in Uruguay. No Uruguayan regulatory authority has approved the ARNs or passed on our solvency. In addition, any resale of the ARNs must be made in a manner that will not constitute a public offering in Uruguay.

Los valores no han sido registrados bajo la Ley de Mercado de Valores de la República Oriental del Uruguay o registrados ante el Banco Central del Uruguay. Los valores no son ofrecidos en

forma pública en Uruguay y lo son únicamente en forma privada. Ninguna acción puede ser adoptada en Uruguay en relación a estos valores que resulte en que esta oferta de valores sea una oferta pública de valores en Uruguay. Ninguna autoridad regulatoria del Uruguay ha aprobado estos valores o se ha manifestado sobre nuestra solvencia. Adicionalmente, cualquier reventa de estos valores debe ser realizada en forma tal que no constituya oferta pública de valores en el Uruguay.

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## CANADIAN FEDERAL INCOME TAX SUMMARY

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

## U.S. FEDERAL INCOME TAX SUMMARY

The following summary of the material U.S. federal income tax considerations of the acquisition, ownership, and disposition of ARNs supplements, and to the extent inconsistent supersedes, the discussions under “Tax Consequences – United States Taxation” in the accompanying prospectus and under “Certain Income Tax Consequences – United States Taxation” in the accompanying prospectus supplement and is not exhaustive of all possible tax considerations. This summary is based upon the Code, regulations promulgated under the Code by the U.S. Treasury Department (“Treasury”) (including proposed and temporary regulations), rulings, current administrative interpretations and official pronouncements of the IRS, and judicial decisions, all as currently in effect and all of which are subject to differing interpretations or to change, possibly with retroactive effect. No assurance can be given that the IRS would not assert, or that a court would not sustain, a position contrary to any of the tax consequences described below. This summary does not include any description of the tax laws of any state or local governments, or of any foreign government, that may be applicable to a particular holder. If the tax consequences associated with ARNs are different than those described below, they will be described in the applicable term sheet.

This summary is directed solely to U.S. holders and non-U.S. holders that, except as otherwise specifically noted, will purchase ARNs upon original issuance and will hold ARNs as capital assets within the meaning of Section 1221 of the Code, which generally means property held for investment, and that are not excluded from the discussion under “Tax Consequences – United States Taxation” in the accompanying prospectus. This discussion does not address the tax consequences applicable to any holders under Section 451(b) of the Code.

You should consult your own tax advisor concerning the U.S. federal income tax consequences to you of acquiring, owning, and disposing of ARNs, as well as any tax consequences arising under the laws of any state, local, foreign, or other tax jurisdiction and the possible effects of changes in U.S. federal or other tax laws.

### General

Although there is no statutory, judicial, or administrative authority directly addressing the characterization of ARNs, in the opinion of our counsel, Morrison & Foerster LLP, it would be reasonable to treat ARNs with terms described in this product supplement as pre-paid cash settled derivative contracts with respect to the Market Measure and under the terms of ARNs, we and every investor in ARNs agree, in the absence of an administrative determination or judicial ruling to the contrary, to treat ARNs for all tax purposes in accordance with such characterization. This discussion assumes that ARNs constitute pre-paid cash settled derivative contracts with respect to the Market Measure for U.S. federal income tax purposes. If ARNs did not constitute pre-paid cash settled derivative contracts, the tax consequences described below would be materially different.

