



TIAA Brokerage Customer Account Agreement (TIAA IRA)

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

I. General terms and conditions

By signing the TIAA IRA Account Application ("Account Application"), I agree to be bound by the following terms and conditions as well as the terms and conditions set forth in Sections II and III of this agreement (collectively, with the Account Application, this "Agreement").

1. "I," "me," and "my" refers to the individual signing the Account Application. "TIAA" refers to TIAA Brokerage, a division TIAA-CREF Individual & Institutional Services, LLC, a wholly owned subsidiary of TIAA. "Pershing" refers to Pershing LLC, the entity TIAA has designated as its clearing firm.
2. This Agreement governs investments and activities undertaken in conjunction with the optional self-directed brokerage feature of the TIAA IRA offered by TIAA. I hereby acknowledge having elected to open a self-directed brokerage account ("Account") as part of my TIAA IRA. I understand that the terms, conditions, rights and responsibilities contained in this Agreement apply only to my Account, and that the other investments in my TIAA IRA, such as investments sponsored by TIAA or Affiliates (as defined below) and cash deposit products, are governed by other agreements and documents, including the TIAA IRA Disclosure Statement, the TIAA IRA Directed Trustee Agreement and the TIAA IRA Adoption Agreement, copies of which I hereby acknowledge having received and reviewed (the "Governing Agreements"). I understand that unless specifically provided otherwise in this Agreement, the terms, conditions, rights and responsibilities contained in the Governing Agreements shall apply. Capitalized terms not defined in this Agreement shall have the same meaning as in the Governing Agreements unless specifically provided otherwise herein. If a provision of this Agreement is inconsistent with the Governing Agreements, the terms of this Agreement shall take precedence.
3. I understand that TIAA Trust, N.A. ("TIAA Trust") is the named Directed Trustee for the TIAA IRA. Pershing, pursuant to a Clearing Agreement with TIAA, will carry the Account and hold the Account's brokerage funds and securities in its role as clearing broker. I acknowledge that when I transfer mutual funds from my TIAA IRA into my Account that TIAA will direct such securities to Pershing, which shall safekeep my Account and any such securities and related cash balances as service agent for the Directed Trustee. The Directed Trustee will be responsible for the safekeeping and custody of all other security and cash deposit products held in my TIAA IRA not held in the Account.
4. I represent that I am of the age of majority and of legal capacity, and the information I have provided on my Account Application is accurate. I acknowledge that the Account is not for a foreign financial institution, private banking accounts or non-residents of the United States. I will notify TIAA of any change to the information provided on my Account Application within 30 days of such change. I promptly will notify TIAA within 10 days if I become a director, 10% beneficial shareholder or an affiliate of a publicly traded company, or if I become an employee of any securities exchange, self-regulatory organization, or a corporation of which an exchange owns a majority of the capital stock.
5. By opening an Account, I understand that I am establishing a brokerage Account with TIAA through the TIAA IRA. The Account will be established with TIAA in the name of the Directed Trustee for my benefit, and I shall direct all investments in my Account. I shall be fully responsible for all investment decisions relating to my Account. I understand and accept the risks of investing through an individual brokerage Account and accept responsibility for any losses I may incur as a result of such investments. I understand that it is my responsibility to follow all requirements and limitations for trading with TIAA, and that if I refuse to comply, TIAA may, in its sole discretion, refuse to execute any and all transactions for my Account, restrict my Account or terminate my Account, all without

prior notice to me. I understand that before placing any order, I am responsible for ensuring that the transaction will be in compliance with all TIAA's policies, procedures, restrictions and requirements of the TIAA IRA, and any statutory or regulatory requirements. TIAA has no obligation to ensure compliance prior to accepting an order. I acknowledge that as a self-directed investor, I am solely responsible for deciding whether my brokerage transactions are suitable investments in light of my stated objectives and financial situation, and that none of TIAA, the Directed Trustee and Pershing is responsible for providing investment advice of any kind, including determining whether my transactions are permissible or suitable for my IRA. I acknowledge and agree that I may not use this Account to invest in municipal securities or commodity futures contracts, purchase securities on margin, and/or engage in any investment in which the risk of loss may exceed the value of my Account. TIAA may provide me with market data or research relating to securities and securities markets, but does not guarantee the accuracy, completeness, or timeliness of such information. Such market data or research is not personalized or in any way tailored to my personal financial circumstances or investment objectives, unless TIAA otherwise has agreed specifically in writing in connection with an advisory program. I acknowledge that I may be able to obtain research on such other mutual funds and share classes through other providers.

