



Client relationship summary, as of July 31, 2023



This summary is provided to help you make informed decisions about the services, products and accounts offered by TIAA-CREF Individual & Institutional Services, LLC (“**TC Services**,” “**we**,” “**us**,” “**our**”), and includes important information about the recommendations we make and the fees we charge. TC Services is a TIAA affiliate and Securities and Exchange Commission registered broker-dealer (“**BD**”) and investment adviser (“**RIA**”). *BD and RIA services and fees differ, and it is important that you understand the differences. Free and simple tools are available to research firms and financial professionals at [Investor.gov/CRS](https://www.investor.gov/crs). The site also provides educational materials about BDs, RIAs and investing.*

1. What investment services and advice can you provide me?

We offer both BD services and RIA services to retail investors. If you have a Plan, or are a participant of, we may use data from the Plan to provide these services to you. Plan sponsors do not review or endorse any services, accounts or products available outside of their Plans.

 Broker-dealer services¹	 Registered investment adviser services²
<p>Through our BD representatives and online tools and calculators we can:</p> <ul style="list-style-type: none">▪ Recommend that you open, contribute or consolidate your assets (by rolling over or transferring) to accounts/products we recommend as a BD (listed on right)▪ Recommend that you purchase and sell specific investments for your Plans (where available), IRAs offered by TIAA (excluding managed account IRAs) and certain affiliated annuities, but not for brokerage accounts offered by us▪ Recommend annuitizing affiliated annuity products to create lifetime income▪ Buy and sell securities for your accounts at your direction▪ Offer education and enrollment services that do not involve a recommendation <p>We are a distributor for TIAA-affiliated mutual funds and variable annuities and for certain state-issued education savings plans.</p> <p><i>Our BD services are provided based on your needs at the time of the service.</i></p> <p>Recommendations to purchase or sell specific investments for:</p> <ul style="list-style-type: none">▪ Plans—limited to a menu of investments selected by the plan sponsor▪ IRAs offered by TIAA (excluding managed account IRAs)—limited to a menu of TIAA-affiliated mutual funds, annuities and bank deposits <p><i>Our BD services and accounts/products we recommend as a BD are not subject to minimums and do not provide ongoing monitoring. They are non-discretionary. You make the ultimate decision regarding the purchase or sale of investments.</i></p>	<p>Through our RIA representatives we can:</p> <ul style="list-style-type: none">▪ Provide financial planning to help you understand your goals and make a plan to pursue them▪ Recommend that you open, contribute or consolidate your assets (by rolling over or transferring) to accounts/products we recommend as an RIA (listed on right) <p><i>Financial planning is provided based on your needs at the time of the service and does not include any investment recommendations. Your accounts are not monitored as part of this service, and TC Services does not make any decisions regarding the purchase or sale of investments in your accounts.</i></p> <p><i>Our managed accounts include a customized model portfolio limited to mutual funds and/or exchange-traded funds (“ETFs”), are subject to minimums and provide ongoing monitoring and discretion by us.</i></p> <p><i>TIAA Trust, N.A. managed accounts include a customized portfolio limited to mutual funds, ETFs, individual equity securities and/or bonds, are subject to minimums and provide ongoing monitoring and discretion by TIAA Trust, N.A.</i></p>

As a BD we recommend:

- Employer-sponsored plans recordkept by TIAA (“Plans”)
- Brokerage accounts offered by us
- Individual Retirement Accounts (“IRAs”) sponsored by TIAA (excluding managed account IRAs)
- Affiliated retirement annuity products available in Plans and IRAs
- Affiliated annuity products available outside of Plans and IRAs

As an RIA we recommend:

- Managed accounts offered by us
- Managed accounts offered by TIAA Trust, N.A. (our affiliated trust company)

¹ For BD recommendations you’ll receive the *Regulation Best Interest* disclosure.

² For RIA services you will also receive the ADV 2A disclosure brochure.