This characterization of ARNs is not binding on the IRS or the courts. No statutory, judicial, or administrative authority directly addresses the characterization of ARNs or any similar instruments for U.S. federal income tax purposes, and no ruling is being requested from the IRS with respect to their proper characterization and treatment. Due to the absence of

authorities on point, significant aspects of the U.S. federal income tax consequences of an investment in ARNs are not certain, and no assurance can be given that the IRS or any court will agree with the characterization and tax treatment described in this product supplement. Accordingly, you are urged to consult your tax advisor regarding all aspects of the U.S. federal income tax consequences of an investment in ARNs, including possible alternative characterizations. Unless otherwise stated, the following discussion is based on the characterization described above. The discussion in this section assumes that there is a significant possibility of a significant loss of principal on an investment in ARNs. We will not attempt to ascertain whether the issuer of any component stocks included in the Market Measure would be treated as a “passive foreign investment company” (“PFIC”), within the meaning of Section 1297 of the Code, or a United States real property holding corporation, within the meaning of Section 897(c) of the Code. If the issuer of one or more stocks included in the Market Measure were so treated, certain adverse U.S. federal income tax consequences could possibly apply to a holder of ARNs. You should refer to information filed with the SEC by the issuers of the component stocks included in the Market Measure and consult your tax advisor regarding the possible consequences to you, if any, if any issuer of the component stocks included in the Market Measure is or becomes a PFIC or is or becomes a United States real property holding corporation.

#### U.S. Holders

Upon receipt of a cash payment at maturity or upon a sale or exchange of ARNs prior to maturity, a U.S. holder generally will recognize capital gain or loss equal to the difference between the amount realized and the U.S. holder’s tax basis in ARNs. A U.S. holder’s tax basis in ARNs will equal the amount paid by that holder to acquire them. This capital gain or loss generally will be long-term capital gain or loss if the U.S. holder held the ARNs for more than one year. The deductibility of capital losses is subject to limitations.

**Alternative Tax Treatments.** Due to the absence of authorities that directly address the proper tax treatment of ARNs, prospective investors are urged to consult their tax advisors regarding all possible alternative tax treatments of an investment in ARNs. In particular, if ARNs have a term that exceeds one year, the IRS could seek to subject ARNs to the Treasury regulations governing contingent payment debt instruments. If the IRS were successful in that regard, the timing and character of income on ARNs would be affected significantly. Among other things, a U.S. holder would be required to accrue original issue discount every year at a “comparable yield” determined at the time of issuance. In addition, any gain realized by a U.S. holder at maturity, or upon a sale or exchange, of ARNs generally would be treated as ordinary income, and any loss realized at maturity would be treated as ordinary loss to the extent of the U.S. holder’s prior accruals of original issue discount, and as capital loss thereafter. If ARNs have a term of one year or less, ARNs would generally be subject to the rules concerning short-term debt instruments as described under the heading “Tax Consequences – United States Taxation – Original Issue Discount – Short-Term Debt Securities” in the accompanying prospectus.

The IRS released Notice 2008-2 (“Notice”), which sought comments from the public on the taxation of financial instruments currently taxed as “prepaid forward contracts.” This Notice addresses instruments such as ARNs. According to the Notice, the IRS and Treasury are considering whether a holder of an instrument such as ARNs should be required to accrue ordinary income on a current basis, regardless of whether any payments are made prior to maturity. It is not possible to determine what guidance the IRS and Treasury will ultimately

issue, if any. Any such future guidance may affect the amount, timing and character of income, gain, or loss in respect of ARNs, possibly with retroactive effect.

The IRS and Treasury are also considering additional issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital, whether foreign holders of such instruments should be subject to withholding tax on any deemed income accruals, whether Section 1260 of the Code, concerning certain “constructive ownership transactions,” generally applies or should generally apply to such instruments, and whether any of these determinations depend on the nature of the underlying asset.

In addition, proposed Treasury regulations require the accrual of income on a current basis for contingent payments made under certain notional principal contracts. The preamble to the regulations states that the “wait and see” method of accounting does not properly reflect the economic accrual of income on those contracts, and requires current accrual of income for some contracts already in existence. While the proposed regulations do not apply to prepaid forward contracts, the preamble to the proposed regulations expresses the view that similar timing issues exist in the case of prepaid forward contracts. If the IRS or Treasury publishes future guidance requiring current economic accrual for contingent payments on prepaid forward contracts, it is possible that you could be required to accrue income over the term of ARNs.