6. I acknowledge that TIAA, the Directed Trustee and/or Pershing, in their sole discretion, may disallow or restrict my ability to purchase particular securities or other property due to volatility or other factors. I agree that TIAA, Pershing and/or Directed Trustee may place trading, disbursement or other full or partial restrictions on my Account as deemed necessary, including but not limited to, the following circumstances: at the request of the security issuer; pursuant to a court order, tax levy, or garnishment; at the request of a government agency or law enforcement authority; in the event that my Account is restricted (including, but not limited to, trading or trade-related violations, or termination of Directed Trusteeship at the age of termination); in the event that a deposit has not yet settled; or in the event of a dispute between joint tenants. I agree to allow TIAA, Pershing or Directed Trustee to liquidate securities if such securities are no longer eligible for the Account (i.e. if a mutual fund is converted to an exchange traded fund and exchange traded funds are not eligible investments for the Account or any leveraged or inverse exchange traded product). Any proceeds from the liquidation would be deposited into the applicable TIAA Sweep Product (as defined below). I agree to abide by any such restriction and not to initiate trades or transactions which would violate the restriction. I agree to allow TIAA, the Directed Trustee and/or Pershing to liquidate securities in my Account to satisfy any request of the security issuer, court order, garnishment, tax levy, or other legal obligation imposed by a court or government agency. I agree not to hold TIAA, the Directed Trustee and/or Pershing liable for any trading losses, lost profits, tax obligation, or other damages resulting from liquidations or trading or disbursement restrictions imposed on my Account in connection with a court order, tax levy, garnishment or other legal proceeding. Furthermore, I acknowledge that the Directed Trustee, TIAA and Pershing have no fiduciary role or obligation with respect to my Account and are not responsible for losses or damages resulting from any investment transaction, including investment losses. I acknowledge that TIAA, the Directed Trustee and Pershing do not provide legal, accounting or tax advice and are not responsible for determining whether a particular investment might generate taxable income to an otherwise tax-exempt trust or for determining whether a particular transaction would constitute a "prohibited transaction" as that term is defined in the Internal Revenue Code of 1986, as amended (the "Code"), and Employee Retirement Income Security Act of 1974 ("ERISA") and their implementing regulations. I understand that TIAA, the Directed Trustee and Pershing are not authorized to give any investment, legal, tax or accounting advice and I will not solicit or rely upon any such advice from TIAA, the Directed Trustee, or Pershing or any of their employees, whether in connection with transactions in or for any of my Account or otherwise.
7. I acknowledge that I will be charged a commission on applicable transactions and other Account-related fees in accordance with the TIAA Commission and Fee Schedule at the end of this Agreement, as may be amended from time to time. TIAA receives remuneration in connection with the mutual funds that I invest in, including but not limited to money market funds and exchange traded funds, including 12b-1 fees and other compensation from Pershing, or a mutual fund's distributor, transfer agent or investment adviser for marketing, shareholder servicing fees and/or distribution services. Additionally, Teachers Advisors, LLC. and the advisory entities of TIAA's wholly owned subsidiary, Nuveen Fund Advisors, LLC, the investment advisers to certain affiliated funds (the "Affiliated Funds"), receive fees from the mutual funds for investment advisory and/or fund administration services. Notwithstanding the above, Affiliated Funds are not available for purchase. See the respective mutual funds' prospectus or statement of additional information for mutual fund payment information. TIAA limits the mutual funds and share classes available through brokerage accounts. TIAA only provides mutual funds that are available through the clearing firm and where TIAA has an agreement with the fund family to offer their funds and waive sales loads. These agreements do not always include access to all share classes. Most of the mutual funds and their corresponding share classes available for purchase pay compensation to TIAA. However, TIAA also offers funds where no compensation is paid to TIAA. In some cases, TIAA makes available for purchase multiple share classes of mutual funds. However, not all share classes of a particular mutual fund may be available for purchase,

including in some cases, the lowest cost share classes of mutual funds, through my Account. Mutual fund purchases are subject to the initial and subsequent minimum investment amounts and applicable waivers as set forth in the mutual funds' prospectuses. I understand that I may also be able to purchase less expensive share classes of mutual funds directly or through another financial institution or arrangement. The funds available through a TIAA Account, including available share classes of particular mutual funds, may change over time at TIAA's discretion. The fees charged with respect to any mutual fund classes that are now or in the future made available through a TIAA Account also may change over time at TIAA's discretion or by the mutual fund itself. For more information on how TIAA gets paid for its products and services, please refer to "Regulation Best Interest-Form CRS" located at the bottom of the home page of TIAA's website at https://www.tiaa.org/public/pdf/support/regbi/TIAA_FormCRS.pdf.

8. I acknowledge that this Agreement cannot be modified by conduct and/or the failure of TIAA, the Directed Trustee and Pershing at any time to enforce its rights hereunder to the greatest extent permitted by law, and shall not be deemed to waive, modify or relax any of the rights granted to TIAA, the Directed Trustee and Pershing and/or Directed Trustee herein.
9. I acknowledge that I must instruct TIAA by phone, online or other TIAA designated channels, to liquidate investments in my TIAA IRA account and transfer the resulting proceeds to my Account. I acknowledge that any such liquidation and transfer may take several days to complete.
10. I acknowledge that, at the time I place a trade, I am solely responsible for ensuring that I have sufficient funds in my Account to cover my purchase. I also acknowledge that TIAA may review, reject, cancel or modify any securities transactions that I have entered at any time, for any reason and without prior notice to me; including where after three instances there are insufficient funds to cover transaction(s). I authorize TIAA to accept my oral or electronic instructions for the purchase and sale of securities. I acknowledge that such instructions must be placed through a designated TIAA channel. TIAA will not accept orders or instructions sent via postal mail (including but not limited to U.S. mail or overnight delivery).
11. I acknowledge that TIAA may suspend or terminate my Account at any time, for any reason and without prior notice to me. If I do not fund my Account within 30 days of Account opening or my Account remains unfunded and inactive (i.e., no statement is generated) during any three-month consecutive period, TIAA reserves the right to close my Account without prior notice to me. Once my Account is closed, for any reason, TIAA Brokerage reserves the right to reject any new Account Application submitted by me or on my behalf. In addition, if I maintain a small balance in my Account (for example, \$100 or less), during any three-month consecutive period, TIAA reserves the right to close my Account without prior notice to me. I shall have 30 days from receiving notice of termination of my Account to transfer all holdings from within my Account to my TIAA IRA account. Should I fail to complete this transfer within 30 days, I direct TIAA to liquidate the Account holdings and to make the transfer on my behalf. In the event my Account is liquidated, I agree to be liable for any resulting losses and costs incurred by TIAA and any Account fees associated with the liquidation. I acknowledge that any such amounts will be deducted from the liquidation amount before being transferred to my TIAA IRA. I may close the Account at any time by giving TIAA notice. I acknowledge that my TIAA IRA account may require that any amount transferred from my Account to the other investment options under the TIAA IRA Account first be transferred into a preselected holding investment within the TIAA IRA, and that I am free thereafter to reallocate this amount within the TIAA IRA account as I choose and as allowed by the Governing Agreements.
12. I acknowledge that I will pay in full for securities I purchase by the settlement date. For transactions not settled by settlement date, TIAA shall have the right, without notice to me, to sell any securities purchased.
13. TIAA will have a lien against my Account assets for any outstanding balance owed by my Account or by me with respect to my Account, except where prohibited by law. In enforcing its lien, TIAA shall have the discretion to determine which assets are to be sold, except where prohibited by law. TIAA may transfer securities or other property from my TIAA IRA account, without notice, to my Account in order to satisfy deficiencies in my Account, except where prohibited by law. I grant TIAA the right of setoff against any other assets I hold at TIAA through my TIAA IRA. I acknowledge and agree that (i) any such lien and right of setoff are for the purpose of satisfaction of outstanding fees and expenses due with respect to my TIAA IRA, (ii) should any setoff occur in accordance with this paragraph, I shall be considered to have directed payment of the applicable amount from my TIAA IRA, and (iii) I am solely responsible for the effects on my TIAA IRA of the payment of any fee or expense from assets of my TIAA IRA (including any such payment by reason of my deemed direction), whether or not from the Account. I acknowledge and agree that none of TIAA, the Directed Trustee, nor Pershing shall have any liability whatsoever with respect to the establishment of a lien or the execution of any setoff pursuant to this paragraph. I agree to pay any costs or