Other services

Separate from our BD and RIA services, we may also:


- **Offer you nonsecurities products** such as fixed annuity products
- **Refer you to third-party providers** for bank deposits and lending products
- **Refer you to TIAA Trust, N.A.** for trust services, investment management, and in-Plan asset allocation and quarterly rebalancing services
- **Refer you to TIAA-CREF Tuition Financing, Inc.** for education savings
- **Refer you to third-party agency** for life insurance and long-term care

2. What fees will I pay?

There are fees associated with our BD and RIA services and the accounts/products we recommend (see fee chart on page 3).

You will pay fees and costs whether you make or lose money on your investments. Fees and costs will reduce any amount of money you make on your investments over time. Please make sure you understand what fees and costs you are paying.

These fees create conflicts of interest. We have an incentive to encourage you to invest or consolidate your assets into the accounts/products we recommend because TC Services and its affiliates and representatives are compensated when you do so. Specific conflicts of interest are addressed in the next question.

 **Fee types and definitions**—A fee is the principal amount you pay for the product or service
For more information about fees and their frequencies, see [TIAA.org/relationshipdisclosures](https://www.tiaa.org/relationshipdisclosures).

Account fees

These fees can include various account maintenance fees, transfer fees, a termination fee, contingent deferred sales charges or other charges that may be incurred upon the sale of a security transferred into an account at your request and/or redemption fees.

Asset-based fee

The account's monthly fee determined by the market value of assets in an account.

Asset-based wrap fee

The account's quarterly fee determined by the market value of assets in an account and inclusive of most transaction costs and fees charged by TC Services and its clearing firm.

Referral fees

We may receive one-time or ongoing referral fees for referring you to affiliated or unaffiliated service providers for bank deposits, insurance sales or investment management services.

Brokerage commissions

Fees for the purchase or sale of securities in an account.

General administrative expenses

Expenses charged to or deducted from Plan balances to pay service providers like TIAA for plan administrative service.

Insurance fees

These fees can include state premium taxes, upfront sales loads, surrender charges, cost of insurance charges, administrative charges and mortality and expense risk charges.

Investment expenses

Expenses associated with the investments held (i.e., funds), whether directly or in an account, as disclosed in a prospectus or similar document. Such expenses vary by product and share class and depend on the distribution arrangement we have in place with the product sponsor.

Transaction fees

Transaction charges for each applicable transaction.



What to ask a representative

Given my financial situation, should I choose a registered investment adviser service? Should I choose a broker-dealer service? Should I choose both types of services? Why or why not?

How will you choose investments to recommend to me?

What is your relevant experience, including your licenses, education and other qualifications? What do those qualifications mean?



Additional information

You can find detailed information about each of our BD and RIA services, the accounts/products we recommend, fees and costs at [TIAA.org/relationshipdisclosures](https://www.tiaa.org/relationshipdisclosures).

What we recommend/provide		Fees
Broker-dealer services	Plans	General administrative expenses, investment expenses
	Brokerage accounts offered by us (including retail, IRA and accounts associated with employer-sponsored retirement plans)	Account fees, brokerage commissions, investment expenses, transaction fees Important: You are charged more when there are more trades in your account.
	IRAs offered by TIAA (excluding managed account IRAs)	No brokerage commissions, except for brokerage account windows (which charge brokerage commissions and transaction fees), investment expenses
	Affiliated annuities (available both in and out of Plans and IRAs)	Account fees, investment expenses
	Third-party life insurance products referrals	Commissions, insurance fees and/or investment expenses (we receive referral fees from a third-party agency)
Registered investment adviser services	Financial planning	No fee (but if you choose an account/product we recommend or buy or sell securities after receiving financial planning services, you will pay the fees associated with that account/product, purchase or sale)
	Managed accounts offered by us	Asset-based wrap fee, account fees, investment expenses <i>Important: The more assets in your managed account, the more TC Services or TIAA Trust, N.A. will receive in fees.</i>
	Managed accounts offered by TIAA Trust, N.A.	Asset-based fee, transaction fees, account fees, investment expenses



What to ask a representative

Help me understand how these fees and costs might affect my investments. If I give you \$10,000 to invest, how much will go to fees and costs, and how much will be invested for me?

