

BANK OF MONTREAL /CAN/  
Form FWP  
October 02, 2018

Registration Statement No. 333-217200

Filed Pursuant to Rule 433

Subject to Completion, dated October 2, 2018

Pricing Supplement to the Prospectus dated April 27, 2017,  
the Prospectus Supplement dated September 23, 2018, and the Product Supplement dated May 1, 2017

### **Senior Medium-Term Notes, Series E**

#### **Autocallable Barrier Notes with Contingent Coupons due January 31, 2020**

#### **Linked to SPDR<sup>®</sup> S&P<sup>®</sup> Metals & Mining ETF**

The notes are designed for investors who are seeking monthly contingent periodic interest payments (as described in more detail below), as well as a return of principal if the closing price of the SPDR<sup>®</sup> S&P<sup>®</sup> Metals & Mining ETF (the "Reference Stock") on any monthly Observation Date beginning in April 2019 is greater than 100% of its Initial Stock Price (the "Call Level"). Investors should be willing to have their notes automatically redeemed prior to maturity and be willing to lose some or all of their principal at maturity.

The notes will pay a Contingent Interest Payment on each monthly Interest Payment Date at the rate set forth below if the closing price of the Reference Stock on the applicable monthly Observation Date is greater than the Coupon Barrier. However, if the closing price of the Reference Stock is less than or equal to the Coupon Barrier on an Observation Date, the notes will not pay the Contingent Interest Payment for that Observation Date.

If on any monthly Observation Date beginning in April 2019, the closing price of the Reference Stock is greater than the Call Level, the notes will be automatically called. On the Call Settlement Date, for each \$1,000 principal amount, investors will receive the principal amount plus the Contingent Interest Payment.

The notes do not guarantee any return of principal at maturity. Instead, if the notes are not automatically called, the payment at maturity will be based on the Final Stock Price of the Reference Stock and whether the closing price of that Reference Stock has declined from the Initial Stock Price to a Final Stock Price that is less than the Trigger Price (a "Trigger Event"), as described below.

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If the notes are not automatically redeemed, and a Trigger Event has occurred, investors will be subject to one-for-one loss of the principal amount of the notes for any percentage decrease from the Initial Stock Price to the Final Stock Price. In such a case, you will receive a cash amount at maturity that is less than the principal amount, together with the final Contingent Interest Payment, if payable.

The notes will not be listed on any securities exchange.

All payments on the notes are subject to the credit risk of Bank of Montreal.

The notes will be issued in minimum denominations of \$1,000 and integral multiples of \$1,000.

Our subsidiary, BMO Capital Markets Corp. (“BMOCM”), is the agent for this offering. See “Supplemental Plan of Distribution (Conflicts of Interest)” below.

The notes will not be subject to conversion into our common shares or the common shares of any of our affiliates under subsection 39.2(2.3) of the Canada Deposit Insurance Corporation Act (the “CDIC Act”).

**Terms of the Notes:**

<b>Pricing Date:</b>	On or about October 26, 2018	<b>Maturity Date:</b>	On or about January 31, 2020
<b>Settlement Date:</b>	On or about October 31, 2018	<b>Call Level:</b>	100% of the Initial Stock Price
<b>Valuation Date:</b>	On or about January 28, 2020		

**Specific Terms of the Notes:**

<b>Autocallable Note Number</b>	<b>Reference Stock Issuer</b>	<b>Ticker Symbol</b>	<b>Coupon Initial Stock Price</b>	<b>Barrier Trigger Price</b>	<b>Contingent Interest Rate</b>	<b>CUSIP</b>	<b>Principal Amount</b>	<b>Price to Public<sup>(1)</sup></b>	<b>Agent’s Commission<sup>(1)</sup></b>	<b>Proceeds to Bank of Montreal</b>
ARC441	SPDR® S&P® Metals & Mining ETF	XME	75% of Initial Price	8.50% (0.7083% month)		06367WDA8	100%		2.00% US\$	98.00% US\$

<sup>(1)</sup> Certain dealers who purchase the notes for sale to certain fee-based advisory accounts may forego some or all of their selling concessions, fees or commissions. The public offering price for investors purchasing the notes in these accounts may be between \$980.00 and \$1,000 per \$1,000 in principal amount.

*Investing in the notes involves risks, including those described in the “Selected Risk Considerations” section beginning on page P-5 of this pricing supplement, the “Additional Risk Factors Relating to the Notes” section beginning on page PS-4 of the product supplement, and the “Risk Factors” sections beginning on page S-1 of the prospectus supplement and on page 8 of the prospectus.*

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the notes or passed upon the accuracy of this pricing supplement, the product supplement, the prospectus supplement or the prospectus. Any representation to the contrary is a criminal offense.**

The notes will be our unsecured obligations and will not be savings accounts or deposits that are insured by the United States Federal Deposit Insurance Corporation, the Deposit Insurance Fund, the Canada Deposit Insurance Corporation

or any other governmental agency or instrumentality or other entity.

On the date of this preliminary pricing supplement, based on the terms set forth above, the estimated initial value of the notes is \$968.40. The estimated initial value of the notes on the Pricing Date may differ from this value but will not be less than \$955 per \$1,000. However, as discussed in more detail in this pricing supplement, the actual value of the notes at any time will reflect many factors and cannot be predicted with accuracy.

**BMO CAPITAL MARKETS**

**Key Terms of the Notes:**

Reference Stock:	SPDR® S&P® Metals & Mining ETF (NYSE Arca symbol: XME). See the section below entitled “The Reference Stock” for additional information about the Reference Stock.
Underlying Index:	S&P® Metals & Mining Select Industry™ Index.
Contingent Interest Payment Dates:	Interest, if payable, will be paid on the last business day of each month beginning on November 30, 2018, to and including the Maturity Date, subject to the automatic redemption feature. The final Contingent Interest Payment Date will be the Maturity Date.
Contingent Interest Payments:	If the price of the Reference Stock on an Observation Date is greater than the Coupon Barrier, a Contingent Interest Payment will be paid on the Interest Payment Date, at the rate specified on the cover page.
Contingent Interest Rate:	8.50% per annum (0.7083% of the principal amount per month) unless earlier redeemed. Accordingly, each interest payment, if payable, will equal \$7.08 for each \$1,000 in principal amount per month.
Coupon Barrier and Trigger Price:	75% of the Initial Stock Price (rounded to two decimal places)
Automatic Redemption:	If, on any monthly Observation Date beginning in April 2019, the closing price of the Reference Stock is greater than the Call Level, the notes will be automatically redeemed.
Payment upon Automatic Redemption:	If the notes are automatically redeemed, then, on the applicable Call Settlement Date, for each \$1,000 principal amount, investors will receive the principal amount plus the applicable Contingent Interest Payment.
Observation Dates:	Five trading days prior to the applicable Contingent Interest Payment Date.
Call Settlement Dates:	The Contingent Interest Payment Date immediately following the applicable Observation Date.
Payment at Maturity:	If the notes are not automatically redeemed, the payment at maturity for the notes is based on the performance of the Reference Stock. You will receive \$1,000 for each \$1,000 in principal amount of the note, unless the Final Stock Price is less than the Trigger Price (a “Trigger Event”).  If the Final Stock Price is less than the Initial Stock Price you will receive at maturity, for each \$1,000 in principal amount of your notes, a cash amount equal to:

$\$1,000 + [\$1,000 \times \text{Percentage Change}]$

**This amount will be less than the principal amount of your notes, and may be zero.**

Trigger Event: A Trigger Event will be deemed to occur if the closing price of the Reference Stock is less than the Trigger Price on the Valuation Date.