expenses incurred by TIAA, including reasonable attorneys' fees, that result from my failure to properly settle any securities transactions, pay any debt or otherwise satisfy my obligations under this Agreement.

14. I acknowledge that various federal and state laws or regulations may be applicable to transactions in my Account regarding restricted securities, as defined by applicable securities laws and regulations. It is my responsibility to notify TIAA if my Account contains restricted securities and to ensure that any transaction I effect will conform to all applicable laws and regulations. I understand that transactions in restricted securities may take longer to process than transactions involving unrestricted securities. Additionally, I acknowledge that TIAA is obligated by federal securities laws to provide my name, address and holdings information to issuers of those securities upon request, unless I instruct TIAA in writing not to do so. Notwithstanding the foregoing, TIAA may, at its discretion, refuse to permit restricted securities within my Account.
15. I acknowledge this Agreement contains a pre-dispute arbitration clause. By signing an arbitration agreement, the parties agree as follows:
- a. 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.
 - b. Arbitration awards generally are final and binding; a party's ability to have a court reverse or modify an arbitration award is very limited.
 - c. The ability of the parties to obtain documents, witness statements and other discovery generally is more limited in arbitration than in court proceedings.
 - d. 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 to the panel by all parties, at least 20 days prior to the first scheduled hearing date.
 - e. The panel of arbitrators typically will include a minority of arbitrators who were or are affiliated with the securities industry.
 - f. 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.
 - g. The rules of the arbitration forum in which the claim is filed, and any amendments thereto, shall be incorporated into this Agreement.

ANY CONTROVERSY THAT SHALL ARISE BETWEEN THE ACCOUNT HOLDER AND TIAA, TIAA'S AFFILIATES, PERSHING AND/OR DIRECTED TRUSTEE (INCLUDING BUT NOT LIMITED TO CONTROVERSIES CONCERNING ANY ACCOUNT, ORDER OR TRANSACTION, OR THE CONTINUATION, PERFORMANCE, OR BREACH OF THIS OR ANY OTHER AGREEMENT BETWEEN THE ACCOUNT HOLDER AND TIAA, TIAA'S AFFILIATES, PERSHING AND/OR DIRECTED TRUSTEE, WHETHER ENTERED INTO OR ARISING BEFORE, ON OR AFTER THIS ACCOUNT IS OPENED) SHALL BE SUBMITTED TO ARBITRATION BEFORE AND ONLY BEFORE THE FINANCIAL INDUSTRY REGULATORY AUTHORITY. ARBITRATION MUST BE COMMENCED BY SERVICE UPON THE OTHER PARTY OF A WRITTEN DEMAND FOR ARBITRATION OR A WRITTEN NOTICE OF INTENTION TO ARBITRATE, THEREIN INDICATING THE ARBITRATION TRIBUNAL. 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. ANY ARBITRATION AWARD SHALL BE FINAL AND BINDING, AND ANY COURT HAVING JURISDICTION MAY ENTER JUDGMENT THEREON.

16. I acknowledge that none of TIAA, Pershing, the Directed Trustee and each Service Provider will be liable in any way to me or any other person for any inaccuracy, error, or delay in, or omission of any data, information or message or the transmission or delivery of any data, information or message, or any loss or damages arising from or occasioned by: any inaccuracy, error, delay or omission, nonperformance, interruption in data due to neglect or omission by any Service Provider, any "force majeure" event (e.g., loss caused directly or indirectly by flood, fire, war, terrorism, civil unrest, strikes, natural disaster, extraordinary weather conditions, earthquake or other acts of God, government

restrictions or actions, interruptions of communications, exchanges or market rulings, suspension of trading or other conditions beyond TIAA, the Directed Trustee, Pershing and/or each Service Provider's control, failure, or equipment or software malfunction), or any other cause beyond the reasonable control of any Service Providers.