How might your conflicts of interest affect me, and how will you address them?



Additional information

You should recognize there are differences between our RIA and BD services. The fiduciary duty that extends to RIA services is broader than the best interest standard under Regulation Best Interest that applies to our BD services. You can find more information about conflicts of interest specific to our RIA and BD services and accounts/products we recommend at [TIAA.org/relationshipdisclosures](https://www.tiaa.org/relationshipdisclosures).




3. What are your legal obligations to me when providing recommendations as my broker-dealer or when acting as my investment adviser? How else does your firm make money and what conflicts of interest do you have?

When we provide you with a recommendation as your broker-dealer or act as your investment adviser, we have to act in your best interest and not put our interest ahead of yours. At the same time, the way we make money creates some conflicts with your interests. You should understand and ask us about these conflicts because they can affect the recommendations and investment advice we provide you. Here are some examples to help you understand what this means.

TC Services and/or TIAA affiliates benefit when:	This creates a conflict of interest that gives TC Services an incentive to:
1 You invest in TIAA-affiliated mutual funds, annuities and certain third-party bank deposits because these products result in higher compensation to TC Services and/or TIAA affiliates than third-party products	Recommend (or invest your assets in) TIAA products or certain third-party bank deposit products over third-party products
2 You hold or own third-party mutual funds, exchange-traded funds, annuities and third-party variable life insurance products because they result in compensation to TC Services and/or TIAA affiliates	Recommend (or invest your assets in) third-party products that result in compensation to TC Services and/or TIAA affiliates over other third-party products that compensate TC Services and/or TIAA affiliates less
3 We include on our platforms share classes of both proprietary as well as third-party mutual funds that pay us administrative, distribution and/or service fees	Offer a more expensive share class than a lower cost alternative, even though higher investment expenses decrease your investment performance
4 Uninvested cash in your account is swept into a third-party cash sweep option or a limited selection of other cash sweep options (with whom TC Services and its clearing firm have an arrangement in place) because these cash sweep options result in higher compensation to TC Services and/or TIAA affiliates than other cash sweep options	Offer cash sweep options that compensate TC Services more than other available cash sweep options, even if such options generate a higher yield for you than the options we include
5 You open, roll over, consolidate, annuitize or transfer assets to the accounts/products we recommend	Recommend that you move your assets to TIAA and create lifetime income/annuitize through annuities

4. How do your financial professionals make money?

Our financial professionals are paid a **salary plus bonuses**. The bonus is primarily based on gathering and in some cases retaining client assets at TIAA. As a result, they have a conflict of interest. For more details, see [TIAA.org/relationshipdisclosures](https://www.tiaa.org/relationshipdisclosures).

 Wealth Management Advisors (WMAs) Registered as both BD and RIA representatives	 Advisory Consultants (ACs) Registered as both BD and RIA representatives	 Other representatives Registered as BD representatives
<p>Have an incentive to encourage you to bring in and keep assets at TIAA and enroll in accounts/products we recommend including:</p> <ul style="list-style-type: none"> Plans, IRAs and Managed Accounts, where we compensate the same regardless of the account or product type After-tax annuities, insurance and brokerage accounts, where we compensate differently, including among such products 	<ul style="list-style-type: none"> Have an incentive to encourage you to bring in and keep assets at TIAA as well as to enroll in accounts/products we recommend regardless of the particular account/product 	<ul style="list-style-type: none"> Have an incentive to encourage you to bring in assets at TIAA as well as to enroll in accounts/products we recommend regardless of the particular account/product Are paid for making successful referrals to WMAs and ACs regardless of the particular account/product



What to ask a representative

As a financial professional, do you have any disciplinary history? For what type of conduct?

Who is my primary contact person? Are they a representative of an investment adviser or a broker-dealer?