Monitoring Period: The Valuation Date (only).

Percentage Change:  $\frac{\text{Final Stock Price} - \text{Initial Stock Price}}{\text{Initial Stock Price}}$ , expressed as a percentage

Initial Stock Price: The closing price of the Reference Stock on the Pricing Date. The Initial Stock Price is subject to adjustment in certain circumstances. See “General Terms of the Notes — Payment at Maturity” and “— Anti-dilution Adjustments” in the product supplement for additional information about these adjustments.

Call Level: 100% of the Initial Stock Price.

Final Stock Price: The closing price of the Reference Stock on the Valuation Date.

Pricing Date: On or about October 26, 2018

Settlement Date: On or about October 31, 2018

Valuation Date: On or about January 28, 2020

Maturity Date: On or about January 31, 2020

Physical Delivery Amount: We will only pay cash on the maturity date, and you will have no right to receive any shares of the Reference Stock.

Calculation Agent: BMOCM

Selling Agent: BMOCM

The Pricing Date and the settlement date are subject to change. The actual Pricing Date, Settlement Date, Contingent Interest Payment Dates, Observation Dates, Valuation Date and Maturity Date for the notes will be set forth in the final pricing supplement.

### Additional Terms of the Notes

You should read this pricing supplement together with the product supplement dated May 1, 2017, the prospectus supplement dated September 23, 2018 and the prospectus dated April 27, 2017. **This pricing supplement, together with the documents listed below, contains the terms of the notes and supersedes all other prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures, fact sheets, brochures or other educational materials of ours or the agent.** You should carefully consider, among other things, the matters set forth in “Additional Risk Factors Relating to the Notes” in the product supplement, as the notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisers before you invest in the notes.

You may access these documents on the SEC website at [www.sec.gov](http://www.sec.gov) as follows (or if such address has changed, by reviewing our filings for the relevant date on the SEC website):

Product supplement dated May 1, 2017:

<https://www.sec.gov/Archives/edgar/data/927971/000121465917002873/j427172424b5.htm>

Prospectus supplement dated September 23, 2018:

<https://www.sec.gov/Archives/edgar/data/927971/000119312518280416/d624491d424b5.htm>

Prospectus dated April 27, 2017:

<https://www.sec.gov/Archives/edgar/data/927971/000119312517142728/d254784d424b2.htm>

Our Central Index Key, or CIK, on the SEC website is 927971. As used in this pricing supplement, “we,” “us” or “our” refers to Bank of Montreal.

Please note that references in the product supplement to the prospectus supplement will be deemed to refer to the prospectus supplement dated September 23, 2018.

We have filed a registration statement (including a prospectus) with the SEC for the offering to which this document relates. Before you invest, you should read the prospectus in that registration statement and the other documents that we have filed with the SEC for more complete information about us and this offering. You may obtain these documents free of charge by visiting the SEC’s website at <http://www.sec.gov>. Alternatively, we will arrange to send to you the prospectus (as supplemented by the prospectus supplement and product supplement) if you request it by

calling our agent toll-free at 1-877-369-5412.

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## Selected Risk Considerations

An investment in the notes involves significant risks. Investing in the notes is not equivalent to investing directly in the Reference Stock. These risks are explained in more detail in the “Additional Risk Factors Relating to the Notes” section of the product supplement.

**Your investment in the notes may result in a loss.** — The notes do not guarantee any return of principal. If the notes are not automatically redeemed, the payment at maturity will be based on the Final Stock Price and whether a Trigger Event has occurred. If the Final Stock Price is less than the Trigger Price, you will be subject to a one-for-one loss of the principal amount of the notes for any Percentage Change from the Initial Stock Price. In such a case, you will receive at maturity a cash payment that is less than the principal amount of the notes and may be zero. **Accordingly, you could lose up to the entire principal amount of your notes, and your payments on the notes could be limited to the Contingent Interest Payments, if any.**

**You may not receive any Contingent Interest Payments with respect to your notes.** — We will not necessarily make periodic interest payments on the notes. If the closing price of the Reference Stock on an Observation Date is less than the Coupon Barrier, we will not pay you the Contingent Interest Payment applicable to that Observation Date. If the closing price of the Reference Stock is less than the Coupon Barrier on each of the Observation Dates, we will not pay you any Contingent Interest Payments during the term of the notes, and you will not receive a positive return on the notes. Furthermore, the non-payment of the Contingent Interest Payment as to the final Observation Date will coincide with a loss of principal on the notes, because in such a case, the Final Stock Price will be less than the Trigger Price.

**Your notes are subject to automatic early redemption.** — We will redeem the notes if the closing price of the Reference Stock on any Observation Date beginning in April 2019 is greater than the Call Level. Following an automatic redemption, you will not receive any additional Conditional Interest Payments on the notes, and you may not be able to reinvest your proceeds in an investment with returns that are comparable to the notes.

**Your return on the notes is limited to the Contingent Interest Payments, if any, regardless of any appreciation in the value of the Reference Stock.** — You will not receive a payment at maturity with a value greater than your principal amount plus the final Contingent Interest Payment, if payable. In addition, if the notes are automatically called, you will not receive a payment greater than the principal amount plus the applicable Contingent Interest Payment, even if the Final Stock Price exceeds the Call Level by a substantial amount. Accordingly, your maximum return on the notes is limited to the potential return represented by the Contingent Interest Payments.

**Your investment is subject to the credit risk of Bank of Montreal.** — Our credit ratings and credit spreads may adversely affect the market value of the notes. Investors are dependent on our ability to pay any amounts due on the notes, and therefore investors are subject to our credit risk and to changes in the market’s view of our creditworthiness. Any decline in our credit ratings or increase in the credit spreads charged by the market for taking our credit risk is likely to adversely affect the value of the notes.