Because of the absence of authority regarding the appropriate tax characterization of ARNs, it is also possible that the IRS could seek to characterize ARNs in a manner that results in tax consequences that are different from those described above. For example, the IRS could possibly assert that any gain or loss that a holder may recognize at maturity or upon sale or exchange of ARNs should be treated as ordinary gain or loss. It is possible that the IRS could assert that a U.S. holder’s holding period in respect of the ARNs should end on the applicable calculation day, even though such holder will not receive any amounts in respect of the ARNs prior to the redemption or maturity of the ARNs. In such case, if the applicable calculation day is not in excess of one year from the original issue date, a U.S. holder may be treated as having a holding period in respect of the ARNs equal to one year or less, in which case any gain or loss such holder recognizes at such time would be treated as short-term capital gain or loss.

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

#### Non-U.S. Holders

The following discussion applies to non-U.S. holders of ARNs. A non-U.S. holder is a beneficial owner of a ARN 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 otherwise discussed below, a non-U.S. holder generally will not be subject to U.S. federal income or withholding tax for amounts paid in respect of ARNs, provided that the non-U.S. holder complies with applicable certification requirements and that the payment is not effectively connected with the conduct by the non-U.S. holder of a U.S. trade or business. Notwithstanding the foregoing, gain from the sale or exchange of ARNs or their settlement at

maturity may be subject to U.S. federal income tax if that non-U.S. holder is a non-resident alien individual and is present in the U.S. for 183 days or more during the taxable year of the settlement at maturity, sale or exchange and certain other conditions are satisfied.

If a non-U.S. holder of ARNs is engaged in the conduct of a trade or business within the U.S. and if gain realized on the settlement at maturity, sale or exchange of ARNs, is effectively connected with the conduct of such trade or business (and, if certain tax treaties apply, is attributable to a permanent establishment maintained by the non-U.S. holder in the U.S.), the non-U.S. holder generally will be subject to U.S. federal income tax on such gain on a net income basis in the same manner as if it were a U.S. holder. Such non-U.S. holders should read the material under the heading “—U.S. Holders,” for a description of the U.S. federal income tax consequences of acquiring, owning, and disposing of ARNs. In addition, if such non-U.S. holder is a foreign corporation, it may also be subject to a branch profits tax equal to 30% (or such lower rate provided by any applicable 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.

A “dividend equivalent” payment is treated as a dividend from sources within the United States and such payments generally would be subject to a 30% (or a lower rate under an applicable treaty) U.S. withholding tax if paid to a non-U.S. holder. Under U.S. Treasury Department regulations, payments (including deemed payments) with respect to equity-linked instruments (“ELIs”) that are “specified ELIs” may be treated as dividend equivalents if such specified ELIs reference an interest in an “underlying security,” which is generally any interest in an entity taxable as a corporation for U.S. federal income tax purposes if a payment with respect to such interest could give rise to a U.S. source dividend. However, the Internal Revenue Service provides 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 expect that the delta of the ARNs with respect to the Market Measure will not be one, and therefore, we expect that non-U.S. holders should not be subject to withholding on dividend equivalent payments, if any, under the ARNs. However, it is possible that the ARNs could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Market Measure or the ARNs, and following such occurrence the ARNs could be treated as subject to withholding on dividend equivalent payments. Non-U.S. holders that enter, or have entered, into other transactions in respect of the Market Measure or the ARNs should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the ARNs and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable paying agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld. As discussed above, alternative characterizations of ARNs for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to ARNs to become subject to withholding tax, tax will be withheld at the applicable statutory rate. As discussed above, the IRS has indicated in the Notice that it is considering whether income in respect of instruments such as ARNs should be subject to withholding tax. Prospective non-U.S. holders of ARNs should consult their own tax advisors in this regard.