17. None of TIAA, the Directed Trustee and Pershing shall be liable for any direct, indirect, incidental, special or consequential damages that may arise from its provision of services to me or to my TIAA IRA, including the Account. None of TIAA, the Directed Trustee and Pershing shall be liable for any losses incurred with respect to my investment selection and performance of the assets in my Account, nor shall they have any responsibility for questioning my investment decisions or otherwise inquiring into the merits of my investments. Applicable policies or rules may restrict certain securities from being available for investment in my Account. I alone am responsible for knowing and complying with these restrictions. None of TIAA, the Directed Trustee and Pershing will monitor whether my trading activity is permissible under the Governing Agreements, or consistent with applicable laws, including ERISA, the Code or state law. TIAA, the Directed Trustee and Pershing may use and rely upon the services of clearing agencies, automatic data processing vendors, proxy processing, transfer agents, securities pricing services and other similar organizations; in such event, none of TIAA, the Directed Trustee and Pershing shall be responsible for the acts and omissions of such third parties except to the extent that they occur as a result of the gross negligence or willful misconduct of TIAA, the Directed Trustee or Pershing.
18. I acknowledge that I have reviewed and agree to the terms outlined within the Fractional Share Disclosure located at https://www.tiaa.org/public/pdf/f/Fractional_Share_Disclosure.pdf.
19. I understand that my Account includes a cash sweep program feature which automatically transfers available uninvested cash balances in my Account at the end of each Business Day to a bank sweep deposit account or money market mutual fund (each a "TIAA Sweep Product" and together the "TIAA Sweep Program"). The TIAA Sweep Program facilitates the redemption of available shares of any such money market funds or the transfer of available cash balances from any such bank sweep deposit accounts to my Account to cover purchases of securities and other debits in my Account. Available TIAA Sweep Products vary based on Account type. I direct TIAA to use the TIAA Sweep Product indicated on my Account Application as the TIAA Sweep Product for my Account, and, if I fail to indicate a TIAA Sweep Product, I direct TIAA to use the default TIAA Sweep Product indicated therein. If my Account type includes only one TIAA Sweep Product, I acknowledge that the TIAA Sweep Product set forth in the Account Application will serve as the sweep option in which all available uninvested cash balances in my Account will be allocated at the end of each Business Day. Different TIAA Sweep Products may have different rates of return and different terms and conditions, including, but not limited to, requiring minimum cash balances in my Account before such balances may be swept to a TIAA Sweep Product. Money market mutual funds are securities that are registered with the U.S. Securities and Exchange Commission ("SEC") under the Investment Company Act of 1940 and the Securities Act of 1933. Although money market funds attempt to maintain a stable net asset value of \$1 per share, there is no guarantee that such a fund will in fact maintain a \$1 per share stable net asset value. Money market funds are not insured by the Federal Deposit Insurance Corporation ("FDIC"). Money market funds are, however, securities subject to protection by the Securities Investor Protection Corporation ("SIPC") in the event of insolvency of Pershing, LLC as the brokerage firm holding my Account and cash or securities owed to me. SIPC is a non-profit member corporation funded primarily by member securities brokerage firms registered with the SEC, which protects customers up to certain limits in the event of the failure of a brokerage firm where cash and securities are owed to customers. See the TIAA Brokerage SIPC Asset Protection Guide (www.tiaa.org/public/pdf/forms/SIPC-asset-protection.pdf) for more information. SIPC does not protect against loss due to market fluctuation or failure of the issuer of a money market fund. More specific information about a particular money market mutual fund, including applicable fund restrictions, fees and expenses and other important information, can be found in the fund's prospectus. TIAA Sweep Product options are deposit accounts held at one or more banks. Deposit accounts pay interest on deposits pursuant to the terms and conditions in the disclosure document for the applicable TIAA Sweep Product. Interest rates may fluctuate and may vary among banks. Deposit accounts are not subject to SIPC protection. They are subject to FDIC insurance up to applicable limits. FDIC insurance protects against loss of deposit amounts in the event the bank holding the deposits fails. More specific information about particular TIAA Sweep Products, including applicable FDIC insurance limits, interest amounts and other important information can be found in the applicable TIAA Sweep Product's disclosure documents. Prospectuses or similar disclosure documents for the Money Market Mutual Fund Sweep Product option(s) that may be available for my Account are available online at <https://www.tiaa.org/public/invest/financial-products/brokerage-accounts/interest-rate-disclosure> or by calling 800-842-2252. I agree to review these disclosure documents prior to opening my Account. TIAA may change the terms and conditions of the TIAA Sweep Program and the TIAA Sweep Product options available for my Account, at its sole discretion. TIAA will provide me with written notice in advance of adding, changing or deleting TIAA Sweep

Product options for my Account or making other changes to the TIAA Sweep Program to the extent required by applicable law. TIAA may receive 12b-1 and similar service fee payments from TIAA Sweep Products. I should consult the prospectus or similar disclosure document for each TIAA Sweep Product for more information concerning such fees. TIAA Brokerage and the banks that participate in the TIAA Sweep Program are separate companies. The TIAA Sweep Program bank(s) hold(s) deposits in connection with the TIAA Bank Sweep Product options described in Paragraph 20 below and in the TIAA Sweep Product Terms and Conditions. For the TIAA Brokerage Sweep Product, pursuant to an agreement between TIAA Brokerage and the cash sweep bank, the cash sweep bank pays TIAA Brokerage an asset-based fee based on the amount of cash from self-directed Accounts that is swept to the bank.