**Potential conflicts.** — We and our affiliates play a variety of roles in connection with the issuance of the notes, including acting as calculation agent. In performing these duties, the economic interests of the calculation agent and other affiliates of ours are potentially adverse to your interests as an investor in the notes. We or one or more of our affiliates may also engage in trading of shares of the Reference Stock or the securities held by the Reference Stock on a regular basis as part of our general broker-dealer and other businesses, for proprietary accounts, for other accounts under management or to facilitate transactions for our customers. Any of these activities could adversely affect the price of the Reference Stock and, therefore, the market value of, and the payments on, the notes. We or one or more of our affiliates may also issue or underwrite other securities or financial or derivative instruments with returns linked or related to changes in the performance of the Reference Stock. By introducing competing products into the marketplace in this manner, we or one or more of our affiliates could adversely affect the market value of the notes.

**Our initial estimated value of the notes will be lower than the price to public.** — Our initial estimated value of the notes is only an estimate, and is based on a number of factors. The price to public of the notes will exceed our initial estimated value, because costs associated with offering, structuring and hedging the notes are included in the price to public, but are not included in the estimated value. These costs include the underwriting discount and selling concessions, the profits that we and our affiliates expect to realize for assuming the risks in hedging our obligations under the notes and the estimated cost of hedging these obligations. The initial estimated value of the notes may be as low as the amount indicated on the cover page of this pricing supplement.

**Our initial estimated value does not represent any future value of the notes, and may also differ from the estimated value of any other party.** — Our initial estimated value of the notes as of the date of this preliminary pricing supplement is, and our estimated value as determined on the Pricing Date will be, derived using our internal pricing models. This value is based on market conditions and other relevant factors, which include volatility of the Reference Stock, dividend rates and interest rates. Different pricing models and assumptions could provide values for the notes that are greater than or less than our initial estimated value. In addition, market conditions and other relevant factors after the Pricing Date are expected to change, possibly rapidly, and our assumptions may prove to be incorrect. After the Pricing Date, the value of the notes could change dramatically due to changes in market conditions, our creditworthiness, and the other factors set forth in this pricing supplement and the product supplement. These changes are likely to impact the price, if any, at which we or BMOCM would be willing to purchase the notes from you in any secondary market transactions. Our initial estimated value does not represent a minimum price at which we or our affiliates would be willing to buy your notes in any secondary market at any time.

**The terms of the notes are not determined by reference to the credit spreads for our conventional fixed-rate debt.** — To determine the terms of the notes, we will use an internal funding rate that represents a discount from the credit spreads for our conventional fixed-rate debt. As a result, the terms of the notes are less favorable to you than if we had used a higher funding rate.

**Certain costs are likely to adversely affect the value of the notes.** — Absent any changes in market conditions, any secondary market prices of the notes will likely be lower than the price to public. This is because any secondary market prices will likely take into account our then-current market credit spreads, and because any secondary market prices are likely to exclude all or a portion of the underwriting discount and selling concessions, and the hedging profits and estimated hedging costs that are included in the price to public of the notes and that may be reflected on your account statements. In addition, any such price is also likely to reflect a discount to account for costs associated with establishing or unwinding any related hedge transaction, such as dealer discounts, mark-ups and other transaction costs. As a result, the price, if any, at which BMOCM or any other party may be willing to purchase the notes from you in secondary market transactions, if at all, will likely be lower than the price to public. Any sale that you make prior to the maturity date could result in a substantial loss to you.

**Owning the notes is not the same as owning shares of the Reference Stock or a security directly linked to the Reference Stock.** — The return on your notes will not reflect the return you would realize if you actually owned shares of the Reference Stock or a security directly linked to the performance of the Reference Stock and held that investment for a similar period. Your notes may trade quite differently from the Reference Stock. Changes in the price of the Reference Stock may not result in comparable changes in the market value of your notes. Even if the price of the Reference Stock increases during the term of the notes, the market value of the notes prior to maturity may not increase to the same extent. It is also possible for the market value of the notes to decrease while the price of the Reference Stock increases. In addition, any dividends or other distributions paid on the Reference Stock will not be reflected in the amount payable on the notes. The return on the notes may be less than the return on an investment in the Reference Stock.

**You will not have any shareholder rights and will have no right to receive any shares of the Reference Stock at maturity.** — Investing in your notes will not make you a holder of any shares of the Reference Stock, or any securities held by the Reference Stock. Neither you nor any other holder or owner of the notes will have any voting rights, any right to receive dividends or other distributions, or any other rights with respect to those securities.

**No Delivery of Shares of the Reference Stock.** — The notes will be payable only in cash. You should not invest in the notes if you seek to have the shares of the Reference Stock delivered to you at maturity.

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**Changes that affect the Underlying Index will affect the market value of the notes, whether the notes will be automatically called, and the amount you will receive at maturity.** — The policies of the index sponsor of the Underlying Index, concerning the calculation of the Underlying Index, additions, deletions or substitutions of the components of the Underlying Index and the manner in which changes affecting those components, such as stock dividends, reorganizations or mergers, may be reflected in the Underlying Index and, therefore, could affect the share price of the Reference Stock, the amounts payable on the notes, whether the notes are automatically called, and the market value of the notes prior to maturity. The amounts payable on the notes and their market value could also be affected if the index sponsor changes these policies, for example, by changing the manner in which it calculates the Underlying Index, or if the index sponsor discontinues or suspends the calculation or publication of the Underlying Index.

**We have no affiliation with the index sponsor of the Underlying Index and will not be responsible for its actions.** — The sponsor of the Underlying Index is not our affiliate, and will not be involved in the offering of the notes in any way. Consequently, we have no control over the actions of the index sponsor of the Underlying Index, including any actions of the type that would require the calculation agent to adjust the payment to you at maturity. The index sponsor of the Underlying Index has no obligation of any sort with respect to the notes. Thus, the index sponsor of the Underlying Index has no obligation to take your interests into consideration for any reason, including in taking any actions that might affect the value of the notes. None of our proceeds from the issuance of the notes will be delivered to the index sponsor of the Underlying Index.

**Adjustments to the Reference Stock could adversely affect the notes.** — The sponsor and advisor of the Reference Stock, SSgA Funds Management, Inc. (“SSFM”), is responsible for calculating and maintaining the Reference Stock. The sponsor and advisor of the Reference Stock can add, delete or substitute the stocks comprising the Reference Stock or make other methodological changes that could change the share price of the Reference Stock at any time. If one or more of these events occurs, the calculation of the amount payable at maturity may be adjusted to reflect such event or events. Consequently, any of these actions could adversely affect the amounts payable on the notes and/or the market value of the notes.

