

KEEP A COPY FOR YOUR RECORDS. This is your Margin Agreement with Pershing LLC ("Pershing").

TO: Pershing LLC

In consideration of your accepting and carrying for the undersigned one or more accounts introduced to you by my broker, bank, or other introducing firm ("Introducing Firm"), which Introducing Firm is intended to have the benefit and is a third-party beneficiary of this agreement, the undersigned agrees as follows:

Role of Pershing

I understand that Pershing is the carrier of the accounts of the undersigned as clearing broker pursuant to a clearing agreement with the Introducing Firm. Until receipt from the undersigned of written notice to the contrary, Pershing may accept from the Introducing Firm, without inquiry or investigation, (i) orders for the purchase or sale of securities and other property on margin or otherwise, and (ii) any other instructions concerning said accounts. Notices to the undersigned concerning margin requirements or other matters related to the undersigned's accounts usually will go through the undersigned's Introducing Firm although direct notice to the undersigned with duplicate notice to the undersigned's Introducing Firm may occur if market conditions, time constraints, or other circumstances require it. Pershing shall not be responsible or liable for any acts or omissions of the Introducing Firm or its employees. I understand that Pershing provides no investment advice, nor does Pershing give advice or offer any opinion with respect to the suitability of any transaction or order. I understand that my Introducing Firm is not acting as the agent of Pershing and I agree that I will in no way hold Pershing, its other divisions, and its officers, directors, and agents liable for any trading losses incurred by me.

1. Applicable Rules and Regulations

All transactions for the undersigned shall be subject to the constitution, rules, regulations, customs, and usages of the exchange or market and its clearing house, if any, where executed by Pershing or its agents, including its subsidiaries and affiliates.

2. Definitions

For purposes of this agreement "securities, commodities, and other property," as used herein shall include, but not be limited to money, securities, and commodities of every kind and nature and all contracts and options relating thereto, whether for present or future delivery.

3. Lien

All securities, commodities, and other property of the undersigned, which Pershing may at any time be carrying for the undersigned, or which may at any time be in Pershing's possession or under Pershing's control, shall be subject to a general lien and security interest in Pershing's favor for the discharge of all the undersigned's indebtedness and other obligations to Pershing, without regard to Pershing having made any advances in connection with such securities and other property and without regard to the number of accounts the undersigned may have with Pershing. In enforcing its lien, Pershing shall have the discretion to determine which securities and property are to be sold and which contracts are to be closed. Securities and other property held in the undersigned's retirement account(s) maintained by Pershing, which may include Individual Retirement Accounts (IRAs) or qualified plans, are not subject to this general lien and such securities or other property may only be used to satisfy the undersigned's indebtedness or other obligations to your Introducing Firm and/or Pershing related to the undersigned's retirement account(s).

4. Liquidation

If, in its discretion, Pershing considers it necessary for protection to require additional collateral, or in the event that a petition in bankruptcy is filed, or the appointment of a receiver is filed by or against the undersigned, or an attachment is levied against the accounts of the undersigned, or in the event of the death of the undersigned, Pershing shall have the right to sell any or all securities, commodities, and other property in the accounts of the undersigned with Pershing, whether carried individually or jointly with others, to buy any or all securities, commodities, and other property which may be short in such accounts, to cancel any open orders and to close any or all outstanding contracts, all without demand for margin or additional margin, notice of sale or purchase, or other notice or advertisement. Any such sales or purchases may be made at Pershing's discretion on any exchange or other market where such business is usually transacted, or at public auction or private sale, and Pershing may be the purchaser for its own account. It being understood that a prior demand, or call, or prior notice of the time and place of such sale or purchase shall not be considered a waiver of Pershing's right to sell or buy without demand or notice.

