



Carefully read the Margin Agreement and make certain that all the information is completed to be considered for Margin Credit in your account. All account owner(s)/trustee(s) must sign and date this form. Please keep a copy for your records.

Questions? Please call 800-927-3059 Monday - Friday 8 a.m. - 7 p.m. (ET). Fax: 800-914-8922.

STEP 1: BROKERAGE ACCOUNT INFORMATION (REQUIRED)

Brokerage Account Number

Brokerage Account Owner Name(s)

Input boxes for account number: A 5 [] [] [] [] [] [] [] []

Input box for Brokerage Account Owner Name(s)

STEP 2: MARGIN ACCOUNT AGREEMENT ACKNOWLEDGMENT AND SIGNATURE(S)

To TIAA-CREF Individual & Institutional Services, LLC and Pershing LLC: By signing this margin acknowledgment form, I ("Client") accept the terms of the enclosed agreement; have read and understood the Margin Disclosure Statement which details the risks associated with a margin account. I ("Client") have also read and understood the credit terms explained in the Margin Disclosure Statement hereof.

MARGIN AGREEMENT ACKNOWLEDGMENT FORM

BY SIGNING THIS ACKNOWLEDGMENT FORM, YOU ACCEPT THE TERMS OF THE ENCLOSED AGREEMENT, AND YOU ACKNOWLEDGE YOU HAVE READ AND UNDERSTOOD THE MARGIN AGREEMENT AND INTEREST RATE DISCLOSURE FOUND IN YOUR BROKERAGE ACCOUNT CUSTOMER AGREEMENT WHICH DETAILS THE RISKS ASSOCIATED WITH A MARGIN ACCOUNT, AND YOU HAVE READ AND UNDERSTOOD THE CREDIT TERMS EXPLAINED IN THE DISCLOSURE STATEMENT. PLEASE BE SURE THAT ALL ACCOUNT OWNERS SIGN THIS ACKNOWLEDGMENT FORM.

SPECIAL NOTE FOR NON-U.S. ACCOUNTS: With respect to assets custodied by Pershing on your behalf, you acknowledge that income and capital gains or distributions to you from this account may be taxable in your home jurisdiction. Furthermore, interest paid to Pershing under this agreement may be subject to withholding tax in your home jurisdiction. It is your obligation to pay such withholding tax, if applicable. You acknowledge to TIAA and to Pershing that you have taken your own tax advice in this regard.

BY SIGNING THIS AGREEMENT, I ACKNOWLEDGE THAT SECURITIES NOT FULLY PAID FOR BY ME 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 5 IN THIS AGREEMENT. I ACKNOWLEDGE RECEIVING A COPY OF THIS AGREEMENT AND ACCEPT ITS TERMS PER MY SIGNATURE BELOW.

Note: All Authorized Persons named on the TIAA Brokerage Account must sign this agreement. This would include any named Owner(s) and all Trustees.

For Organizational Accounts, also include your respective title(s).

Account Owner/Trustee Signature

Signature input box 1

Today's Date (mm/dd/yyyy)

Date input box 1: [] [] / [] [] / 20 [] []

Account Owner/Trustee Signature

Signature input box 2

Today's Date (mm/dd/yyyy)

Date input box 2: [] [] / [] [] / 20 [] []

Account Owner/Trustee Signature

Signature input box 3

Today's Date (mm/dd/yyyy)

Date input box 3: [] [] / [] [] / 20 [] []



STEP 3: MARGIN ACCOUNT AGREEMENT

KEEP THIS COPY FOR YOUR RECORDS. THIS IS A COPY OF YOUR MARGIN AGREEMENT WITH PERSHING LLC (“PERSHING”).

Meaning of terms in the Agreement: “I”, “Client” and “undersigned” refer to the person(s) who signed this Margin Agreement Form. “Pershing” refers to Pershing LLC. “TIAA” refers to TIAA-CREF Individual & Institutional Services, LLC that has introduced my (our) account to Pershing. In consideration of your accepting and carrying for the undersigned one or more accounts introduced to you by TIAA, which TIAA 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 TIAA. Until receipt from the undersigned of written notice to the contrary, Pershing may accept from TIAA, 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 TIAA, although direct notice to the undersigned with duplicate notice to TIAA 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 TIAA 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 TIAA 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 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 TIAA 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.



STEP 3: MARGIN ACCOUNT AGREEMENT (CONTINUED)

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.

I acknowledge receipt of the Disclosure Statement from TIAA, 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. I further acknowledge receipt of the separate Margin Disclosure Statement, which provides some basic facts about purchasing securities on margin and alerts me 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 TIAA, may permit me 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 I 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 TIAA 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 judgment without notice to me. 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. I will contact TIAA 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 TIAA, 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.



STEP 3: MARGIN ACCOUNT AGREEMENT (CONTINUED)

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 LIABILITIES

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 TIAA

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 TIAA so that TIAA 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 me.

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.



STEP 3: MARGIN ACCOUNT AGREEMENT (CONTINUED)

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 US 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 TIAA may receive compensation in connection therewith. Pershing does not lend fully-paid-for securities without your written permission. Please contact TIAA 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.

STEP 4: RETURN COMPLETED FORM TO:

FAX:
800-914-8922

STANDARD MAIL:
TIAA
P.O. Box 1280
Charlotte, NC 28201-1280

OVERNIGHT:
TIAA
8500 Andrew Carnegie Blvd.
Charlotte, NC 28262

SEND US YOUR FORM ONLINE:

- Log in to your account at tiaa.org. On the top most menu, next to "Profile & Settings," select "Messages."
- Within the "Shared Files" tab in "Message Center," select the "Upload Files" button.