**We and our affiliates do not have any affiliation with the investment advisor or the Reference Stock Issuer and are not responsible for its public disclosure of information.** — The investment advisor of the Reference Stock Issuer advises the Reference Stock Issuer on various matters, including matters relating to the policies, maintenance and calculation of the Reference Stock. We and our affiliates are not affiliated with the investment advisor or the Reference Stock Issuer in any way and have no ability to control or predict its actions, including any errors in or discontinuance of disclosure regarding the methods or policies relating to the Reference Stock. Neither the investment advisor nor the Reference Stock Issuer is involved in the offering of the notes in any way or has any obligation to consider your interests as an owner of the notes in taking any actions relating to the Reference Stock Issuer that might affect the value of the notes. Neither we nor any of our affiliates has independently verified the adequacy or accuracy of the information about the investment advisor, the Reference Stock Issuer or the Reference Stock contained in any public disclosure of information. You, as an investor in the notes, should make your own investigation into the Reference Stock Issuer.

**The correlation between the performance of the Reference Stock and the performance of the Underlying Index may be imperfect.** — The performance of the Reference Stock is linked principally to the performance of the Underlying Index. However, because of the potential discrepancies identified in more detail in the product

supplement, the return on the Reference Stock may correlate imperfectly with the return on the Underlying Index.

**The Reference Stock is subject to management risks.** — The Reference Stock is subject to management risk, which is the risk that the investment advisor's investment strategy, the implementation of which is subject to a number of constraints, may not produce the intended results. For example, the investment advisor may invest a portion of the Reference Stock Issuer's assets in securities not included in the relevant industry or sector but which the investment advisor believes will help the Reference Stock track the relevant industry or sector.

**Lack of liquidity.** — The notes will not be listed on any securities exchange. BMOCM may offer to purchase the notes in the secondary market, but is not required to do so. Even if there is a secondary market, it may not provide enough liquidity to allow you to trade or sell the notes easily. Because other dealers are not likely to make a secondary market for the notes, the price at which you may be able to trade the notes is likely to depend on the price, if any, at which BMOCM is willing to buy the notes.

**Hedging and trading activities.** — We or any of our affiliates may carry out hedging activities related to the notes, including in the Reference Stock, the securities that it holds, or instruments related to the Reference Stock. We or our affiliates may also trade in the Reference Stock, such securities, or instruments related to the Reference Stock from time to time. Any of these hedging or trading activities on or prior to the Pricing Date and during the term of the notes could adversely affect the payments on the notes.

**Many economic and market factors will influence the value of the notes.** — In addition to the price of the Reference Stock and interest rates on any trading day, the value of the notes will be affected by a number of economic and market factors that may either offset or magnify each other, and which are described in more detail in the product supplement.

**You must rely on your own evaluation of the merits of an investment linked to the Reference Stock.** — In the ordinary course of their businesses, our affiliates from time to time may express views on expected movements in the price of the Reference Stock or the securities held by the Reference Stock. One or more of our affiliates have published, and in the future may publish, research reports that express views on the Reference Stock or these securities. However, these views are subject to change from time to time. Moreover, other professionals who deal in the markets relating to Reference Stock at any time may have significantly different views from those of our affiliates. You are encouraged to derive information concerning the Reference Stock from multiple sources, and you should not rely on the views expressed by our affiliates.

Neither the offering of the notes nor any views which our affiliates from time to time may express in the ordinary course of their businesses constitutes a recommendation as to the merits of an investment in the notes.

**The stocks included in the Underlying Index are concentrated in one industry.** — All or substantially all of the equity securities held by the Reference Stock are issued by companies whose primary lines of business are directly associated with the metals and mining industry. As a result, the value of the notes may be subject to greater volatility and be more adversely affected by a single economic, political or regulatory occurrence affecting this industry than a different investment linked to securities of a more broadly diversified group of issuers. The metals and mining industry can be significantly affected by international political and economic developments, the success of exploration projects, commodity prices and tax and other government regulations. Companies involved in the metals and mining industry may benefit from government subsidies or certain trade protections. If those subsidies or trade protections are reduced or removed, the profits of such companies may be affected, potentially drastically. In addition, competitive pressures and the cyclical nature of the metal and mining industry may have a significant effect on the financial condition of these companies. These companies are also subject to risks of changes in exchange rates, terrorist attacks, depletion of resources and reduced demand. Such companies are subject to extensive federal, state and local environmental laws and regulations regarding air emissions and the disposal of hazardous materials and may be at risk for environmental damage claims. These factors could affect the metals and mining industry and could affect the value of the equity securities held by the Reference Stock and the price of the Reference Stock during the term of the notes, which may adversely affect the value of your notes.

**Significant aspects of the tax treatment of the notes are uncertain.** — The tax treatment of the notes is uncertain. We do not plan to request a ruling from the Internal Revenue Service or from any Canadian authorities regarding the tax treatment of the notes, and the Internal Revenue Service or a court may not agree with the tax treatment described in this pricing supplement.

The Internal Revenue Service has released a notice that may affect the taxation of holders of “prepaid forward contracts” and similar instruments. According to the notice, the Internal Revenue Service and the U.S. Treasury are actively considering whether the holder of such instruments should be required to accrue ordinary income on a current basis.

While it is not clear whether the notes would be viewed as similar to such instruments, it is possible that any future guidance could materially and adversely affect the tax consequences of an investment in the notes, possibly with retroactive effect.

Please read carefully the section entitled “Supplemental U.S. Federal Income Tax Considerations” in this pricing supplement, the section entitled “United States Federal Income Taxation” in the accompanying prospectus and the section entitled “Certain Income Tax Consequences” in the accompanying prospectus supplement. You should consult your tax advisor about your own tax situation.

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**Examples of the Hypothetical Payment at Maturity for a \$1,000 Investment in the Notes**

The following table illustrates the hypothetical payments on a note at maturity, assuming that the notes are not automatically called. The hypothetical payments are based on a \$1,000 investment in the note, a hypothetical Initial Stock Price of \$100.00, a hypothetical Trigger Price of \$75.00 (75% of the hypothetical Initial Stock Price), a hypothetical Call Level of \$100.00 (100% of the hypothetical Initial Stock Price), and a range of hypothetical Final Stock Prices.

The hypothetical examples shown below are intended to help you understand the terms of the notes. If the notes are not automatically called, the actual cash amount that you will receive at maturity will depend upon the Final Stock Price of the Reference Stock. If the notes are automatically called prior to maturity, the hypothetical examples below will not be relevant, and you will receive on the applicable Call Settlement Date, for each \$1,000 principal amount, the principal amount plus the applicable Contingent Interest Payment.