5. Payment of Indebtedness Upon Demand and Liability for Costs of Collection

The undersigned shall at all times be liable for the payment upon demand of any debit balance or other obligations owing in any of the accounts of the undersigned with Pershing, and the undersigned shall be liable to Pershing for any deficiency remaining in any such accounts in the event of the liquidation thereof, in whole or in part, by Pershing or by the undersigned; and, the undersigned shall make payments of such obligations and indebtedness upon demand. The reasonable cost and expense of collection of the debit balance, recovery of securities, and any unpaid deficiency in the accounts of the undersigned with Pershing, including, but not limited to attorney's fees, incurred and payable or paid by Pershing shall be payable to Pershing by the undersigned.

6. Pledge of Securities

All securities, commodities, and other property now or hereafter held, carried, or maintained by Pershing in its possession in any of the accounts of the undersigned may be pledged, repledged, hypothecated or rehypothecated by Pershing from time to time, without notice to the undersigned, either separately or in common with other such securities, commodities, and other property for any amount due in the accounts of the undersigned, or for any greater amount, and Pershing may do so without retaining into its possession or control for delivery, a like amount of similar securities, commodities, or other property.

7. Margin Requirements, Credit Charges, and Credit Investigation

The undersigned will at all times maintain such securities, commodities, and other property in the accounts of the undersigned for margin purposes as Pershing shall require from time to time via a margin call or other request, and the monthly debit balances or adjusted balances in the accounts of the undersigned with Pershing shall be charged, in accordance with Pershing practice, with interest at a rate permitted by laws of the state of New York. It is understood



that the interest charge made to the undersigned's account at the close of a charge period will be added to the opening balance for the next charge period unless paid. The undersigned acknowledges receipt of the Disclosure Statement from my Introducing Firm, which explains the conditions under which interest can be charged to my account, the annual rate of interest, how debit balances are determined, and the methods of computing interest. The undersigned further acknowledges receipt of the separate Margin Disclosure Statement, which provides some basic facts about purchasing securities on margin and alerts the undersigned to the risks involved with trading securities in a margin account.

In regard to margin calls, whether for maintenance or any other margin call, in lieu of immediate liquidations, Pershing, through the undersigned's Introducing Firm, may permit the undersigned a period of time to satisfy a call. This time period shall not in any way waive or diminish Pershing's right in its sole discretion, to shorten the time period in which the undersigned may satisfy the call, including one already outstanding, or to demand that a call be satisfied immediately. Nor does such practice waive or diminish the right of Pershing and/or the undersigned's Introducing Firm to sell out positions to satisfy the call, which can be as high as the full indebtedness owed by me. Margin requirements may be established and changed by Pershing in its sole discretion and judgement without notice to the undersigned. In making this determination, Pershing may take into account various factors including but not limited to (i) issues as to the undersigned's securities such as, among others, the liquidity of a position and concentrations of securities in an account, (ii) considerations as to the undersigned's status, including but not limited to a decline in creditworthiness, (iii) the size of the account, (iv) the general condition of the market, (v) considerations as to the ability of Pershing to obtain financing, and (vi) regulatory interpretations or guidance. The undersigned will contact its Introducing Firm for the latest information on margin requirements.

Pershing may exchange credit information about the undersigned with others. Pershing may request a credit report on the undersigned and upon request, Pershing will state the name and address of the consumer reporting agency that furnished it. If Pershing extends, updates, or renews the undersigned's credit, Pershing may request a new credit report without telling the undersigned.

8. Communications

Communications may be sent to the undersigned at the current address of the undersigned, which is on file at Pershing's office, or at such other address as the undersigned may hereafter give Pershing in writing, or through my Introducing Firm, and all communications, so sent, whether by mail, telegraph, messenger, or otherwise, shall be deemed given to the undersigned personally, whether actually received or not.