20. As set forth in Paragraph 19 above, TIAA Sweep Product options vary by Account type. The following paragraphs apply to Account types with the TIAA Brokerage Sweep Account or Money Market Mutual Fund Sweep options.
21. The TIAA Sweep Product (FDIC-Insured). The following describes the TIAA Sweep Product option, if my Account Application indicates that the TIAA Sweep Product for my Account is the TIAA Brokerage Sweep Account; if I have selected the TIAA Sweep Product as my sweep option; if I have failed to select a TIAA Sweep Product on my Account Application and the TIAA Sweep Product is the default sweep option for the Account; or if TIAA has notified me that TIAA is replacing the existing sweep option for my Account with the TIAA Sweep Product. The TIAA Sweep Product comprises two separate sweep options used in combination: (1) the TIAA Brokerage Sweep Product (for self-directed Accounts), which automatically sweeps eligible cash balances in an Account up to the Maximum Deposit Amount (defined below) into interest-bearing deposit accounts at the cash sweep bank as indicated within the TIAA Sweep Product Terms and Conditions; and (2) the Liquid Insured Deposits ("LIDs Overflow") Sweep Product, which is used as an overflow TIAA Sweep Product to automatically sweep eligible cash balances in excess of the Maximum Deposit Amount into interest-bearing deposit accounts with participating banks unaffiliated with TIAA ("LIDs Overflow banks"). The TIAA Sweep Product will serve as the primary sweep option for eligible cash balances in an Account up to a Maximum Deposit Amount set by the cash sweep bank. The Maximum Deposit Amount for an Account is specified within the TIAA Sweep Terms and Conditions and is subject to change with notice to me. Interest that accumulates in my Account may cause my balance to exceed the Maximum Deposit Amount; however, in no event will the balance exceed the then-current FDIC insurance limits for deposit amounts held at a bank in the same right and capacity. The LIDs Overflow Sweep Product will be used as an overflow sweep for eligible cash deposits in an Account which exceeds the Maximum Deposit Amount ("Excess Balances") plus any interest accrued. Only Excess Balances in an Account are eligible to use the LIDs Overflow Sweep Product. By way of example, if an Account holds \$300,000 in eligible cash balances, the first \$248,500 automatically will be swept into interest-bearing deposit accounts with the cash sweep bank through the TIAA Sweep Product. The remaining \$51,500 in eligible cash balances automatically will be swept into interest-bearing accounts with participating TIAA Sweep Program banks unaffiliated with TIAA through the LIDs Overflow Sweep Product. By way of further example, if the Account instead holds \$248,500 or less in eligible cash balances, such eligible cash balances will be automatically swept into interest-bearing deposit accounts with the cash sweep bank through the TIAA Sweep Product. In the event there is insufficient availability of TIAA Sweep Program banks to fully allocate my balance, or I have a balance in excess of the limits, cash will not be deposited in the TIAA Sweep Products and will remain as uninvested cash within my Account. While uninvested cash is covered by SIPC, it does not earn a rate of return nor is it covered by FDIC insurance. I will review the separate disclosure documents for the TIAA Sweep Product and the LIDs Overflow Sweep Product carefully.

It is my sole responsibility to monitor the total balances I have across my Accounts with the banks that participate in the TIAA Sweep Program to ensure that my deposit amounts held at any bank in the same right and capacity, directly or indirectly (with the TIAA Sweep Program bank(s) or through my Account), do not exceed \$250,000, which currently is the maximum amount eligible for FDIC insurance coverage for a single bank. Amounts I hold at any bank, including a LIDS Overflow bank, in excess of \$250,000 will not receive FDIC insurance coverage. For example, if I have a deposit account and a certificate of deposit ("CD") with the same bank, the aggregate dollar amount of the deposit account and the CD including accrued interest in excess of \$250,000 will not be FDIC- insured. A list of participating LIDS Overflow banks can be viewed online by going to <https://www.tiaa.org/public/invest/financial-products/brokerage-accounts/interest-rate-disclosure> or by contacting TIAA for a written copy. Once I have cash invested within the LIDS Overflow Sweep Product, I may opt out of having funds swept to a participating LIDS Overflow bank by contacting TIAA at 800-842-2252 weekdays, 8 a.m. to 7 p.m. (ET); a representative can take such instructions over the phone.

Other Sweep Options. TIAA may make other sweep options available for your Brokerage account. To discuss available sweep options or request a change from the primary or default sweep product, contact TIAA Brokerage. TIAA may make the Liquid Insured Deposits Overflow Sweep Product or Money Market Fund Sweep Products

available as the primary sweep on my Account (i.e., not in combination with the TIAA Brokerage Sweep Account). TIAA may change this option by replacing it with the TIAA Sweep Product described above or otherwise adding or deleting sweep options. TIAA will provide prior written notice to such Account holders as set forth in Paragraph 19 above prior to making any such changes. When selecting LIDS Overflow Sweep Product as the primary sweep on my Account, a secondary sweep should be elected in the event there is insufficient availability of LIDS Overflow banks to fully allocate my balance, or if I have a cash balance in excess of the LIDS Overflow Sweep Product FDIC limits, cash will be swept automatically into the secondary cash sweep.

22. For the parties mutual protection, I understand, agree and expressly consent to the electronic recordation of any of my telephone conversations with TIAA and to TIAA's monitoring of my electronic communications with TIAA, including but not limited to email and facsimile transmissions. I acknowledge that when I change any instruction on a limit order, I am responsible for any open order and any actions by me that modify or impact an open order. If I fail to take action, I understand that I will be responsible for any losses, including applicable commission charges. I am responsible for knowing the status of my pending orders and any duplication by me of a pending order will be considered authorized by me.
23. I acknowledge that federal law requires that TIAA verify my identity by obtaining, among other information, my name, date of birth, address and government-issued identification number before opening my Account. This information is necessary to help the government fight the funding of terrorism and money laundering activities. TIAA may gather and verify this information with respect to any other person authorized to effect transactions in my Account. TIAA may restrict and/or close my Account if TIAA cannot verify this information. TIAA will not be responsible for any losses resulting from my failure to provide this information, or from any related restriction or closing of my Account.
24. I acknowledge that if any provision or condition of this Agreement is held invalid or unenforceable for any reason by any court, regulatory or self-regulatory agency or body, such provision or condition shall be fully severable, and this Agreement shall be enforced and construed as if such provision or condition had never comprised a part of this Agreement. I acknowledge that to deter frequent trading within mutual funds, a short-term redemption fee may be assessed, as provided in the Commission and Fee Schedule attached hereto. This fee is in addition to any short-term redemption fee or restriction the underlying mutual fund may independently assess against the same transaction as described in the fund's prospectus. Each of TIAA, the Directed Trustee and Pershing reserves the right to restrict access to the purchase of mutual fund shares within any Account deemed at their sole discretion to engage in excessive or abusive short-term trading patterns. Additionally, in the event Pershing or Directed Trustee, as the case may be, is instructed by the issuer of a mutual fund to restrict my access to such mutual fund's shares, such a restriction may remain in place until Pershing or Directed Trustee receives notice from the issuer to remove the restriction.
25. I acknowledge that TIAA will send all communications to me at the mailing address I provide on my Account Application, or at such other address as I may subsequently provide to TIAA in writing, and that all communications so sent shall be deemed properly delivered, whether actually received by me or not. I acknowledge that I have a duty to timely review any confirmations or Account statements for accuracy. I am responsible for notifying TIAA, Pershing, and/or the Directed Trustee immediately of any error or omission. If I fail to notify TIAA, Pershing and/or the Directed Trustee of any error or omission within this time frame, the brokerage Account statement and confirmations shall be presumed accurate.
26. I acknowledge that this Agreement constitutes the full and entire understanding between the parties with respect to the provisions herein, and that there are no oral or other agreements in conflict herewith. I acknowledge that each of TIAA, the Directed Trustee and Pershing reserves the right to amend this Agreement by modifying or rescinding any of its existing provisions or by adding any new provision at any time upon written notice to me on my brokerage Account statement(s), trade confirmation(s), or such other written or electronic notification, including but not limited to posting notice of such amendment(s) and/or the amended Agreement on the TIAA Brokerage website. The amended Agreement will be effective as of the date established by TIAA, the Directed Trustee and Pershing (the "Effective Date"). I agree that any future amendments made to the Agreement shall apply to my Account and to any subsequent Accounts I ask TIAA to establish for me in the future. The use of my Account after the Effective Date of the amendment(s) shall constitute my acknowledgement and agreement to be bound thereby. I am responsible for regularly checking for any updates. I understand additional restrictions may apply to the brokerage services provided hereunder and additional documentation may be required by applicable law or TIAA, the Directed Trustee and Pershing's policies and procedures. I agree to comply with any such restrictions and promptly provide any documents or information requested.