As discussed in more detail above, your total return on the notes will depend on the number of Contingent Interest Payment Dates on which the Contingent Interest Payment is payable. It is possible that the only payments on your notes will be the payment, if any, due at maturity. The payment at maturity will not exceed the principal amount, and may be significantly less.

<b>Hypothetical Final Stock Price</b>	<b>Hypothetical Final Stock Price Expressed as a Percentage of the Initial Stock Price</b>	<b>Payment at Maturity (Excluding Interest Payments)</b>
\$150.00	150.00%	\$1,000.00
\$125.00	125.00%	\$1,000.00
\$110.00	110.00%	\$1,000.00
\$100.00	100.00%	\$1,000.00
\$90.00	90.00%	\$1,000.00
\$80.00	80.00%	\$1,000.00
\$75.00	75.00%	\$1,000.00
\$70.00	70.00%	\$700.00
\$65.00	65.00%	\$650.00
\$50.00	50.00%	\$500.00
\$25.00	25.00%	\$250.00
\$0.00	0.00%	\$0.00

## **Supplemental U.S. Federal Income Tax Considerations**

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

The following section supplements the discussion of U.S. federal income taxation in the accompanying prospectus and prospectus supplement with respect to United States holders (as defined in the accompanying prospectus). It applies only to those holders who are not excluded from the discussion of U.S. federal income taxation in the accompanying prospectus. It does not apply to holders subject to special rules including holders subject to Section 451(b) of the Code. In addition, the discussion below assumes that an investor in the notes will be subject to a significant risk that it will lose a significant amount of its investment in the notes. Bank of Montreal intends to treat Contingent Interest Payments with respect to the notes as U.S. source income for U.S. federal income tax purposes.

You should consult your tax advisor concerning the U.S. federal income tax and other tax consequences of your investment in the notes in your particular circumstances, including the application of state, local or other tax laws and the possible effects of changes in federal or other tax laws.

**NO STATUTORY, JUDICIAL OR ADMINISTRATIVE AUTHORITY DIRECTLY DISCUSSES HOW THE NOTES SHOULD BE TREATED FOR U.S. FEDERAL INCOME TAX PURPOSES. AS A RESULT, THE U.S. FEDERAL INCOME TAX CONSEQUENCES OF AN INVESTMENT IN THE NOTES ARE UNCERTAIN. BECAUSE OF THE UNCERTAINTY, YOU SHOULD CONSULT YOUR TAX ADVISOR IN DETERMINING THE U.S. FEDERAL INCOME TAX AND OTHER TAX CONSEQUENCES OF YOUR INVESTMENT IN THE NOTES, INCLUDING THE APPLICATION OF STATE, LOCAL OR OTHER TAX LAWS AND THE POSSIBLE EFFECTS OF CHANGES IN FEDERAL OR OTHER TAX LAWS.**

We will not attempt to ascertain whether the Reference Stock or any of the entities whose stock is owned by the Reference Stock would be treated as a “passive foreign investment company” within the meaning of Section 1297 of the Code or a “U.S. real property holding corporation” within the meaning of Section 897 of the Code. If a Reference Stock or any of the entities whose stock is owned by the Reference Stock were so treated, certain adverse U.S. federal income tax consequences could possibly apply. You should refer to any available information filed with the SEC by the Reference Stock or any of the entities whose stock is owned by the Reference Stock and consult your tax advisor regarding the possible consequences to you in this regard.

In the opinion of our counsel, Morrison & Foerster LLP, it would generally be reasonable to treat a note with terms described in this pricing supplement as a pre-paid cash-settled contingent income-bearing derivative contract in respect of the Reference Stock for U.S. federal income tax purposes, and the terms of the notes require a holder and us (in the absence of a change in law or an administrative or judicial ruling to the contrary) to treat the notes for all tax purposes in accordance with such characterization. Although the U.S. federal income tax treatment of the Contingent Interest Payments is uncertain, we intend to take the position, and the following discussion assumes, that such Contingent Interest Payments (including any interest payment on or with respect to the maturity date) constitute taxable ordinary income to a United States holder at the time received or accrued in accordance with the holder's regular method of accounting. If the notes are treated as described above, it would be reasonable for a United States holder to take the position that it will recognize capital gain or loss upon the sale or maturity of the notes in an amount equal to the difference between the amount a United States holder receives at such time (other than amounts properly attributable to any interest payments, which would be treated, as described above, as ordinary income) and the United States holder's tax basis in the notes. In general, a United States holder's tax basis in the notes will be equal to the price the holder paid for the notes. Capital gain recognized by an individual United States holder is generally taxed at ordinary income rates where the property is held for one year or less. The deductibility of capital losses is subject to limitations.

## **Alternative Treatments**

Alternative tax treatments of the notes are also possible and the Internal Revenue Service might assert that a treatment other than that described above is more appropriate. For example, it would be possible to treat the notes, and the Internal Revenue Service might assert that the notes should be treated, as a single debt instrument. Such a debt instrument would be subject to the tax rules governing short-term debt instruments. If the notes are so treated, a United States holder would generally be required to accrue interest currently over the term of the notes irrespective of the Contingent Interest Payments, if any, paid on the notes. In addition, any gain a United States holder might recognize upon the sale or maturity of the notes would be ordinary income and any loss recognized by a holder at such time would be ordinary loss to the extent of interest that same holder included in income in the current or previous taxable years in respect of the notes, and thereafter, would be capital loss.

Because of the absence of authority regarding the appropriate tax characterization of the notes, it is also possible that the Internal Revenue Service could seek to characterize the notes in a manner that results in other tax consequences that are different from those described above.

The Internal Revenue Service has released a notice that may affect the taxation of holders of the notes. According to the notice, the Internal Revenue Service and the Treasury Department are actively considering whether the holder of an instrument such as the notes should be required to accrue ordinary income on a current basis irrespective of any interest payments, and they sought taxpayer comments on the subject. It is not possible to determine what guidance they will ultimately issue, if any. It is possible, however, that under such guidance, holders of the notes will ultimately be required to accrue income currently and this could be applied on a retroactive basis. The Internal Revenue Service and the Treasury Department are also considering other relevant issues, including whether additional gain or loss from such instruments should be treated as ordinary or capital and whether the special “constructive ownership rules” of Section 1260 of the Code might be applied to such instruments. Holders are urged to consult their tax advisors concerning the significance, and the potential impact, of the above considerations. We intend to treat the notes for U.S. federal income tax purposes in accordance with the treatment described in this pricing supplement unless and until such time as the Treasury Department and Internal Revenue Service determine that some other treatment is more appropriate.