9. Scope and Transferability

This agreement shall cover individually and collectively all accounts that the undersigned may open or reopen with Pershing, and shall inure to the benefits of its successors and assigns, whether Pershing's merger, consolidation, or otherwise, and Pershing may transfer the accounts of the undersigned to its successors and assigns, and this agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

10. No Professional Advice

The undersigned acknowledges that Pershing will not provide the undersigned with any investment, legal, tax, or accounting advice,

that its employees are not authorized to give any such advice, and that the undersigned will not solicit or rely upon any such advice from Pershing or its employees whether in connection with transactions in or for any of the accounts of the undersigned or otherwise. In making investment, legal, tax, or accounting decisions with respect to transactions in or for the accounts of the undersigned or any other matter, the undersigned will consult with and rely upon its own advisors and not Pershing, and Pershing shall have no liability therefore.

11. Extraordinary Events

Pershing shall not be liable for loss caused directly or indirectly by government restrictions, exchange or market rulings, suspension of trading, war, strikes, or other conditions beyond its control.

12. Representations as to Capacity to Enter Into Agreement

The undersigned, if an individual, represents that he or she is of full age, that unless otherwise disclosed to Pershing in writing the undersigned is not an employee of any exchange; or an employee of any corporation of which any exchange owns a majority of the capital stock; or an employee of a member firm or member corporation registered on any exchange; or an employee of a bank, trust company, insurance company; or an employee of any corporation, firm, or individual engaged in the business of dealing either as a broker or as principal in securities, bills of exchange, acceptances, or other forms of commercial paper. The undersigned further represents that no one except the undersigned has an interest in the account or accounts of the undersigned with Pershing.

13. Joint and Several Liability

If the undersigned shall consist of more than one individual, their obligations under this agreement shall be joint and several. The undersigned have executed the Joint Account Agreement and made the election required therein. Pursuant to that agreement, Pershing may, but is not required to, accept instructions from either joint party.

14. Option Transactions

If at any time the undersigned shall enter into any transaction for the purchase or resale of an option contract, the undersigned hereby agrees to abide by the rules of any national securities association, registered securities exchange, or clearing organization applicable to the trading of option contracts and, acting alone or in concert, will not violate the position or exercise limitation rules of any such association, exchange, the Options Clearing Corporation, or other clearing organization.

15. Separability

If any provision or condition of this agreement shall be held to be invalid or unenforceable by any court, or regulatory or self-regulatory agency or body, such invalidity or unenforceability shall attach only to such provision or condition. The validity of the remaining provisions and conditions shall not be affected thereby and this agreement shall be carried out as if any such invalid or unenforceable provision or condition were not contained herein.

16. Headings Are Descriptive

The heading of each provision hereof is for descriptive purposes only and shall not be deemed to modify or qualify any of the rights or obligations set forth in each such provision.

17. Assignment of Pershing's Rights Under This Agreement to the Introducing Firm

The undersigned agrees that any rights that Pershing has under this agreement, including but not limited to the right to collect any debit

balance or other obligations owing in any of the accounts of the undersigned, may be assigned to the Introducing Firm of the undersigned so that the undersigned's Introducing Firm may collect from the undersigned independently or jointly with Pershing, or enforce any other rights granted to Pershing under this agreement.

18. No Waiver

This agreement cannot be modified by conduct and no failure on the part of Pershing at any time to enforce its rights hereunder to the greatest extent permitted shall in any way be deemed to waive, modify, or relax all of the rights granted Pershing herein, including those rights vested in Pershing to deal with collateral on all loans advanced to the undersigned.

19. Entire Agreement

This agreement constitutes the full and entire understanding between the parties with respect to the provisions herein, and there are no oral or other agreements in conflict herewith. Any future modification, amendment, or supplement to this agreement or any individual provision herein can only be in the form of a writing signed by a representative of Pershing.