27. I acknowledge that use of the telephone, internet or any other electronic system and software provided for use in accessing my Account information, is used at my sole risk. I further acknowledge that none of TIAA, the Directed Trustee, or Pershing, nor any of their vendors providing data, information or other services, including but not limited to any exchange (collectively, "Service Providers"), warrant that the service will be uninterrupted or error free, and that TIAA, the Directed Trustee Pershing and their Service Providers do not make any warranty as to the results that may be obtained from any of these systems. I further acknowledge that the telephone, internet and other electronic systems are provided on an "as-is" and "as available" basis, without warranties of any kind, either expressed or implied, including, without limitation those of merchantability and fitness for a particular purpose, other than those warranties which are implied by and incapable of exclusion, restriction or modification under the laws applicable to this Agreement. None of TIAA, Pershing, the Directed Trustee or the Service Providers will be liable in any way to me or any other person for inaccuracy, error, delay in, or omission of any data, information, or message, or the transmission or delivery of any data, information or message, or any loss or damages arising from or occasioned by: any inaccuracy, error, delay or omission, nonperformance, interruption in data due to neglect or omission by any Service Provider; any "force majeure" event (e.g. loss caused, directly or indirectly by flood, fire, war, terrorism, civil unrest, strikes, natural disaster, extraordinary weather conditions, earthquake or other acts of God, government restrictions or actions, interruptions of communications, exchanges or market rulings, suspension of trading or other conditions beyond TIAA, the Directed Trustee, Pershing and/or each Service Provider's control, failure, or equipment or software malfunction); or any other cause beyond the reasonable control of any Service Provider.
28. TIAA Brokerage and Pershing, in its capacity as clearing firm, may make the Account communications available in an electronic form instead of mailing them in paper form; according to terms and conditions stated within the Electronic Delivery Terms and Conditions.
29. I acknowledge receipt of the TIAA Privacy Notices and TIAA Trust, N.A. Privacy Notice.
30. I acknowledge that complaints regarding my Account are to be mailed to: TIAA Brokerage, 8500 Andrew Carnegie Blvd., Charlotte, North Carolina 28262, or I may call 800-842-2252.
31. I agree that TIAA may assign this Agreement (in part or in full, and including assigning the role of clearing broker and Directed Trustee for the Account) to any third-party or any subsidiary, affiliate or successor of TIAA. I hereby delegate and grant to TIAA the power and authority to make these changes on my behalf. TIAA will provide me with at least 30 days prior written notice of such assignment and I will be deemed to have consented to the assignment if I conduct any transactions in my Account or keep my Account open subsequent to receiving such a notice.

II. Trusted Contacts

TIAA is committed to helping customers protect their Account(s) and information. One way for customers to protect their interests is to appoint a Trusted Contact. A Trusted Contact is someone over the age of 18 whom the customer knows and trusts. This person will serve as a point of contact should TIAA have questions concerning a customer's overall well-being or whereabouts, or if TIAA suspects the customer may be the victim of fraud or exploitation. The individual(s) a customer selects may not take any action on the customer's Account and will not replace or affect existing powers of attorney. Customers should notify those they appoint as Trusted Contacts.

To appoint Trusted Contact(s), a customer can log into their Account at TIAA.org, click *Profile* at the top of the page. Within *Manage profile*, click *Trusted Contacts* and complete the required Trusted Contact information, or contact TIAA at 800-842-2252 to request a form to name a Trusted Contact.

Please note that TIAA, and its affiliates and representatives, are authorized to contact the Trusted Contact(s) and disclose information about the customer's Account(s) to address possible financial exploitation, to confirm the specifics of the customer's current contact information, health status, or the identity of any legal guardian, executor, trustee, or holder of a power of attorney, or as otherwise permitted under FINRA Rule 2165. Except as is required by FINRA Rule 2165, TIAA is under no obligation to interact with Trust Contacts.

III. Role of Pershing

TIAA has retained Pershing to act as a clearing broker for TIAA and provide certain recordkeeping and operational services, which may include execution and settlement of securities transactions, custody of securities and

cash balances, and extension of credit on margin transactions. These services are provided under a written Clearing Agreement between Pershing and TIAA. The respective roles of Pershing and TIAA, as defined within the Clearing Agreement, are outlined below. In general, Pershing only is responsible for those services provided at the request or direction of TIAA as contemplated by the Clearing Agreement.