## **Backup Withholding and Information Reporting**

Please see the discussion under “United States Federal Income Taxation—Other Considerations—Backup Withholding and Information Reporting” in the accompanying prospectus for a description of the applicability of the backup withholding and information reporting rules to payments made on your notes.

## **Non-United States Holders**

The following discussion applies to non-United States holders of the notes. A non-United States holder is a beneficial owner of a note that, for U.S. federal income tax purposes, is a non-resident alien individual, a foreign corporation, or a foreign estate or trust.

While the U.S. federal income tax treatment of the notes (including proper characterization of the Contingent Interest Payments for U.S. federal income tax purposes) is uncertain, U.S. federal income tax at a 30% rate (or at a lower rate under an applicable income tax treaty) will be withheld in respect of the Contingent Interest Payments paid to a non-United States holder unless such payments are effectively connected with the conduct by the non-United States holder of a trade or business in the U.S. (in which case, to avoid withholding, the non-United States holder will be required to provide a Form W-8ECI). We will not pay any additional amounts in respect of such withholding. To claim benefits under an income tax treaty, a non-United States holder must obtain a taxpayer identification number and certify as to its eligibility under the appropriate treaty's limitations on benefits article, if applicable (which certification may generally be made on a Form W-8BEN or W-8BEN-E, or a substitute or successor form). In addition, special rules may apply to claims for treaty benefits made by corporate non-United States holders. A non-United States holder that is eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the Internal Revenue Service. The availability of a lower rate of withholding or an exemption from withholding under an applicable income tax treaty will depend on the proper characterization of the Contingent Interest Payments under U.S. federal income tax laws and whether such treaty rate or exemption applies to such payments. No assurance can be provided on the proper characterization of the Contingent Interest Payments for U.S. federal income tax purposes and, accordingly, no assurance can be provided on the availability of benefits under any income tax treaty. Non-United States holders must consult their tax advisors in this regard.

Except as discussed below, a non-United States holder will generally not be subject to U.S. federal income or withholding tax on any gain (not including for the avoidance of doubt any amounts properly attributable to any interest which would be subject to the rules discussed in the previous paragraph) upon the sale or maturity of the notes, provided that (i) the holder complies with any applicable certification requirements (which certification may generally be made on a Form W-8BEN or W-8BEN-E, or a substitute or successor form), (ii) the payment is not effectively connected with the conduct by the holder of a U.S. trade or business, and (iii) if the holder is a non-resident alien individual, such holder is not present in the U.S. for 183 days or more during the taxable year of the sale or maturity of the notes. In the case of (ii) above, the holder generally would be subject to U.S. federal income tax with respect to any income or gain in the same manner as if the holder were a United States holder and, in the case of a holder that is a corporation, the holder may also be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable U.S. income tax treaty) of a portion of its earnings and profits for the taxable year that are effectively connected with its conduct of a trade or business in the U.S., subject to certain adjustments. Payments made to a non-United States holder may be subject to information reporting and to backup withholding unless the holder complies with applicable certification and identification requirements as to its foreign status.

A “dividend equivalent” payment is treated as a dividend from sources within the U.S. and such payments generally would be subject to a 30% U.S. withholding tax if paid to a non-United States 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, Internal Revenue Service guidance 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. Based on our determination that the notes are not “delta-one” instruments, non-United States holders should not be subject to withholding on dividend equivalent payments, if any, under the notes. However, it is possible that the notes could be treated as deemed reissued for U.S. federal income tax purposes upon the occurrence of certain events affecting the Reference Stock or the notes, and following such occurrence the notes could be treated as delta-one specified ELIs that are subject to withholding on dividend equivalent payments. Non-United States holders that enter, or have entered, into other transactions in respect of the Reference Stock or the notes should consult their tax advisors as to the application of the dividend equivalent withholding tax in the context of the notes and their other transactions. If any payments are treated as dividend equivalents subject to withholding, we (or the applicable paying agent) would be entitled to withhold taxes without being required to pay any additional amounts with respect to amounts so withheld.

As discussed above, alternative characterizations of the notes for U.S. federal income tax purposes are possible. Should an alternative characterization, by reason of change or clarification of the law, by regulation or otherwise, cause payments as to the notes to become subject to withholding tax in addition to the withholding tax described above, we will withhold tax at the applicable statutory rate. The Internal Revenue Service has also indicated that it is considering whether income in respect of instruments such as the notes should be subject to withholding tax. Prospective investors should consult their own tax advisors in this regard.

## **Foreign Account Tax Compliance Act**

The Foreign Account Tax Compliance Act imposes 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 the Treasury Department to collect and provide to the Treasury Department substantial information regarding U.S. account holders, including certain account holders that are foreign entities with U.S. owners, with such institution. A note may constitute an account for these purposes. The legislation also generally imposes a withholding tax of 30% on Withholdable Payments made to a non-financial foreign entity unless such entity provides the withholding agent with a certification that it does not have any substantial U.S. owners or a certification identifying the direct and indirect substantial U.S. owners of the entity.

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

### **Supplemental Plan of Distribution (Conflicts of Interest)**

BMOCM will purchase the notes from us at a purchase price reflecting the commission set forth on the cover page of this pricing supplement. BMOCM has informed us that, as part of its distribution of the notes, it will reoffer the notes to other dealers who will sell them. Each such dealer, or additional dealer engaged by a dealer to whom BMOCM reoffers the notes, will receive a commission from BMOCM, which will not exceed the commission set forth on the cover page. This commission will include a selling concession paid by BMOCM or one of its affiliates to certain dealers of up to 1.60% of the principal amount in connection with the distribution of the notes.

Certain dealers who purchase the notes for sale to certain fee-based advisory accounts may forego some or all of their selling concessions, fees or commissions. The public offering price for investors purchasing the notes in these accounts may be less than 100% of the principal amount, as set forth on the cover page of this document. Investors that hold their notes in these accounts may be charged fees by the investment advisor or manager of that account based on the amount of assets held in those accounts, including the notes.

We will deliver the notes on a date that is greater than two business days following the pricing date. Under Rule 15c6-1 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the notes more than two business days prior to the issue date will be required to specify alternative settlement arrangements to prevent a failed settlement.

We own, directly or indirectly, all of the outstanding equity securities of BMOCM, the agent for this offering. In accordance with FINRA Rule 5121, BMOCM may not make sales in this offering to any of its discretionary accounts without the prior written approval of the customer.

We reserve the right to withdraw, cancel or modify the offering of the notes and to reject orders in whole or in part. You may cancel any order for the notes prior to its acceptance.

You should not construe the offering of the notes as a recommendation of the merits of acquiring an investment linked to the Reference Stock or as to the suitability of an investment in the notes.