20. Arbitration Disclosures

THIS AGREEMENT CONTAINS A PREDISPUTE ARBITRATION CLAUSE. BY SIGNING AN ARBITRATION AGREEMENT THE PARTIES AGREE AS FOLLOWS:

- **ALL PARTIES TO THIS AGREEMENT ARE GIVING UP THE RIGHT TO SUE EACH OTHER IN COURT, INCLUDING THE RIGHT TO A TRIAL BY JURY, EXCEPT AS PROVIDED BY THE RULES OF THE ARBITRATION FORUM IN WHICH A CLAIM IS FILED.**
- **ARBITRATION AWARDS ARE GENERALLY FINAL AND BINDING; A PARTY'S ABILITY TO HAVE A COURT REVERSE OR MODIFY AN ARBITRATION AWARD IS VERY LIMITED.**
- **THE ABILITY OF THE PARTIES TO OBTAIN DOCUMENTS, WITNESS STATEMENTS AND OTHER DISCOVERY IS GENERALLY MORE LIMITED IN ARBITRATION THAN IN COURT PROCEEDINGS.**
- **THE ARBITRATORS DO NOT HAVE TO EXPLAIN THE REASON(S) FOR THEIR AWARD, UNLESS, IN AN ELIGIBLE CASE, A JOINT REQUEST FOR AN EXPLAINED DECISION HAS BEEN SUBMITTED BY ALL PARTIES TO THE PANEL AT LEAST 20 DAYS PRIOR TO THE FIRST SCHEDULED HEARING DATE.**
- **THE PANEL OF ARBITRATORS WILL TYPICALLY INCLUDE A MINORITY OF ARBITRATORS WHO WERE OR ARE AFFILIATED WITH THE SECURITIES INDUSTRY.**
- **THE RULES OF SOME ARBITRATION FORUMS MAY IMPOSE TIME LIMITS FOR BRINGING A CLAIM IN ARBITRATION. IN SOME CASES, A CLAIM THAT IS INELIGIBLE FOR ARBITRATION MAY BE BROUGHT IN COURT.**
- **THE RULES OF THE ARBITRATION FORUM IN WHICH THE CLAIM IS FILED, AND ANY AMENDMENTS THERETO, SHALL BE INCORPORATED INTO THIS AGREEMENT.**

21. Arbitration Agreement

ANY CONTROVERSY BETWEEN YOU AND THE UNDERSIGNED SHALL BE SUBMITTED TO ARBITRATION BEFORE THE FINANCIAL INDUSTRY REGULATORY AUTHORITY.

NO PERSON SHALL BRING A PUTATIVE OR CERTIFIED CLASS ACTION TO ARBITRATION, NOR SEEK TO ENFORCE ANY

PREDISPUTE ARBITRATION AGREEMENT AGAINST ANY PERSON WHO HAS INITIATED IN COURT A PUTATIVE CLASS ACTION; OR WHO IS A MEMBER OF A PUTATIVE CLASS WHO HAS NOT OPTED OUT OF THE CLASS WITH RESPECT TO ANY CLAIMS ENCOMPASSED BY THE PUTATIVE CLASS ACTION UNTIL; (I) THE CLASS CERTIFICATION IS DENIED; (II) THE CLASS IS DECERTIFIED; OR (III) THE CUSTOMER IS EXCLUDED FROM THE CLASS BY THE COURT. SUCH FORBEARANCE TO ENFORCE AN AGREEMENT TO ARBITRATE SHALL NOT CONSTITUTE A WAIVER OF ANY RIGHTS UNDER THIS AGREEMENT EXCEPT TO THE EXTENT STATED HEREIN.

THE LAWS OF THE STATE OF NEW YORK GOVERN.

22. The Laws of the State of New York Govern

This agreement and its enforcement shall be governed by the laws of the state of New York without giving effect to its conflicts of laws provisions.

23. Loan Consent

By signing this agreement, the undersigned acknowledges that securities not fully paid for by the undersigned may be loaned to Pershing or loaned out to others, and as permitted by law, certain securities in the undersigned's account, may be used for, among other things, settling short sales and lending the securities for short sales, and as a result Pershing and your Introducing Firm may receive compensation in connection therewith. Pershing does not lend fully paid-for securities without your written permission. Please contact your introducing financial institution with any questions. Fully-paid for securities held in a cash account (unless otherwise agreed in a separate written agreement) and fully-paid-for securities held in a margin account in which there is no debit balance are not loaned.