Who can I talk to if I have concerns about how this person is treating me?

5. Do you or your financial professionals have legal or disciplinary history?

Yes. Visit [Investor.gov/CRS](https://www.investor.gov/CRS) or [brokercheck.finra.org](https://www.brokercheck.finra.org) for free and simple search tools to research TIAA-CREF Individual & Institutional Services, LLC and its financial professionals.

Additional information: For detailed information about our BD and RIA services and the accounts/products we recommend, go to [TIAA.org/relationshipdisclosures](https://www.tiaa.org/relationshipdisclosures). For up-to-date information or a copy of this disclosure, please call 888-583-2535.



Carefully read the Margin Account Form and Agreement to verify 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 **800-842-2252**, weekdays 8 a.m. to 7 p.m. (ET).

STEP 1: BROKERAGE ACCOUNT INFORMATION (REQUIRED)

Brokerage Account Number

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 THE MARGIN ACCOUNT FORM AND AGREEMENT, I ("CLIENT") ACCEPT THE TERMS OF THE MARGIN ACCOUNT FORM AND AGREEMENT, AND ACKNOWLEDGE THAT I HAVE READ AND I UNDERSTAND THE MARGIN AGREEMENT AND MARGIN DISCLOSURE STATEMENT, WHICH DETAILS THE RISKS ASSOCIATED WITH A MARGIN ACCOUNT, AND I HAVE READ AND I UNDERSTAND THE MARGIN AGREEMENT, INTEREST RATE DISCLOSURE, AND THE CREDIT TERMS EXPLAINED IN THE MARGIN DISCLOSURE STATEMENT LOCATED WITHIN MY BROKERAGE CUSTOMER ACCOUNT AGREEMENT.

I acknowledge that any assets in my TIAA Brokerage Customer Account that are eligible as margin will be transferred to my margin account upon the opening of my margin account. I acknowledge that this transfer will happen upon the opening of my margin account, at settlement for purchases that cause a margin debit of \$1,000 or greater, and that any further transfers will require me to communicate with TIAA to effect them.

SPECIAL NOTE FOR NON-U.S. ACCOUNTS: With respect to assets custodied by Pershing on my behalf, I acknowledge that income and capital gains or distributions to me from this account may be taxable in my home jurisdiction. Furthermore, interest paid to Pershing under this agreement may be subject to withholding tax in my home jurisdiction. It is my obligation to pay such withholding tax, if applicable. I acknowledge to TIAA and to Pershing that TIAA and Pershing are not responsible to provide, and have not provided, any tax advice to me 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 SECTIONS 21 AND 22 ON PAGE 6 OF 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 includes any named Owner(s) and all Trustees.

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

Account Owner/Trustee Signature

Today's Date (mm/dd/yyyy)

Account Owner/Trustee Signature

Today's Date (mm/dd/yyyy)

Account Owner/Trustee Signature

Today's Date (mm/dd/yyyy)





MARGIN ACCOUNT AGREEMENT

I SHOULD KEEP THIS COPY FOR MY RECORDS. THIS IS A COPY OF MY MARGIN AGREEMENT WITH PERSHING LLC ("PERSHING") AND IS IN EFFECT ALONG WITH THE MARGIN AGREEMENT LOCATED WITHIN MY CUSTOMER ACCOUNT AGREEMENT.