U.S. Federal Estate Tax. Under current law, while the matter is not entirely clear, individual non-U.S. holders, and entities whose property is potentially includible in those individuals’ gross estates for U.S. federal estate tax purposes (for example, a trust funded by such an individual and with respect to which the individual has retained certain interests or powers), should note that, absent an applicable treaty benefit, ARNs may be treated as U.S.

situs property, subject to U.S. federal estate tax. These individuals and entities should consult their own tax advisors regarding the U.S. federal estate tax consequences of investing in ARNs.

#### Backup Withholding and Information Reporting

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

Reports will be made to the IRS and to holders that are not excepted from the reporting requirements.

#### 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 OID), dividends, other fixed or determinable annual or periodical gain, profits, and income, and on the gross proceeds from a disposition of property of a type which can produce U.S. source interest or dividends ("Withholdable Payments"), if paid to a foreign financial institution (including amounts paid to a foreign financial institution on behalf of a holder), unless such institution enters into an agreement with Treasury to collect and provide to Treasury 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 ARNs may constitute a "financial account" for these purposes and thus, be subject to information reporting requirements pursuant to FATCA. FATCA also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity. Under certain circumstances, a holder may be eligible for refunds or credits of such taxes. The U.S. Treasury Department and the IRS have announced that withholding on payments of gross proceeds from a sale or redemption of the ARNs will only apply to payments made after December 31, 2018. However, recently proposed regulations eliminate the requirement of withholding on gross proceeds from the sale or disposition of financial instruments. The U.S. Treasury Department has indicated that taxpayers may rely on these proposed regulations pending their finalization. If we determine withholding is appropriate with respect to the ARNs, we will withhold tax at the applicable statutory rate, and we will not pay any additional amounts in respect of such withholding. Foreign financial institutions and non-financial foreign entities located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Prospective investors are urged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in the ARNs.

## ERISA CONSIDERATIONS

Each fiduciary of a pension, profit-sharing, or other employee benefit plan subject to the Employee Retirement Income Security Act of 1974 (“ERISA”) (a “Plan”), should consider the fiduciary standards of ERISA in the context of the Plan’s particular circumstances before authorizing an investment in the ARNs. Accordingly, among other factors, the fiduciary should consider whether the investment would satisfy the prudence and diversification requirements of ERISA and would be consistent with the documents and instruments governing the Plan.

In addition, we, the agents, and certain of our respective subsidiaries and affiliates may be each considered a party in interest within the meaning of ERISA, or a disqualified person (within the meaning of the Code), with respect to many Plans, as well as many individual retirement accounts and Keogh plans (also “Plans”). Prohibited transactions within the meaning of ERISA or the Code would likely arise, for example, if the ARNs are acquired by or with the assets of a Plan with respect to which we or any of our affiliates is a party in interest, unless the ARNs are acquired under an exemption from the prohibited transaction rules. A violation of these prohibited transaction rules could result in an excise tax or other liabilities under ERISA and/or Section 4975 of the Code for such persons, unless exemptive relief is available under an applicable statutory or administrative exemption.

Under ERISA and various prohibited transaction class exemptions (“PTCEs”) issued by the U.S. Department of Labor, exemptive relief may be available for direct or indirect prohibited transactions resulting from the purchase, holding, or disposition of the ARNs. Those exemptions are PTCE 96-23 (for certain transactions determined by in-house asset managers), PTCE 95-60 (for certain transactions involving insurance company general accounts), PTCE 91-38 (for certain transactions involving bank collective investment funds), PTCE 90-1 (for certain transactions involving insurance company separate accounts), PTCE 84-14 (for certain transactions determined by independent qualified asset managers), and the exemption under Section 408(b)(17) of ERISA and Section 4975(d)(20) of the Code for certain arm’s-length transactions with a person that is a party in interest solely by reason of providing services to Plans or being an affiliate of such a service provider (the “Service Provider Exemption”).