24. Shareholder Vote of Loaned Securities

In the event the undersigned's securities have been loaned by Pershing on the record date of a shareholder vote involving those securities, the undersigned agrees that the undersigned's vote may be reduced to reflect the total amount of the undersigned's securities loaned by Pershing.

Margin Agreement Acknowledgement Form

BY SIGNING THIS ACKNOWLEDGEMENT FORM, THE UNDERSIGNED ACCEPTS THE TERMS OF THE ENCLOSED AGREEMENT, AND ACKNOWLEDGES THAT THE UNDERSIGNED HAS READ AND UNDERSTOOD THE MARGIN DISCLOSURE STATEMENT WHICH DETAILS THE RISKS ASSOCIATED WITH A MARGIN ACCOUNT, AND THE UNDERSIGNED HAS READ AND UNDERSTOOD THE CREDIT TERMS EXPLAINED IN THE DISCLOSURE STATEMENT. PLEASE BE SURE THAT ALL ACCOUNT OWNERS SIGN THIS ACKNOWLEDGEMENT FORM.

SPECIAL NOTE FOR NON-U.S. ACCOUNTS: With respect to assets custodied by Pershing on the undersigned's behalf, the undersigned acknowledges that income and capital gains or distributions to the undersigned from this account may be taxable in the undersigned's home jurisdiction. Furthermore, interest paid to Pershing under this agreement may be subject to withholding tax in the undersigned's home jurisdiction. It is the undersigned's obligation to pay such withholding tax, if applicable. The undersigned acknowledges to its financial organization and to Pershing that the undersigned has taken its own tax advice in this regard.

ACCOUNT OWNER(S) SIGNATURE(S)

PLEASE BE SURE THAT ALL ACCOUNT OWNERS SIGN THIS ACKNOWLEDGEMENT FORM.

THE UNDERSIGNED ACKNOWLEDGES THAT BY SIGNING THIS AGREEMENT THAT SECURITIES NOT FULLY PAID FOR BY THE UNDERSIGNED MAY BE LOANED TO PERSHING OR LOANED OUT TO OTHERS.

THE MARGIN AGREEMENT CONTAINS A PREDISPUTE ARBITRATION CLAUSE IN PARAGRAPHS 20 AND 21 ON PAGE 3 IN THIS AGREEMENT. THE UNDERSIGNED ACKNOWLEDGES RECEIVING A COPY.

Margin Account Number

Authorized Signer Print Name	Date
Signature X	

Authorized Signer Print Name	Date
Signature X	

Authorized Signer Print Name	Date
Signature X	

Authorized Signer Print Name	Date
Signature X	

Authorized Signer Print Name	Date
Signature X	

Please Complete if a Corporation, Partnership, or Other Entity

Name of Entity	Date
Title	Seal
Signature X	

Margin Disclosure Statement

The Margin Disclosure Statement is intended to provide some basic facts about purchasing securities on margin and to alert you to the risks involved with trading securities in a margin account. Before trading securities in a margin account, it is important to carefully review the written Margin Agreement provided by your financial organization or its clearing firm, Pershing LLC ("Pershing"), and to consult with your financial organization regarding any questions or concerns you may have regarding margin accounts.

When you purchase securities, you have the option of paying for them in full or borrowing part of the purchase price from Pershing. If you choose to borrow funds from Pershing, you will need to open a margin account with Pershing through your financial organization. The securities purchased are used as collateral for the loan that was made to you or any other indebtedness arising after the initial transaction. If the securities in your brokerage account decline in value, so does the value of the collateral supporting your loan. As a result, your financial organization or Pershing can take action. For instance, your financial organization or Pershing can issue a margin call and/or sell securities or liquidate other assets in any of your brokerage accounts held with your financial organization or Pershing in order to maintain the required equity in the margin account.