BMOCM may, but is not obligated to, make a market in the notes. BMOCM will determine any secondary market prices that it is prepared to offer in its sole discretion.



We may use the final pricing supplement relating to the notes in the initial sale of the notes. In addition, BMOCM or another of our affiliates may use the final pricing supplement relating to the notes in market-making transactions in any notes after their initial sale. Unless BMOCM or we inform you otherwise in the confirmation of sale, the final pricing supplement is being used by BMOCM in a market-making transaction.

For a period of approximately three months following issuance of the notes, the price, if any, at which we or our affiliates would be willing to buy the notes from investors, and the value that BMOCM may also publish for the notes through one or more financial information vendors and which could be indicated for the notes on any brokerage account statements, will reflect a temporary upward adjustment from our estimated value of the notes that would otherwise be determined and applicable at that time. This temporary upward adjustment represents a portion of (a) the hedging profit that we or our affiliates expect to realize over the term of the notes and (b) the underwriting discount and the selling concessions paid in connection with this offering. The amount of this temporary upward adjustment will decline to zero on a straight-line basis over the three-month period.

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

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

### **Additional Information Relating to the Estimated Initial Value of the Notes**

Our estimated initial value of the notes on the date of this preliminary pricing supplement, and that will be set forth on the cover page of the final pricing supplement relating to the notes, equals the sum of the values of the following hypothetical components:

- a fixed-income debt component with the same tenor as the notes, valued using our internal funding rate for structured notes; and

- one or more derivative transactions relating to the economic terms of the notes.

The internal funding rate used in the determination of the initial estimated value generally represents a discount from the credit spreads for our conventional fixed-rate debt. The value of these derivative transactions are derived from our internal pricing models. These models are based on factors such as the traded market prices of comparable derivative instruments and on other inputs, which include volatility, dividend rates, interest rates and other factors. As a result, the estimated initial value of the notes on the Pricing Date will be determined based on market conditions at that time.

## **The Reference Stock**

In this section, Reference Stock Issuer refers to the SPDR® S&P® Metals and Mining ETF (the “XME”), Reference Stock refers to the shares of the XME, and Underlying Index refers to the S&P Metals & Mining Select Industry™ Index.

The Reference Stock is an investment portfolio maintained and managed by SSFM. The Reference Stock trades on the NYSE Arca under the ticker symbol “XME.” The inception date of the Reference Stock is June 19, 2006.

Information provided to or filed with the SEC by the SPDR® Series Trust (“SPDR”) under the Securities Exchange Act of 1934 can be located by reference to its Central Index Key, or CIK, 1064642 through the SEC’s website at <http://www.sec.gov>. Additional information about SSFM and the Reference Stock may be obtained from other sources including, but not limited to, press releases, newspaper articles and other publicly disseminated documents. We have not made any independent investigation as to the accuracy or completeness of such information.

The Reference Stock seeks to provide investment results that correspond generally to the price and yield performance, before fees and expenses, of the Underlying Index. The Underlying Index represents the metals and mining sub-industry portion of the S&P TMI.

The Reference Stock utilizes a “sampling” investment approach in attempting to track the performance of the Underlying Index. Under normal circumstances, the Reference Stock typically invests in substantially all of the securities which comprise the Underlying Index in approximately the same proportions as the Underlying Index. Reference Stock will normally invest at least 80% of its total assets in common stocks that comprise the Underlying Index.

The information above was compiled from the SPDR® website. We have not independently investigated the accuracy of that information. Information contained in the SPDR® website is not incorporated by reference in, and should not be considered a part of, this document.

## **The Underlying Index**

The S&P® Metals & Mining Select Industry® Index is managed by S&P Dow Jones Indices LLC (“S&P”) and is a modified equal-weighted index that is designed to measure the performance of stocks in the S&P TMI that both (i) are classified under the Global Industry Classification Standard (“GICS®”) in the aluminum, coal & consumable fuels, copper, diversified metals & mining, gold, precious metals & minerals, silver or steel sub-industries and (ii) satisfy certain liquidity and market capitalization requirements. The S&P TMI tracks all eligible U.S. common stocks listed on the NYSE, NYSE Arca, NYSE American (formerly NYSE MKT), Nasdaq Global Select Market, Nasdaq Select Market, Nasdaq Capital Market, Bats BZX, Bats BYX, Bats EDGA, Bats EDGX and IEX. The index is one of the 21 sub-industry sector indices S&P maintains that are derived from a portion of the stocks comprising the S&P TMI. An equal-weighted index is one where every stock or company has the same weight in the index. As such, the index must be rebalanced from time to time to re-establish the proper weighting.

The return on your notes will not reflect any dividends paid on the Reference Stock, on the securities purchased by the Reference Stock or on the securities that comprise the index.

### **Eligibility for Inclusion in the Index**

Selection for the index is based on a company’s GICS® classification, as well as liquidity and market capitalization requirements. In addition, only U.S. companies are eligible for inclusion in the index. GICS® classifications are determined by S&P using criteria it has selected or developed. Index and classification system sponsors may use very different standards for determining sector designations. In addition, many companies operate in a number of sectors, but are listed only in one sector. As a result, sector comparisons between indices with different sponsors may reflect differences in methodology as well as actual differences in the sector composition of the indices.

To be eligible for inclusion in the index, stocks must be in the S&P TMI and satisfy the following combined liquidity and market capitalization criteria: (i) a float-adjusted market capitalization above \$500 million with a float-adjusted liquidity ratio above 90% or (ii) a float-adjusted market capitalization above \$400 million with a float-adjusted liquidity ratio above 150%; and (iii) are U.S. based companies. The float-adjusted liquidity ratio is defined as the dollar value traded over the previous 12 months divided by the float-adjusted market capitalization as of the index’s rebalancing reference date.

All stocks in the related GICS® sub-industries satisfying the above requirements are included in the index and, the total number of stocks in the index should be at least 35. If there are fewer than 35 stocks in the index, the market capitalization requirements may be relaxed to reach at least 22 stocks.

With respect to liquidity, the length of time to evaluate liquidity is reduced to the available trading period for companies that recently became public or companies that were spun-off from other companies, the stocks of which therefore do not have 12 months of trading history.

### **Calculation of the Total Return of the Index**

The total return calculation begins with the price return of the index. The price return index is calculated as the index market value divided by the divisor. Given the index is an equal-weighted index, the market capitalization of each stock used in the calculation of the index market value is redefined so that each stock has an equal weight in the index on each rebalancing date. The adjusted market capitalization for each stock in the index is calculated as the product of the stock price, the number of shares outstanding, the stock's float factor and the adjustment factor.