Because we may be considered a party in interest with respect to many Plans, the ARNs may not be purchased, held, or disposed of by any Plan, any entity whose underlying assets include plan assets by reason of any Plan’s investment in the entity (a “Plan Asset Entity”) or any person investing plan assets of any Plan, unless such purchase, holding, or disposition is eligible for exemptive relief, including relief available under PTCE 96-23, 95-60, 91-38, 90-1, or 84-14 or the Service Provider Exemption, or such purchase, holding, or disposition is otherwise not prohibited. Any purchaser, including any fiduciary purchasing on behalf of a Plan, transferee or holder of the ARNs will be deemed to have represented, in its corporate and its fiduciary capacity, by its purchase and holding of the ARNs that either (a) it is not a Plan or a Plan Asset Entity and is not purchasing such ARNs on behalf of or with plan assets of any Plan or any plan subject to similar laws or (b) its purchase, holding, and disposition are eligible for exemptive relief or such purchase, holding, and disposition are not prohibited by ERISA or Section 4975 of the Code or similar laws.

Further, any person acquiring or holding the ARNs on behalf of any plan or with any plan assets shall be deemed to represent on behalf of itself and such plan that (x) the plan is paying no more than, and is receiving no less than, adequate consideration within the meaning of Section 408(b)(17) of ERISA in connection with the transaction or any redemption of the ARNs, (y) none of us, MLPF&S, or any other agent directly or indirectly exercises any discretionary authority or control or renders investment advice or otherwise acts in a fiduciary capacity with respect to the assets of the plan within the meaning of ERISA and (z) in making

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the foregoing representations and warranties, such person has applied sound business principles in determining whether fair market value will be paid, and has made such determination acting in good faith.

The fiduciary investment considerations summarized above generally apply to employee benefit plans maintained by private-sector employers and to individual retirement accounts and other arrangements subject to Section 4975 of the Code, but generally do not apply to governmental plans (as defined in Section 3(32) of ERISA), certain church plans (as defined in Section 3(33) of ERISA), and foreign plans (as described in Section 4(b)(4) of ERISA). However, these other plans may be subject to similar provisions under applicable federal, state, local, foreign, or other regulations, rules, or laws (“similar laws”). The fiduciaries of plans subject to similar laws should also consider the foregoing issues in general terms as well as any further issues arising under the applicable similar laws.

In addition, any purchaser, that is a Plan or a Plan Asset Entity or that is acquiring the ARNs on behalf of a Plan or a Plan Asset Entity, including any fiduciary purchasing on behalf of a Plan or Plan Asset entity, will be deemed to have represented, in its corporate and its fiduciary capacity, by its purchase and holding of the ARNs that (a) none of us, MLPF&S, or any of our respective affiliates is a “fiduciary” (under Section 3(21) of ERISA, or under any final or proposed regulations thereunder, or with respect to a governmental, church, or foreign plan under any similar laws) with respect to the acquisition, holding or disposition of the ARNs, or as a result of any exercise by us or our affiliates of any rights in connection with the ARNs, (b) no advice provided by us or any of our affiliates has formed a primary basis for any investment decision by or on behalf of such purchaser in connection with the ARNs and the transactions contemplated with respect to the ARNs, and (c) such purchaser recognizes and agrees that any communication from us or any of our affiliates to the purchaser with respect to the ARNs is not intended by us or any of our affiliates to be impartial investment advice and is rendered in its capacity as a seller of such ARNs and not a fiduciary to such purchaser. Purchasers of the ARNs have exclusive responsibility for ensuring that their purchase, holding, and disposition of the ARNs do not violate the prohibited transaction rules of ERISA or the Code or any similar regulations applicable to governmental or church plans, as described above.

This discussion is a general summary of some of the rules which apply to benefit plans and their related investment vehicles. This summary does not include all of the investment considerations relevant to Plans and other benefit plan investors such as governmental, church, and foreign plans and should not be construed as legal advice or a legal opinion. Due to the complexity of these rules and the penalties that may be imposed upon persons involved in non-exempt prohibited transactions, it is particularly important that fiduciaries or other persons considering purchasing the ARNs on behalf of or with “plan assets” of any Plan or other benefit plan investor consult with their legal counsel prior to directing any such purchase.