GENERAL MARGIN POLICIES

The Financial Industry Regulatory Authority ("FINRA") and the Federal Reserve Board set credit minimum initial and maintenance requirements for all security types. The amount of credit that may be extended by Pershing and the terms of such extension may be equal or greater than the limits set by FINRA and the Federal Reserve Board. Within the guidelines of these rules and subject to adjustment required by changes in such rules and Pershing's business judgment, Pershing establishes certain policies with respect to Margin Accounts. If the market value of securities in a Margin Account declines, Pershing may require the deposit of additional collateral. Margin Account equity is the current market value of securities and cash deposited as security less the amount owed to Pershing for credit extended at its discretion. It is Pershing's general policy to require Margin Account holders to maintain equity in their Margin Accounts of the greater of 30% of the current market value or \$3.00 per share for common stock purchased on margin. Pershing applies other standards for other types of securities. For example, securities may be ineligible for margin credit from time to time. For information with respect to general margin maintenance policy as to municipal bonds, corporate bonds, listed United States Treasury notes and bonds, mutual funds, and other securities, as well as information about the eligibility of particular securities for margin credit, I should contact TIAA. Notwithstanding the above general policies, Pershing reserves the right, at its discretion, to require the deposit of additional collateral and to set required margin at a higher or lower amount with respect to particular accounts or classes of accounts as it deems necessary. In making this determination, Pershing may take into account various factors including, but not limited to, (i) issues as to my securities such as, among others, the liquidity of a position and concentrations of securities in an Account, (ii) considerations as to my 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. If I fail to meet a margin call in a timely manner, some or all of my positions may be liquidated.

Approval of margin privileges is subject to review by TIAA. The following terms and conditions shall govern all Margin Accounts:

I acknowledge that Margin Accounts, which allow the purchase of securities on credit, enable me to increase the buying power of my equity and thus increase the potential for profit or loss. A portion of the purchase price is deposited when buying securities on margin, and Pershing extends credit for the remainder. I understand this loan appears as a debit balance on my monthly account statement. Pershing charges interest on the debit balance and requires me to maintain securities, cash or other property to secure repayment of funds advanced, and interest due. I understand that interest will be charged for any credit extended to me for the purpose of buying, trading, or carrying any securities, for any cash withdrawals made against the collateral of securities, or for any other extension of credit. When funds are paid in advance of settlement on the sale of securities, interest will be charged on such amount from trade date until settlement date. In the event that any other charge is made to the Account for any reason, interest may be charged on the resulting debit balances. I authorize TIAA to transfer securities held in my cash Account to my Margin Account. Any assets in my Account that are eligible as margin will be transferred to my Margin Account upon the opening of my Margin Account. This transfer will happen upon the opening of my Margin Account, at settlement for purchases that cause a margin debit of \$1,000 or greater, and that any further transfers will require me to communicate with TIAA to effect them.

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, which has introduced my account to Pershing. In consideration of Pershing accepting and carrying for the undersigned one or more accounts introduced to Pershing by TIAA, of 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 cash or cash equivalents, 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 its 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 attorneys' fees, incurred and payable or paid by Pershing, shall be payable to Pershing by the undersigned. Notwithstanding the foregoing or anything herein, any notification of any debit balance or obligation owing to Pershing shall not be deemed a communication to a debtor, and the undersigned hereby consents to such notification irrespective of the time of such notification.

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. INTEREST RATE DISCLOSURE PURSUANT TO SECTION 10B-16 OF THE SECURITIES AND EXCHANGE ACT OF 1934

The following information applies to charges in connection with any credit that Pershing may extend to the undersigned.

For Margin Accounts, interest will be charged on any credit extended to the undersigned for the purpose of purchasing, carrying, or trading in securities. The annualized rate of interest will be based on the amount of the debit balance during the interest calculation period. The rates are subject to revision without notice, in accordance with any changes in the Pershing Base Lending Rate, which is the base interest rate that Pershing uses to determine how much to charge for loans. Interest rates charged on any debit balances in cash Accounts or credit extended in Margin Accounts may be up to 3.00 percentage points above the Pershing Base Lending Rate. The Pershing Base Lending Rate will be set with reference to commercially recognized interest rates, industry conditions relating to the extension of credit and general credit market conditions. The Pershing Base Lending Rate will change without prior notice. When the Pershing Base Lending Rate changes during an interest period, interest will be calculated according to the number of days each rate is in effect during that period. If the rate of interest charged to the undersigned is changed for any other reason, the undersigned will be notified at least 30 days in advance. Interest period begins on the 20th of each month and ends on the 19th of the following month. Accordingly, the interest charges for the period as shown on the undersigned's monthly statement are based only on the daily net debit and credit balances for the interest period.