A stock's float factor refers to the number of shares outstanding that are available to investors. S&P indices exclude shares closely held by control groups from the index calculation because such shares are not available to investors. For each stock, S&P calculates an Investable Weight Factor ("IWF"), which is the percentage of total shares outstanding that are included in the index calculation.

The adjustment factor for each stock is assigned at each rebalancing date and is calculated by dividing a specific constant set for the purpose of deriving the adjustment factor (often referred to as modified index shares) by the number of stocks in the index multiplied by the float-adjusted market value of such stock on such rebalancing date.

Adjustments are also made to ensure that no stock in the index will have a weight that exceeds the value that can be traded in a single day for a theoretical portfolio of \$1 billion.

The maximum basket liquidity weight for each stock in the index will be calculated using the ratio of its three-month median daily value traded to a theoretical portfolio value of \$1 billion. Each stock's weight in the index is then compared to its maximum basket liquidity weight and is set to the lesser of (1) its maximum basket liquidity weight or (2) its initial equal weight. All excess weight is redistributed across the index to the uncapped stocks. If necessary, a

final adjustment is made to ensure that no stock in the index has a weight greater than 4.5%. No further adjustments are made if the latter step would force the weight of those stocks limited to their maximum basket liquidity weight to exceed that weight. If the index contains exactly 22 stocks as of the rebalancing effective date, the index will be equally weighted without basket liquidity constraints.

If a company has more than one share class line in the S&P TMI, such company will be represented once by the primary listing (generally the most liquid share line). In the event that a company issues a secondary share class to the index share class holders by means of a mandatory distribution, the newly issued share class line will be added to the index on the distribution ex-date, provided that the distributed class is not considered to be *de minimis*. Both share class lines will then remain in the index until the next rebalancing, at which time only the primary share class line will be considered for continued inclusion.

The index is calculated by using the divisor methodology used in all S&P equity indices. The initial divisor was set to have a base value of 1,000 on December 17, 1999. The index level is the index market value divided by the index divisor. In order to maintain index series continuity, it is also necessary to adjust the divisor at each rebalancing. Therefore, the divisor (after rebalancing) equals the index market value (after rebalancing) divided by the index value before rebalancing. The divisor keeps the index comparable over time and is one manipulation point for adjustments to the index, which we refer to as maintenance of the index.

Once the price return index has been calculated, the total return index is calculated. First, the total daily dividend for each stock in the index is calculated by multiplying the per share dividend by the number of shares included in the index. Dividends are reinvested in the index after the close on the ex-date for such dividend. Then the index dividend is calculated by aggregating the total daily dividends for each of the index stocks (which may be zero for some stocks) and dividing by the divisor for that day. Next the daily total return of the index is calculated as a fraction minus 1, the numerator of which is the sum of the index level plus the index dividend and the denominator of which is the index level on the previous day. Finally, the total return index for that day is calculated as the product of the value of the total return index on the previous day *times* the *sum* of 1 *plus* the index daily total return for that day.

## **Maintenance of the Index**

The composition of the index is reviewed quarterly. Rebalancing occurs after the closing of the relevant U.S. trading markets on the third Friday of the month ending that quarter. The reference date for float-adjusted market capitalization and the float-adjusted liquidity ratio is after the closing of the last trading date of the previous month. The reference date for GICS® classification is as of the rebalancing effective date. Existing stocks in the index are removed at the quarterly rebalancing if either their float-adjusted capitalization falls below \$300 million or their float-adjusted liquidity ratio falls below 50%. A stock will also be deleted from the index if the S&P TMI deletes that stock. Stocks are added between rebalancings only if a company deletion causes the number of stocks in the index to fall below 22. The newly added stock will be added to the index at the weight of the deleted stock. If the stock was deleted at \$0.00, the newly added stock will be added at the deleted stock's previous day's closing value (or the most immediate prior business day that the deleted stock was not valued at \$0.00) and an adjustment to the divisor will be made (only in the case of stocks removed at \$0.00). At the next rebalancing, the index will be rebalanced based on the eligibility requirements and equal-weight methodology discussed above. In the case of GICS® changes, where a stock does not belong to a qualifying sub-industry after the classification change, it is removed from the index on the next rebalancing date.

In the case of a merger involving two index constituents, the merged entity will remain in the index provided that it meets all general eligibility requirements. The merged entity will be added to the index at the weight of the stock deemed to be the surviving stock in the transaction (i.e., the surviving stock will not experience a weight change and its subsequent weight will not be equal to that of the pre-merger weight of the merged entities).

Adjustments are made to the index in the event of certain corporate actions relating to the stocks included in the index, such as spin-offs, rights offerings, stock splits and special dividends, as per the methodology of the Underlying Index.

**Historical Information of the SPDR® S&P® Metals & Mining ETF**

The following table sets forth the high and low closing prices of the Reference Stock from the first quarter of 2008 through September 27, 2018.

	<b>High (in \$)</b>	<b>Low (in \$)</b>
2008 First Quarter	77.53	57.85
Second Quarter	94.24	71.36
Third Quarter	92.77	43.99
Fourth Quarter	44.44	17.37
2009 First Quarter	32.49	20.79
Second Quarter	43.00	26.36
Third Quarter	49.62	32.87
Fourth Quarter	53.55	42.35
2010 First Quarter	58.73	45.48
Second Quarter	59.95	45.69
Third Quarter	53.81	44.73
Fourth Quarter	69.01	53.09
2011 First Quarter	74.28	65.53
Second Quarter	76.48	62.77
Third Quarter	71.80	44.82
Fourth Quarter	58.99	41.88
2012 First Quarter	56.78	48.69
Second Quarter	50.58	38.40
Third Quarter	47.70	37.25
Fourth Quarter	46.80	40.56
2013 First Quarter	46.68	39.21
Second Quarter	39.41	32.11
Third Quarter	39.37	32.88
Fourth Quarter	42.09	36.60
2014 First Quarter	42.84	38.45
Second Quarter	42.93	38.75
Third Quarter	43.87	36.79
Fourth Quarter	36.13	29.35
2015 First Quarter	30.87	25.72
Second Quarter	29.13	24.33
Third Quarter	23.97	16.43



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Fourth Quarter	19.77	14.44
2016 First Quarter	20.91	11.97
Second Quarter	24.62	19.89
Third Quarter	29.02	24.28
Fourth Quarter	33.73	24.43
2017 First Quarter	34.85	29.63
Second Quarter	31.37	28.03
Third Quarter	32.95	29.54
Fourth Quarter	36.40	30.32
2018 First Quarter	39.17	33.06
Second Quarter	38.62	33.63
Third Quarter (through September 27, 2018)	37.25	32.54

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