It is important that you fully understand the risks involved in trading securities on margin. These risks include the following:

You can lose more funds or securities than you deposit in the margin account.

A decline in the value of securities that are purchased on margin may require you to provide additional funds to Pershing to avoid the forced sale of those securities or other securities or assets in your account(s).

Your financial organization or Pershing can force the sale of securities or other assets in your account(s).

If the equity in your account falls below Pershing's maintenance margin requirements or your financial organization's higher "house" requirements, your financial organization or Pershing can sell the securities or other assets in any of your accounts to cover the margin deficiency. You also will be responsible for any shortfall in the account after such a sale.

Your financial organization or Pershing can sell your securities or other assets without contacting you.

Some investors mistakenly believe that a financial organization must contact them for a margin call to be valid, and that the financial organization cannot liquidate securities or other assets in their account(s) to meet the call unless the financial organization has contacted them first. This is not the case. Most financial organizations will attempt to notify their clients of margin calls, but they are not required to do so. However, even if a financial organization has contacted a client and provided a specific date by which the client can meet a margin call, the financial organization can still take necessary steps to protect its financial interests, including immediately selling the securities without notice to the client.

Your financial organization or Pershing may change margin requirements or margin call time periods without notice to you.

With regard to house, maintenance, and other margin calls, in lieu of immediate liquidations, Pershing, through your financial organization, may permit you a period of time to satisfy a call. This time period shall not in any way waive or diminish Pershing's right in its sole discretion, to shorten the time period in which you may satisfy a call, including one already outstanding, or to demand that a call be satisfied immediately. Nor does such practice waive or diminish the right of Pershing or your financial organization to sell out positions to satisfy the call, which can be as high as the full indebtedness owed by you. Margin requirements may be established and changed by Pershing or your financial organization in its sole discretion and judgement.

You are not entitled to choose which securities or other assets in your brokerage account(s) are liquidated or sold to meet a margin call.

Because the securities are collateral for the margin loan, your financial organization or Pershing has the right to decide which securities to sell

in order to protect its interests.

Your financial organization or Pershing can increase its "house" maintenance margin requirements at any time and is not required to provide you with advance written notice.

These changes in firm policy often take effect immediately and may result in the issuance of a maintenance margin call. Your failure to satisfy the call may cause your financial organization or Pershing to liquidate or sell securities in your brokerage account(s).

You are not entitled to an extension of time on a margin call.

While an extension of time to meet margin requirements may be available to investors under certain conditions, an investor does not have a right to the extension.

Your written Margin Agreement with Pershing or your financial organization provides for certain important obligations by you.

The Margin Agreement is a legally binding agreement, cannot be modified by conduct, and no failure on the part of Pershing or your financial organization at any time to enforce its rights under the Margin Agreement to the greatest extent permitted shall in any way be deemed to waive, modify, or relax any of the rights granted Pershing or your financial organization, including those rights vested in Pershing or your financial organization to deal with collateral on all loans advanced to you.

Also, the Margin Agreement constitutes the full and entire understanding between the parties with respect to the provision of the Margin Agreement, and there are no oral or other agreements in conflict with the Margin Agreement unless you have advised Pershing or your financial organization in writing of such conflict. Any future modification, amendment, or supplement of the Margin Agreement or any individual provision of the Margin Agreement can only be in writing signed by a representative of Pershing. You should carefully review your Margin Agreement for the rights and limitations governing your margin account relationship.

If Article 15 of the EU Securities Financing Transactions Regulation ("SFTR") is applicable to you:

Please refer to https://www.pershing.com/_global-assets/pdf/disclosures/per-eu-article-15-info-stmt.pdf for access to an information statement disclosing the risks and consequences of delivering non cash collateral under a relevant collateral arrangement with Pershing LLC (including a margin account). This statement does not amend or supersede the express terms of any transaction, collateral arrangement or otherwise affect your or our liabilities or obligations. Please contact your financial professional if you have any questions.