1. Pershing will create computer-based Account records on the Account holder's behalf in such name(s) and with such address(es) as TIAA directs.
2. Pershing will process orders for the purchase, sale or transfer of securities for the Account as TIAA directs. Pershing is not obligated to accept orders for securities transactions directly from the Account holder and will do so only in exceptional circumstances.
3. Pershing will receive and deliver cash and securities for the Account and will record such receipts and deliveries according to information provided either by TIAA or directly, in writing, by the Account holder. Pershing is the only recipient of cash or checks for the Account by the Account holder.
4. Pershing will hold in custody securities and cash received for the Account, and will collect and disburse dividends and interest, and will process reorganization and voting instructions with respect to securities held in custody. Pershing is responsible for the custody of cash and securities only after such comes into Pershing's physical possession or control.
5. Pershing will prepare and transmit to the Account holder, or provide facilities to TIAA for the preparation and transmission of, confirmations of trades. Pershing will prepare and transmit to the Account holder periodic account statements summarizing the transaction history.
6. In connection with all of the functions that Pershing performs, Pershing maintains the books and records required by law and by business practice. Pershing will provide TIAA with written reports of all transactions processed for the Account to enable it to carry out its responsibilities under the Clearing Agreement. Pershing will assist the Account holder and TIAA with any discrepancies or errors that may occur in the processing of transactions for the Account.
7. **PERSHING DOES NOT CONTROL, AUDIT OR OTHERWISE SUPERVISE THE ACTIVITIES OF TIAA OR ITS EMPLOYEES. PERSHING DOES NOT VERIFY INFORMATION PROVIDED BY TIAA REGARDING THE ACCOUNT OR TRANSACTIONS PROCESSED FOR THE ACCOUNT NOR UNDERTAKE RESPONSIBILITY FOR REVIEWING THE APPROPRIATENESS OF TRANSACTIONS ENTERED BY TIAA ON THE ACCOUNT HOLDER'S BEHALF. PERSHING MAY ACCEPT FROM TIAA, WITHOUT INQUIRY OR INVESTIGATION, (I) ORDERS FOR THE PURCHASE OR SALE OF SECURITIES, AND (II) OTHER INSTRUCTIONS CONCERNING MY ACCOUNTS. PERSHING SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY ACTS OR OMISSIONS BY 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. I AUTHORIZE PERSHING TO ACT AS MY AGENT TO PURCHASE AND REDEEM FOR MY ACCOUNT SHARES OF THE FUNDS, AS PREVIOUSLY DEFINED, AND I AGREE THAT I SHALL NOT HOLD PERSHING, ITS OTHER DIVISIONS, AFFILIATES, OFFICERS, DIRECTORS OR AGENTS LIABLE FOR ANY TRADING LOSSES INCURRED.**
8. The Clearing Agreement does not encompass transactions in commodities futures contracts or investments other than marketable securities, which Pershing normally processes on recognized exchanges and over-the-counter markets.
9. In furnishing its services under the Clearing Agreement, Pershing may use and rely upon the services of clearing agencies, automatic data processing vendors, proxy processing, transfer agents, securities pricing services and other similar organizations.
10. This statement addresses the basic allocation of functions regarding the handling of the Account. It is not meant as a definitive enumeration of every possible circumstance, but only as a general disclosure.

IV. Commission and fee schedule

Equities and Exchange-Traded Funds (ETFs)

(All commissions and fees are per transaction, unless otherwise indicated.)

	Online/mobile TIAA.org/brokerage	Client Service Assistance 800-842-2252
Equity and Transaction-Fee ETFs	No charge	\$55
No-Transaction-Fee (NTF) ETFs	<ul style="list-style-type: none"> NTF-eligible ETFs will have a \$0.00 commission, regardless of order size or holding period. Any ETF shares purchased prior to January 26, 2018 and now identified as an NTF ETF will still be charged a commission when the shares are sold, when placing the trade through Client Service Assistance. A commission will be charged for NTF ETFs sold prior to settlement. 	
Equity notes	<ul style="list-style-type: none"> Fees shown reflect stock prices greater than \$1 per share. Orders to buy shares priced under \$1, restricted shares, non-permitted Cannabis Related Business securities, foreign securities, privately held securities, shares without a market price or both a bid/ask will not be accepted. Orders to sell shares priced under \$1 are handled via Client Service Assistance at the online commission rate, given above, based on eligibility. 	
Financial Transaction Tax (FTT) Ordinary and ADR	<ul style="list-style-type: none"> Financial Transaction Tax (FTT) is a generic name for taxes that are levied on certain transactions in FTT-eligible companies/financial instruments from certain countries. The rates are typically on the total transaction cost and vary by country. Rates generally will range between 0.01% to 5% per transaction. 	
ADR agent servicing fee	Fee generally will range from \$0.01 to \$0.03 per share. Amounts will differ by ADR. Please refer to the ADR prospectus for specific fee and other information.	
Financial Industry Regulatory Authority (FINRA) Trading Activity Fee (TAF)	Varies per transaction/security. Visit https://www.finra.org/rules-guidance/guidance/trading-activity-fee for the current rates.	
Securities and Exchange Commission (SEC) Section 31 transaction fee	Varies per transaction. Visit https://www.SEC.gov for the current rate.	

Fixed income

(All commissions and fees are per transaction, unless otherwise indicated.)

U.S. Treasury Securities		
New issues (primary, at auction)	\$50 per transaction	
Existing issues (secondary, already trading)	\$1 per \$1,000 face amount (\$50 minimum)	

Other Fixed Income

Municipal Bonds, Government Agency
Bonds, Unlisted (over-the-counter) Corporate
Bonds, and Mortgage-backed Securities¹ \$50 + \$2 per bond

Certificates of Deposit – New Issues

Purchase minimums of \$5,000, no commission (interest rate reflects
issuing bank's fee)

¹ TIAA may execute certain fixed-income transactions for your Account on either an agency or principal basis. If TIAA executes on an agency basis, the commissions listed above will apply. If TIAA executes on a principal basis, TIAA will sell a fixed-income product to you (or buy it from you), which TIAA contemporaneously purchases from (or sells to) a dealer. If so, the net compensation earned by TIAA will include a mark-up. If TIAA sells a fixed-income product to you, the mark-up is the difference between the sales price to you and the price TIAA pays to purchase the product from a dealer. If TIAA buys a fixed-income product from you, the mark-up is the difference between the sales price to the dealer and the price TIAA pays to purchase the security from you.