The method of interest computation is as follows: At the close of each interest period during which credit was extended to the undersigned, an interest charge is computed by multiplying the average daily debit balance by the applicable schedule rate and by the number of days during which a debit balance was outstanding, and then dividing by 360. If there has been a change in the Pershing Base Lending Rate, separate computations will be made with respect to each rate of charge for the appropriate number of days at each rate during the interest period. The interest charge for credit made to the undersigned's Account at the close of the interest period is added to the opening debit balance for the next interest period, unless paid.

With the exception of credit balances in the undersigned's short Account, all other credit and debit balances in all of the undersigned's Accounts will be combined daily, and interest will be charged on the resulting average daily net debit balances for the interest period. If there is a debit in the cash Account (type 1) and there is a Margin Account (type 2), interest will be calculated on the combined debit balance and charged to the Margin Account. Any credit balance in the short Account is disregarded because such credit collateralizes the stock borrowed for delivery against the short sale. Such credit is disregarded even if the undersigned should be long in the same position in the undersigned's Margin Account (i.e., "short against the box"). If the security that the undersigned sold short (or sold short against the box) appreciates in market price over the selling price, interest will be charged on the appreciation in value. Correspondingly, if the security that the undersigned sold short depreciates in market price, the interest charged will be reduced since the average debit balance will decline. This practice is known as "marking-to-market." The daily closing price is used to determine any appreciation or depreciation of the security sold short.

If the undersigned's Account is short shares of stock on the record date of a dividend or other distribution, however such short position occurs, the undersigned's Account will be charged the amount of dividend or other distribution on the following Business Day.

INTEREST RATE TABLE

Average Debit Balance	Interest rate above Pershing base lending rate
\$0-\$9,999	1.25%
\$10,000-\$29,999	0.75%
\$30,000-\$49,999	0.50%
\$50,000 +	0.25%



9. 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.

10. 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 benefit of its successors and assigns, whether due to 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.

11. 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.

12. 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.

13. 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: (i) an employee of any exchange; (ii) an employee of any corporation of which any exchange owns a majority of the capital stock; (iii) an employee of a member firm or member corporation registered on any exchange; (iv) an employee of a bank, trust company, or insurance company; or (v) 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. If this is a Margin Agreement for a trust or other similar fiduciary account, the undersigned certifies that the use of a Margin Account and the borrowing and lending of securities is authorized by the trust instrument and/or applicable law.

14. 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.

15. 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.

16. 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.

17. 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.



18. 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 such amounts from the undersigned independently or jointly with Pershing, or enforce any other rights granted to Pershing under this agreement.

19. 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.

20. 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 made in writing and must be signed by a representative of Pershing.

21. 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.

22. ARBITRATION AGREEMENT

ANY CONTROVERSY BETWEEN THE PARTIES 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.

23. 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.



24. 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 the undersigned's 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.

25. 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.

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. I acknowledge to TIAA and to Pershing that they do not and have not provided any tax advice to me.

BY SIGNING THE MARGIN ACCOUNT FORM, I ACCEPT THE TERMS OF THE ENCLOSED AGREEMENT, AND ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THE MARGIN AGREEMENT AND MARGIN DISCLOSURE STATEMENT WHICH DETAIL THE RISKS ASSOCIATED WITH A MARGIN ACCOUNT, AND I HAVE READ AND UNDERSTAND THE MARGIN AGREEMENT, INTEREST RATE DISCLOSURE, AND THE CREDIT TERMS EXPLAINED IN THE DISCLOSURE STATEMENT.

OPTIONS TO RETURN COMPLETED FORM(S)

Please return **all** numbered pages, including any pages you didn't need to complete.

OPTION 1: Use the TIAA mobile app to quickly upload your completed document(s). It's as simple as taking a picture. Haven't downloaded the TIAA mobile app? Get it today in the **App Store** or **Google Play**.