Options

(All commissions and fees are per transaction, unless otherwise indicated.)

	Online/mobile TIAA.org/brokerage	Client Service Assistance 800-842-2252
Commissions and fees	No charge	\$55 + \$2.50 per contract
Options exercise/assignment	\$25	\$25
Options regulatory fee	Varies by contract. Visit https://www.theocc.com for the current fee schedule.	

Mutual funds

(All commissions and fees are per transaction, unless otherwise indicated.)

No-Transaction-Fee (NTF) Funds	<ul style="list-style-type: none">• Minimum initial investment for NTF mutual funds: The greater of either the listed amount in the fund's prospectus or \$500. Purchases below the stated minimum will be charged the appropriate transaction fee.• Additional investments of NTF funds: The greater of either the listed amount in the fund's prospectus or \$500, unless you are purchasing through a systematic (automatic recurring) order. Purchases below the \$500 minimum will be charged the appropriate transaction fee.• Systematic (automatic recurring or dollar cost averaging) orders, no fee; minimum transaction of \$100.• Short-term redemption fee: \$50 minimum for shares held less than three months (waived for shares transferred from another brokerage firm or financial institution). Additional redemption fees may apply as set forth in each fund's prospectus.
Transaction-Fee (TF) Funds	<ul style="list-style-type: none">• Transaction fee, regardless of order size:<ul style="list-style-type: none">- \$50 per trade- \$35 per trade for customers that receive a financial planning solution from their Wealth Management Advisor.• Minimum initial investment for mutual funds: The greater of either the listed amount in the fund's prospectus or \$500.• Additional investments: The greater of either the listed amount in the fund's prospectus or \$500, unless you are purchasing through a systematic (automatic recurring) order.• Systematic (automatic recurring or dollar cost averaging) order, no fee: minimum transaction of \$100.

Account maintenance fees

(All fees are per transaction, unless otherwise indicated.)

Account research	\$20 per hour
ACH return fee	\$25
Alternate investment transaction/processing fee	\$50
Certificate cancellation fee for certificates deposited outside of the transfer agent	\$3 or higher (pass-through fee, varies by agent)

Custody/safekeeping fee for physical securities (Excludes ADRs held with domestic Directed Trustee bank)	\$10 per Account, per position, per month
Direct registration system (“DRS”) incoming transfer fee – shares sent directly from some transfer agents	\$15 – \$20 (pass-through fee, varies by transfer agent)
DRS outgoing transfer fee – shares sent directly back to the transfer agent ²	\$30 per security, per Account
Foreign Account fee (Non-US address)	\$50 per year for each Account that maintained a balance, position or had a form 1042-S reportable transaction
Foreign securities	Up to \$125 for each order (not applicable to American Depositary Receipts) + transaction fees and commission
Foreign security receive and deliver fee	\$75
Incoming Account transfer/IRA termination/Account closure fee	Varies by sender (pass-through fee)
International overnight check delivery fee ²	\$25
IRA termination fee ³	\$130
Margin extensions	\$15
NSF/return check deposit fee	\$25
Outgoing wired funds fee	\$25
Overnight check delivery fee ²	\$12
Post-effective reorganizations—Voluntary	\$75
Reorganizations—Voluntary	\$25
Saturday delivery—overnight check delivery fee	\$18
Special product fee—Registered real estate investment trusts (“REITs”)	\$35 per position, charged at transfer and then annually
Special product fee—Unregistered REITs	\$125 per position, charged at transfer and then annually
Stop-payment order fee	\$15

Transfers of gifted securities or checks mailed regular delivery ²	No charge
Transfers—Accommodation ¹	\$80 per transfer
Transfers—Automated Clearing House (ACH)	No charge
Transfers—GNMA, Restricted, Legal ²	\$140 per transfer
Transfers—Outgoing full Account ²	\$50 per transfer, no charge for partial transfers
Transfers—Register, transfer and ship ¹	\$80 per transfer, plus any third-party charges, including a DTCC charge of \$500
Unrelated Business Taxable Income Tax Return (IRS Form 990-T) Processing	\$200 per tax return filed

¹ Checks in the amount of \$250,000 or more for transfers will be sent via overnight delivery and a delivery fee of \$12 will be charged to the Account.

² Termination fee does not apply to the TIAA IRA self-directed brokerage Account, or if the assets from a TIAA IRA Account are transferred to a new or existing TIAA IRA Account.

Foreign currency deposit fee “Free credit balance interest charge”

(Monthly rate subject to change. Call TIAA Brokerage for current rates.)

Currency	Rate for balance below daily exception balance	Daily exception balance	Rate for balance above daily exception
Swiss Franc (CHF)	2.00%	\$100,000	4.25%
Danish Krone (DKK)	1.40%	\$1,000,000	1.80%
Swedish Krona (SEK)	.85%	\$2,000,000	1.25%
Euro (EUR)	.80%	\$86,000	1.05%
Japanese Yen (JPY)	.40%	\$100,000,000	.65%
Norwegian Krone (NOK)	1.10%	N/A	N/A

Investment, insurance and annuity products are not FDIC insured, are not bank guaranteed, are not deposits, are not insured by any federal government agency, are not a condition to any banking service or activity, and may lose value.

TIAA Brokerage, a division of TIAA-CREF Individual & Institutional Services, LLC, Member FINRA and SIPC, reserves the right to change this fee and commission schedule at its discretion, subject to notification in accordance with applicable laws and regulations.

TIAA-CREF Individual & Institutional Services, LLC, Member FINRA and SIPC, distributes securities products. 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, Member FINRA, NYSE, SIPC.

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