Scan the **QR Code** to upload your documents.

OR

Tap the **Profile** icon in the lower-right corner of your screen, then tap **Upload files** and follow the step-by-step instructions.



OPTION 2: Use your personal computer to quickly upload your completed document(s).

Go to tiaa.org/upload, select **Upload files**, and follow the step-by-step instructions.

OPTION 3: If you prefer to fax or mail your completed documents, use the information provided below.

FAX:

800-914-8922 (within U.S.)
704-595-5795 (outside U.S.)

STANDARD MAIL:

TIAA
P.O. Box 1280
Charlotte, NC 28201-1280

OVERNIGHT DELIVERY:

TIAA
8500 Andrew Carnegie Blvd.
Charlotte, NC 28262





Margin disclosure statement

TIAA Brokerage is furnishing this document to you 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, you should carefully review the margin agreement provided within your Customer Account Agreement. Consult TIAA Brokerage regarding any questions or concerns you may have with your margin account(s).

When you purchase securities, you have the option of paying for them in full or borrowing part of the purchase price from TIAA Brokerage and/or Pershing. If you choose to borrow funds from TIAA Brokerage and/or Pershing, you will need to open a margin account. 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 investment account decline in value, so does the value of the collateral supporting your loan. As a result, TIAA Brokerage and/or Pershing can take action. For instance, TIAA Brokerage and/or Pershing can issue a margin call and/or sell securities or liquidate other assets in any of your investment accounts held with TIAA Brokerage and/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 value of securities that are purchased on margin may require you to provide additional funds to TIAA Brokerage and/or Pershing to avoid the forced sale of those securities or other securities or assets in your account(s).

TIAA Brokerage and/or Pershing can force the sale of securities or other assets in your account(s).

If the equity in your account falls below the maintenance margin requirements, TIAA Brokerage and/or Pershing can sell the securities or other assets in any of your accounts held at TIAA Brokerage and/or Pershing to cover the margin deficiency. You also will be responsible for any short fall in the account after such a sale.

TIAA Brokerage and/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 accounts 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 customers of margin calls, but they are not required to do so. However, even if a financial organization has contacted a customer and provided a specific date by which the customer 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 customer.

TIAA Brokerage and/or Pershing may change margin requirements or margin call time periods without notice to you.

In regard to house, maintenance, and other margin calls, in lieu of immediate liquidations, TIAA Brokerage and/or Pershing may permit you a period of time to satisfy a call. This time period shall not in any way waive or diminish the firm'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 TIAA Brokerage and/or Pershing 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 TIAA Brokerage and/or Pershing in the sole discretion and judgment of either.

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

Because the securities or other assets are collateral for the margin loan, TIAA Brokerage and/or Pershing has the right to decide which securities to sell in order to protect its interests. TIAA Brokerage and/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 policy often take effect immediately and may result in the issuance of a maintenance margin call. Your failure to satisfy the call may cause TIAA Brokerage and/or Pershing to liquidate or sell securities in your investment 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 customers under certain conditions, a customer does not have a right to the extension.

Your written Margin Agreement with Pershing and TIAA 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 TIAA Brokerage 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 TIAA Brokerage, including those rights vested in Pershing or TIAA Brokerage 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 in writing to Pershing or TIAA Brokerage of such conflict. Any future modification, amendment, or supplement to the Margin Agreement or any individual provision of the Margin Agreement can only be in writing signed by a representative of TIAA Brokerage and Pershing. You should carefully review your Margin Agreement for the rights and limitations governing your margin account relationship.

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, or collateral arrangement or otherwise affect your or our liabilities or obligations. Please contact TIAA Brokerage if you have any questions.



TIAA Brokerage, a division of TIAA-CREF Individual & Institutional Services, LLC, Member FINRA and SIPC, distributes securities. Brokerage accounts are carried by Pershing, LLC, a subsidiary of The Bank of New York Mellon Corporation FINRA, NYSE, SIPC.

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